THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF LANDS, HOUSING AND HUMAN SETTLEMENTS DEVELOPMENT

DAR ES SALAAM CITY MASTER PLAN 2016-2036

VOLUME I:

MAIN REPORT

DAR ES SALAAM CITY COUNCIL

KINONDONI MUNICIPAL COUNCIL

ILALA MUNICIPAL COUNCIL

TEMEKE MUNICIPAL COUNCIL

KIGAMBONI MUNICIPAL COUNCIL

UBUNGO MUNICIPAL COUNCIL

FOREWORD

Dar es Salaam is the largest city in Tanzania. With its location on the Indian Ocean coast, it is also the manufacturing and commercial centre of the nation. Preparation of the revised Dar es Salaam Master Plan was initiated under the leadership of the Fourth Phase President, Dr. Jakaya Mrisho Kikwete and realised under the leadership of the Fifth Phase President, Dr. John Pombe Joseph Magufuli. The impetus towards these initiatives originates from the need to address the impending challenges arising from unguided growth of the Dar es Salaam city and other urban centres in Tanzania.

The last Master Plan of the city of Dar es Salaam was prepared in 1979 for a period of twenty years up to 1999. Due to rapid growth of the city, new challenges emerged and the understanding of the old premises also changed. The preparation of the new Dar es Salaam Master Plan thus, aims at enhancing the plan's responsiveness to changes in the social, economic and physical environment. Several changes have since occurred in the nation and the city that demand a review of the 1979 master plan, including rapid population growth of the city which reached 5,382,352 by 2016, liberalisation of the economy and the formulation of new national land and human settlement development policies. The city population is projected to about 13 million in 2036. The Master Plan proposes strategies to accommodate the additional population of seven million that will live in Dar es Salaam City in the next 20 years.

The Dar es Salaam Master Plan defines a shared vision of the community of its residents in political, social, economic and cultural expressions, regarding the future destiny of the city. The new Master Plan envisions a sustainable, competitive and people-centred city, predicated on optimal utilization of resources and conservation of the natural environment. It aims at enhancing the culture and preserving the historic heritage of the city while harnessing the existing potentials to contribute towards attainment of the national aspirations of transforming Tanzania from low to middle income country as articulated in the Tanzania Development Vision 2025 and elaborated in the National Five Year Development Plan (2016/17-2020/21).

The Dar es Salaam Master Plan is a strategic, indicative, forward planning tool to guide decision-making on the use and development of land in order to ensure orderly growth and development of the city to the year 2036 and beyond. It proposes solutions to the critical challenges facing the city including, severe traffic congestion, predominance of informal settlements that lack basic infrastructure and services, has poor sanitation and inadequate infrastructure. The fundamental structure of the city shall be based on neighbourhoods that will constitute the lowest urban planning units for the effective and equitable delivery of basic social services such as education, health care, and other amenities.

In this master plan the future growth of the city is viewed from a metropolitan perspective that extends the city development strategies beyond its physical boundaries to cover its emerging region of influence that incorporates the urban areas of Bagamoyo, Kibaha, Kisarawe and Mkuranga.

I wish to acknowledge the contribution of many actors who facilitated the completion of this Master Plan. These include; the Consortium of consultants from DODI MOSS SRL of Milano, Italy, AFRI-ARCH ASSOCIATES of Dar es Salaam, Tanzania, BURO HAPPOLD LTD of London, UK, Q-CONSULT LIMITED of Dar es Salaam, Tanzania, the Ministry of Lands, Housing and Human Settlements Development, the Dar es Salaam Region Administrative Secretariat, the Dar es Salaam City, Ilala, Kinondoni, Temeke, Ubungo and Kigamboni Municipal Councils, the Technical Review Team and the primary and secondary stakeholders who were involved in the various stages of the preparation process of this master plan.

Hon. William V. Lukuvi (MP)
Minister for Lands, Housing and Human Settlements Development
TANZANIA
22nd July 2016

MASTER PLAN APPROVAL

I, John M. Lupala

Director of Urban Planning by virtue of powers vested in me under section 12(4) of the Urban Planning Act No. 8 of 2007,

Do hereby APPROVE:

The Dar es Salaam Master Plan (2016-2036)

Signature
Date
Date: ----------, 2018

MESSAGE FROM THE DAR ES SALAM CITY AND MUNICIPAL COUNCILS

The Dar es Salaam City Master Plan (2016 – 2036) is a strategic, indicative, forward planning tool to guide decision-making on the use and development of land in order to ensure orderly growth and development of the city to the year 2036 and beyond. It is based on the shared vision of the community of city residents in its political, social, economic and cultural expressions, regarding the future destiny.

To our appreciation, the Master Plan has clearly represented our vision for future development of a sustainable, competitive and people-centred city, predicated on optimal utilization of resources and conservation of the natural environment. We also acknowledge that the master plan has proposed an appropriate land use structure to guide the future growth of the city and defined a clear strategy for accommodating the anticipated population increase over the next 20 years from 2016 to 2036. We realize that the predominance of informal settlements is one of the major challenges facing the city. We believe that the proposed master plan strategy to take the process of formalization beyond the on-going regularization process to actual redevelopment provides a permanent solution to this problem enabling Dar es Salaam to develop as a truly modern city.

In its present form, the city of Dar es Salaam is over-burdened with a problem of severe traffic congestion. We appreciate that this master plan has come up with viable proposals that will contribute to eliminating this challenge through decentralization of the city centre facilities to the proposed urban sub-centres and proposed transformation of the current radial network of roads to a concentric pattern of roads.

Furthermore, we believe that the proposed metropolitan structure of Dar es Salaam will facilitate a more efficient management of the city, ensure proper implementation of the master plan and open up new social and economic development opportunities for the city.

We understand that the proposals of this Master Plan cannot be realized without the commitment of all six councils, the co-operation of the Dar es Salaam regional secretariat, the support of the central government and the participation of all residents of the city as well as the private sector and civil society organisations. We thus call upon all stakeholders to fully participate and support the implementation of this master plan.

Hon.
Lord Mayor
Dar es Salaam City Council
Date
----------, 2018

City Director
Dar es Salaam City Council

---------, 2018

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ABBREVIATIONS

AC	African Community
BRT	Bus Rapid Transit
CBD	Central Business District
CIUP	Community Infrastructure Upgrading Programme
DARCOBOA	Dar es Salaam Association of *Daladala Owners*
DART	Dar es Salaam Rapid Transport Agency
DAWASA	Dar es Salaam Water and Sewerage Authority
DAWASCO	Dar es Salaam Water Supply Company
DCC	Dar es Salaam City Council
DSM-RAS	Dar es Salaam Regional Administrative Secretariat
DUTA	Dar es Salaam Urban Transport Authority
EAC	East Africa Community
EDZ	Economic Development Zone
EPZA	Economic Processing Zone Authority
EWURA	Energy and Water Utilities Regulatory Authority
ICD	Inland Container Depot
IDA	International Development Association
IT	Information Technology
IPP	Independent Power Producers
JICA	Japan International Co-operation Agency
JNIA	Julius Nyerere International Airport
MLHHSD	Ministry of Lands, Housing and Human Settlements Development
MMML	Marshall Macklin Monaghan
MoF	Ministry of Finance
MoHA	Ministry of Home Affairs
MoT	Ministry of Transport
MoW	Ministry of Works
PMO	Prime Minister's Office
PPP	Public Private Partnership
RAHCO	Rail Assets Holding Company
RALG	Regional Administration and Local Government
RAS	Regional Administrative Secretariat
RFB	Roads Fund Board
SADC	Southern Africa Development Cooperation
SPP	Small Power Producers
SPPA	Standardized Power Purchase Agreement
SUMATRA	Surface and Marine Transport Regulatory Authority
TAA	Tanzania Airports Authority
TAH	Trans African Highway
TANESCO	Tanzania Electric Supply Company Limited
TANROADS	Tanzania National Roads Agency
TAZARA	Tanzania Zambia Railways Authority
TFF	Tanzania Football Federation
TIC	Tanzania Investment Centre
TICTS	Tanzania International Container Terminal Services Limited
TPA	Tanzania Ports Authority
TRL	Tanzania Railways Limited
UDA	*Usafiri* Dar es Salaam
URT	United Republic of Tanzania
UN	United Nations
WHO	World Health Organization
WRM	Water Resources Management
WB	World Bank
TZS	Tanzania Shilling
PHC	Primary Health Care

PREFACE

Dar es Salaam City is currently going through a process of rejuvenation and gentrification. Replacement of old buildings with modern state of the art property is taking place in the inner city. These trends are giving the City a new shape, opening up more business opportunities and creating new challenges related to the capacity of the existing infrastructural such as the utilities, which are not growing in tandem with the changes such as the new multi-storey buildings dotting the inner city skyline. Given the pace of growth of the city, the metropolitan Dar es Salaam will within a few years, become a *mega city* and the new status will come with its own opportunities and challenges. Potential opportunities will arise from the economies of agglomeration and reduced cost of doing business. New business opportunities and innovations will open up as well as availability of abundant skilled labour as added advantages. The new mega city will however, also create additional costs of keeping the city clean, maintaining public order, controlling disease outbreaks, commuting across long distances, pollution, provision of social services to a large population and many administrative challenges. The quality of life in the future mega city will very much depend on what was done in the past in terms of land use planning. The last Master plan dates back to 1979. To cope with the emerging challenges, the city therefore requires a new master plan to guide the rapid and uncontrolled development that has taken place over the years.

The new Master plan is a result of joint efforts of a consortium of four planning and design consultants, the Ministry of Lands, Housing and Human Settlements Development (MLHHSD), the Dar es Salaam City Council (DCC) and the five Municipalities, namely; Ilala, Kinondoni, Ubungo, Kigamboni and Temeke, with contributions of the key stakeholders. The Plan translates the shared vision of the Dar es Salaam city community in political, social, economic and cultural expressions into concrete strategies regarding to shape the future destiny of the City.

It being a spatial management tool, the master plan cannot address all the complex issues of urban development. This is why it only identifies the major structural choices in quantitative and spatial terms, which define the character of the city that the residents intend to have realized in the next twenty years. The plan proposes strategies to put effect to those choices, which will progressively be defined and refined in the course of implementation of the master plan.

Dar es Salaam is a city of duality comprising planned and unplanned settlements both of which are undergoing rapid transformation. This presents a challenge as each is trying to influence the other, in that the formal urban areas are assuming a lot of informality while the informal settlements are adopting a formal system in terms of uncontrolled construction of high rise buildings. This duality of the city and its unique role as a regional hub in the East African Community and beyond has contributed to the definition of the vision of the Dar es Salaam Master Plan 2016-2036.

This report is divided into two parts: the Main Report and Technical Supplements. The Technical Supplements contain detailed analysis of the information collected through interviews and fieldwork, the data being arranged into sections that address pertinent issues and key challenge facing the Dar es Salaam city. The key to success of this master plan lies in its execution. Therefore, governance and implementation modalities are critical issues, for which considerable research has been undertaken that has led the proposals to establish a metropolitan authority, and decentralisation of the city administration and planning functions to the ward and *mtaa* level as a way to manage the sustainable growth and development of regional Dar es Salaam city in the 21st Century.

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Dar es Salaam City Council
----------, 2018

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Dar es Salaam City Council
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EXECUTIVE SUMMARY

Dar es Salaam City Master plan is a structure plan that defines the main development strategies for the metropolitan area for a twenty year period from 2016-2036 and proposes a set of design guidelines, which establishes the framework for the physical and spatial arrangement and composition of built-forms and their three-dimensional relationship with the spaces around them and the surrounding settings for achievement of aesthetic and socio-cultural qualities. The design guidelines are intended to shape a better physical environment in aesthetic and functional terms, while enhancing the quality of the built environment by improving the overall townscape. The main strategies for the future development of the city include the following:

- Comprehensive planning of the whole city
- Conservation of the city centre to preserve the unique characteristics of Dar es salaam as a historic city
- Developing new urban sub-centres to decentralise central city functions and redistribute traffic to reverse the current traffic congestion
- Redevelopment and densification of the existing planned areas of the city in order to optimise utilisation of existing infrastructure facilities and social services;
- Take the process of formalization beyond the on-going regularisation process to actual redevelopment of the informal settlements to improve living conditions and capture the high value of land and properties in the informal settlements which occupy prime land in the city
- Establishment of a Metropolitan Authority
- The proposed design guidelines define the criteria and rules that the development of the following areas of the city:

Category A - Design Guidelines for the existing city give directions on protection of the historical centre;

Category B – Design Guidelines for the future city are elaborated for new satellite centres and new urban sub-centres.

Category C - Design Guidelines for other land use zones cover the development of Institutional areas, Playgrounds and Open Spaces, Peri-Urban Areas/Urban Agriculture, Forests and Natural Parks, Environmental Protection, Area of Tourism Development, Industry, Airport, Harbour, Technological Facilities and Networks, Military Areas and Areas Reserved For Mobility.

Category D - Design Guidelines on Urban Planning and Space Standards, Building Standards, Setbacks and Urbanisation Works.

Category E - City Centre Design Guidelines provide for Land Use Policy, the City Centre, Upanga Area, Kariakoo, Institutional areas, Transportation Facilities, Parks & Open Spaces, Waterfront, New detailed schemes, Urban Renewal Schemes, Redevelopment of Saturated Informal Areas, Regularisation Schemes and Detailed Plans.

The Planning Process was predicated on the following:

1) The preparation of the plan was based on a system of methodological tools, which show how to start the development process and how to implement it.
2) Methodology

Methodological Approach: - comprised urban screening through a critical assessment of the built-up city with the view to highlighting the strengths and weaknesses and its capacity to interact with other areas for an effective socio-economic development and sustainability.

Social economic Survey and fieldwork: in general, the methodological process followed an articulate analysis of the metropolitan habitat conditions, with reference to a master plan proposal that is conceived as a structured plan.

Participatory Process: preparation of the planning was carried out with the cooperation of local actors and the representatives of counterpart staff with the view to involving the technical committee in the public administration who will be in charge of managing the plan.

Review of Previous Master Plans: the first planning scheme for the Dar es Salaam City was drawn up in 1891 when Dar es Salaam (then a minor settlement), was declared the capital of the then German East Africa. In 1949 Dar es Salaam Municipality had its first Master plan prepared, followed by that of 1968 and 1979. The Dar es Salaam Strategic Urban Development Plan (SUDP) was developed in 1999.

Review of other key developments: studies were conducted on the evolution of the Pattern of Dar es Salaam City, the Sustainable Dar es Salaam Project (SDP), and the impact of Policy Changes on implementation of the Dar es Salaam Master Plans.

Overview of the Upgrading Initiatives

Environmental Planning and Management (EPM)-Initiated in 1992 by Sustainable Cities Programme under the support of UN agencies (International Labour Organization, UN-Habitat, UN volunteers) and the Ford Foundation

Citywide Action Plan-Recommended in 2007 by the Citywide Strategy for Upgrading Unplanned and Un-served Settlements in Dar es Salaam City

The Master plan plays an important role in defining the shared vision of the community of Dar es Salaam city in political, social, economic and cultural expressions, regarding the future destiny of the city. Its proposals are the result of an extensive consultation process.

The Main Goals for the Metropolitan Area

The City in the forthcoming decades will see its role strengthened in linking the economic regions of Central, Southern and Eastern Africa, the Indian Ocean islands and the Middle and Far East. This is due to a strategic location in relation to the continental growth corridors, and is situated in one of the world's regions with the fastest demographic growth.

Adopting the medium forecast for the future growth (population of around 11.9 million in 2036), the aim of the Master Plan is to propose a strategy to settle the 7.5 million additional population that will live in Dar es Salaam and its impact regions in the next 20 years. In order to obtain a better quality of the living

habitat, the Master plan proposes to implement a decentralization strategy, which can reduce traffic congestion and facilitate the improvement of the city as an important logistic centre.

Issues and Key Decisions

Issue: the strong urban polarisation dictated by the *mono-centrality of the city centre* is the main cause of imbalance and malfunctioning of the city, characterised by high traffic congestion, and by a trend towards mono-functional concentration of activities in the area of the city centre and in a few adjacent areas.

Intervention: the Master Plan proposes to launch a strategy of decentralization of urban polarities, facilitating the creation of new sub-centres at urban scale. The new urban hierarchies are planned along the existing corridors (Bagamoyo, Morogoro, Nyerere, Kilwa, and Mandela roads), and in the existing main developing hubs at Mwenge, Ubungo, Magomeni and Mbagala.

Finally, the proposed new sub-centres will be developed along the main roads, which cross the unplanned areas. These corridors have to be considered as the potential elements that can act as a catalyst to generate a process of urban upgrading and redevelopment of the informal settlements. The localization of new urban services and common areas for the communities will facilitate the progressive inclusion of these zones as integrated parts of the city.

Issue: The threats to the *historic City Centre* characterised by the presence of a significant cultural heritage, which is progressively being destroyed by inappropriate interventions, such as demolition of historical buildings and erection of high-rise buildings. Hence, there is a need of introducing a proper strategy for preservation and sustainable development.

Intervention: The Master plan concentrates on the need for *preservation and maintenance of cultural heritage*, regulation of building activities and reduction of traffic congestion to improve urban quality of the city centre. Preserving, maintaining and rehabilitating architectural and urban heritage should be a base-element of the new city centre.

Planning themes for the future City Centre are:

- Conservation of the cultural heritage and rehabilitation of the Waterfront;
- Balance between mixed, commercial and residential uses;
- Urban open space and the green city;
- High quality commerce, public and cultural facilities;
- Sustainable mobility, creation of pedestrian areas and streets

Issue: decay and exclusion of the *informal settlements*, characterised by low or poor quality housing, lack of infrastructure and poor road networks as well as lack of services;

Intervention: The Master plan identifies three categories of the informal city and proposes appropriate *redevelopment and renewal strategies* for each of them:

- Areas on which to operate through systematic policies for the improvement of services and for residential redevelopment based on new urban design tools. The scope of the policies in these areas is to gradually raise the overall quality, by reformulating them to the level of the low-density, formal city, and reorganization of the public open spaces.
- Areas located in strategic zones for urban development *(majorly environmental risk areas)* will be subject to policies of transformation and if necessary for removal where necessary.
- Areas which are highly unstructured exhibiting characteristics such as lack of adequate services and infrastructure, low building density of poor quality, in these areas; new interventions based on contemporary urban design proposals and policies of building replacement may be implemented.

Issue: *traffic congestion* and absence of road hierarchy;

Solution: proposal for a new road system based on two the proposal for the construction of two new ring roads and on the proposal of a grid of main roads. The new ring roads will provide access to the harbour, thus relieving the Mandela road of the heavy-duty trucks which at present; use it to access to the harbour, leading to severe congestion on the road, while the proposal of a grid of main roads will facilitate permeability of the existing city, particularly in the informal areas.

Issue: Poor condition of the *infrastructure networks and environmental contamination and risks;*

Intervention: The Master plan presents infrastructure and utilities proposals, based on a detailed analysis realized through field survey, interviews and data collection. Proposals for each infrastructure element have been developed with reference to a wider framework, articulated in three main streams:

1. Environment;
2. Climate change; and,
3. Sustainability

The main disciplines of this component of the work are: Green infrastructure, Air quality, and Soil and water quality. Others are Water supply; Sanitation; Power; ICT; Storm water drainage; Flooding and Waste Management.

The proposed policies and actions have been built in coherence with the sector master plans of the main metropolitan agencies, which actually manage the infrastructure in the town (DAWASA, TANESCO, and TANROADS).

Issue: How to guarantee adequate *environmentally sustainable urban development;*

Intervention: The Master plan proposes to act on four levels:

- Increasing the system of green areas: The existing urban parks to be preserved- increased and improved; new parks to be realized especially fluvial parks and a system of district or local parks to be implemented in available adequate spaces;
- Protection of the coast line, and where possible widening the protected areas;

- Reorganization of the entire mobility system;
- The definition of a system of rules and regulations that encourage and, where possible, impose all actions aimed at environmental sustainability.

Issue: Immigration and *urban demographic growth;*

Intervention: the Master plan has planned to settle the 7.5 million new inhabitants for the next 20 years in the following areas:

- 1 million inhabitants in the existing city, through a policy of densification and infill;
- 5.0 million Inhabitants in the Urban Units that will structure the future city in the area between the two rings and Kigamboni.
- 1 million inhabitants in the already urbanized areas of the future city and along the main development corridors in the direction of the North and West, through a policy of densification;
- 0.5 Million in the area planned by the Master plan of Kigamboni.

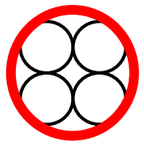
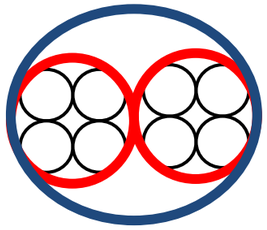
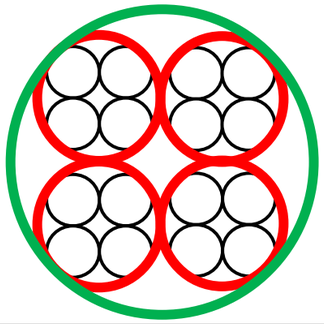
Problem: Strategy for the *new settlements* in areas of expansion;

Intervention: A residential community of 24,000 populations is proposed to form the basic planning unit to calculate the land required for future expansion of the Dar es Salaam city to accommodate the expected population increase of 7,960,595 by 2036. The proposed residential community will comprise four neighbourhood units each having a population of 6,000. Each neighbourhood unit will cover an estimated area of 48.0 hectares and will be provided with basic services including:

- Economic activities namely, service industry, market and commercial facilities
- Community facilities namely, nursery schools, primary school, dispensary, social hall, religious buildings and a cemetery
- Recreation and open spaces including children playground, play fields, sport fields/stadia and a neighbourhood park
- Circulation and infrastructure such as roads and footpaths, water, waste water and drainage, power supply and communication networks

For these residential communities it is proposed that together with the residential use, the main social infrastructure (schools; green spaces; civic, sanitary and cultural centres), economic activities, roads, squares, parking areas and green open space will accordingly be provided. Each residential community will include a "service centre", where the main public activities (secondary schools, public services, health centre, light industry, commercial activities, open spaces, playground, and parking and circulation areas) shall be located. The proposed area of each new service centre is 278.2 ha.

Table 0.1: Panning Hierarchical concept

Hierarchical Concept	**Interpretation**
	<u>Neighborhood Level</u> • Population of 6,000 • Primary school • Dispensary
	**<u>Community Level</u>** • Population of 24,000 • Four Primary schools • Secondary school • Health centre/ Clinic
	**<u>Ward Level</u>** • Population of 48,000 • Eight Primary schools • Two Secondary school • Two health centers/ clinics • Hospital
	**<u>District Level</u>** • Population of 96,000 • Sixteen Primary schools • Four Secondary school • Four health centers/ clinics • Hospital

Issue: Inadequate employment *opportunities in the formal economy*;

Intervention: Designation of two new large industrial areas, located on the existing TAZARA railway line along the Nyerere Road and one to the north, near Bagamoyo road at Bunju area. Expansion of the harbour according to its Master plan and through the proposal of a new ring road for port related trucks. The new Master plan proposes to establish a Tourist Park in the southern areas of the Kigamboni Municipality, along the Indian Ocean coast and new tourist developments with hotels and restaurants close to the beaches, services, new residential centres and development of agriculture to serve the tourists hosted along the beaches.

Implementation

The Master plan presents proposals and recommendations for a new governance structure, based on the following key policies:

1. Create a Single New Metropolitan Authority;
2. Improve Institutional Arrangements for Planning;
3. Strengthen Local Governance;
4. Enhance the City Council Financial Capacity for Master Plan Implementation;
5. Promote Policy and Legal Frameworks Reforms.

The Design Guidelines are a specific important product of the planning activity; the specific prescriptions for each proposed land use zone and policy are clearly detailed in each Article (mention the articles and page numbers). The proposal of this new component of the Master plan requires the presence of an adequate number of qualified staff of local practitioners in the public administrative offices. This proposal should thus be supported by a good programme of capacity building, which could be carried out with the coordination of the local universities.

The Master plan proposes phasing of the future urban development to facilitate a better management of the process. The proposal identifies three phases:

First Phase (Short term - 5 years2017-2021):

To start with the urgent construction of the first new ring road and establish the new Metropolitan Planning Authority; to coordinate the Master Plan proposal on infrastructure with the specific sector master plans, (water, transport, port, and energy) start a process of upgrading of the informal areas by creation of new sub-centres along the main existing corridors. Parallel to this; carry out densification of the existing city inside the new ring and the preservation process of the city centre.

Second Phase (Medium term – 10 years) :(2022-2026)

To realize the new residential clusters in the expansion area between the two rings, with the new sub-centres. Densification of the existing city will be achieved starting with the realization of the new industrial areas, rehabilitation of the existing railway lines and establishment of the new Satellite Centres at Kimbiji, Kongowe, Pugu Kajiungeni, Kibamba - Luguruni and Bunju. The first and second phases will accommodate about 3.5 million inhabitants in the metropolitan area.

Third Phase (Long term – 20 years): (2026-2036)

The third Phase will start after achievement of the previous phases, (short and medium term). It is planned to accommodate 4.0 million inhabitants in the areas that are designated for the expansion of the existing City. In line with the Metropolitan approach to governance, these new inhabitants will find a place in the developing areas north, west and south, along the Kilwa road, which will also be subject to intensive densification.

1.0.INTRODUCTION

1.1.Historical Background

Dar es Salaam is the largest city in Tanzania. With its location on the Indian Ocean coast, separated from the island of Zanzibar by the Zanzibar Channel, it is also the manufacturing and commercial centre of the nation. The city began as a fishing village in the mid-19th Century and gradually became an established port and trading centre.

The site of Dar es Salaam was originally a small village named Mzizima (Kiswahili for a healthy town) dating back to 1857. Later, it became the site of plantations growing cassava, millet and maize. Dar es Salaam, an Arabic name meaning, "haven of peace," was formally founded in 1866; by Majid bin Sayyid, the Sultan of Zanzibar (c. 1834-1870). The city fell into decline after the death of the Sultan in 1870 but its fortunes were revived when the German East Africa Company established a trading station there in 1887. As the German colonial presence in east Africa grew, Dar es Salaam became the administrative and commercial centre of the colony. In 1900 it became the eastern terminus of the Central Railway Line that ran into the interior of German East Africa.

British forces took control of Dar es Salaam and German East Africa during World War I. They renamed the colony Tanganyika but retained Dar es Salaam as the capital. The British also legalized the informal residential segregation of the city that began under the Germans. There was a European section (Oyster Bay) and two African sections (Kariakoo and Ilala). Eventually a fourth section was developed for Asians.

Dar es Salaam grew rapidly after World War II and soon became the centre of anti-colonial agitation led by the Tanganyika African National Union (TANU) founded in the city. When Tanganyika became independent in 1961, Dar es Salaam became its first capital, a position it continued to have when Tanganyika and Zanzibar merged in 1964 to become Tanzania. Although the interior city of Dodoma was announced as the new capital of Tanzania in 1973, Dar es Salaam continues to be the location of most government offices.

1.2.Rationale for the Preparation of a New Master Plan

The last Master Plan of the city of Dar es Salaam was prepared in 1979 for a period of twenty years up to 1999. Due to rapid growth of the city, new challenges emerged and the understanding of the old premises also changed. The preparation of the new Dar es Salaam Master Plan, thus, aims at enhancing the plan's responsiveness to changes in the social, economic and physical environment.

Since preparation of the 1979 master plan, several changes have occurred in the nation and the city that demand a review of the 1979 master plan. The city population, for example, increased exponentially to 5,382,352, more than twice the master plan target of 2.4 million people. Most of the population increase found accommodation in the city without proper planning guidance. Many other fundamental changes have since occurred in Tanzania's socio-economic conditions and in the policy and legal environment. Key among them includes:

1) Liberalisation of the economy in the mid-1990s;
2) Adoption of a new national land policy in 1995 that assigned monetary value to bare land; and
3) The formulation of a new Human Settlements Development Policy in 2000.
4) Enacting the Land Act No. 4 and 5 of 1999, the Urban Planning Act and Village Planning Act, both of 2007, among others; and
5) New concerns over the environment and climate change impacts have since emerged, which were not addressed in 1979.

1.3. The aim and purpose of the Master Plan

The purpose of the project is to review the 1979 Dar es Salaam master plan and prepare a revised master plan that will guide the growth and development of Dar es Salaam city for the period of 20 years from 2016 to 2036 and beyond

1.4. Scope

The planning area covers all the land within the administrative boundaries of the Dar es Salaam city and region. The planning timeframe is for 20 years from 2016 to 2036. The master plan addresses all the physical, social, cultural and economic development aspects of the city in a holistic manner.

The main thrust of the review process was to assess and evaluate implementation of the 1979 master plan and any subsequent plans to benchmark progress in the various sectors against the issues identified and proposals made for each sector in the 1979 master plan.

The Dar es Salaam master plan 1979 was reviewed against the following set of performance criteria:

Table 1.1: Criteria for the Review of the 1979 Dar es Salaam Master Plan

1) The extent of achievement of the stated goals and objectives of the 1979 master plan, given the realities on the ground;
2) The extent to which the goals and objectives were attuned to the planning issues at the time of the preparation of the plan;
3) Determining which development proposals and recommendations of the plan have been implemented to-date (2016), and what possible reason can be deduced for non-implementation of other proposals;
4) Effectiveness of the 1979 master plan proposals in solving and addressing all the identified issues;
5) The extent to which the proposals contained in the 1979 master plan were implementable, practicable and cost effective;
6) The extent to which the 1979 master plan accommodated community and stakeholder views and aspirations; and
7) The stakeholders' perception of the plan with regards to creating a functional and prosperous; liveable and sustainable city that would be safe to live in.

The review of the 1979 master plan focussed on assessing those attributes using data and information collected from field surveys and interviews of relevant stakeholders to elicit their views and opinions on the implementation of the previous master plan and their perceptions regarding how to transform Dar es

Salaam into a more liveable, functional, safer city in which commerce, industry and tourism would thrive and create adequate jobs and other livelihood opportunities for the residents.

1.5. Overview of the Master Plan

The Master Plan of the Dar es Salaam City is a strategic, indicative, forward planning tool to guide decision-making on the use and development of land in order to ensure orderly growth and development of the city to the year 2036 and beyond. The master plan report provides a clear and logical sequence in the flow of information that establishes the link between studies of the existing situation and the final plan by way of synthesising the outcomes of the situational and contextual analysis to identify the planning issues, challenges, constraints and opportunities highlighted in this report and to inform the formulation of planning policies and strategies geared to addressing the specific issue identified from the studies. The Dar es Salaam City Master plan has two main characteristics:

- It is a structure plan that identifies and proposes the main development strategies for the metropolitan area for a twenty-year period, 2016-2036 and beyond; and
- It contains design guidelines, which define the criteria and rules for future growth and development of the city.

The Master plan defines the shared vision of the community of its residents in political, social, economic and cultural expressions, regarding the future destiny of the City. The city is viewed from a metropolitan perspective that extends the city development strategies beyond its physical boundaries to cover its merging region of influence that incorporates the urban areas of Bagamoyo, Kibaha, Kisarawe and Mkuranga.

1.6. The Main Planning Challenges and Key Strategies

The city population is projected to about 13 million in 2036. The Master Plan proposes strategies to accommodate the additional populations of seven million that will live in Dar es Salaam City in the next 20 years. In order to obtain a better quality of the living habitat, the Master plan proposes to implement a decentralised growth strategy, laying emphasis on assigning clear planning responsibilities to the wards and sub wards as planning units and on the creation of sub-centres (based on both existing and new urban areas) with the aim of reducing traffic congestion and enhancing the role of the city as an important logistic centre. The master plan identified the following major problems that need immediate, short, medium and long-term solutions:

i. The strong urban polarisation determined by the mono-centrality of the city is the main cause of imbalance and malfunctioning of the city, characterised by a high traffic congestion, and by a trend towards mono-functional concentration of activities in the area of the city centre and a few adjacent areas;
ii. The threats to the historical city centre, characterised by the presence of several significant cultural heritage, which is progressively being destroyed by incongruous interventions and the high volume of vehicular traffic no longer sustainable due to the lack of a strategy for preservation and appropriate development of the city centre;
iii. Decay and the exclusion of the informal settlements, characterised by low or poor quality housing, lack of infrastructure and road network, as well as lack of services;
iv. Traffic congestion and the absence of a clear hierarchy of roads;
v. The bad condition of infrastructure networks;
vi. The deteriorating quality of the environment due to pollution of water, air and soils;
vii. Severe impacts of climate change and the attendant risk in the face of inadequate means and limited capacities to guarantee environmentally sustainable urban development;
viii. Rapid population growth, high rates of rural to urban migration and urban demographic trends;
ix. Absence of clear strategies to guide development in the areas of expansion of the city;
x. Employment opportunities in the formal economy, considering that the problem of congestion does not allow for the localisation and growth of new developed areas, which need to have a good access to private and public transport;
xi. Improper governance structures, poor implementation and inadequate coordination on matters of the city's development activities.
xii. Chaotic development and lack of overall and specific development guidelines as well as inadequate capacity to manage and control the development process.

The following main strategies have been proposed to address those issues and guide the future growth and development of the city:

i. Conservation of the city centre as a Historic City.
ii. Shift and reversal of the mono-centric development and development of existing and new urban centres
iii. Redevelopment of the existing planned and unplanned urban areas under new guidelines
   - Redevelopment through regularization of the informal settlements in a three stage process involving land ownership identification; regularisation for right of occupancy and redevelopment under proper guidelines based on a rule of thumb defined by a plot coverage of 50 per cent; plot ratio of 2 and height of 4 storeys; setbacks of 3 from front and 2 meters from sides and rear of the plot. A minimum size for a plot is envisaged to be 300 square meters. Smaller plots will have to be combined on part right of occupancy basis;
   - Redevelopment of the old and dilapidated planned areas of the city under new guidelines to intensify development and achieve a compact city form;
iv. Comprehensive planning of the whole city; and
v. Establishing a Single Metropolitan Authority.

In this regards, the master plan proposes a set of appropriate planning standards, regulations and development guidelines and conditions that are realistic and conducive for Dar es Salaam City taking into consideration the social-economic environment of the country and the specific physical characteristics and social-economic conditions of the city.

The final product for the Dar es Salaam Master Plan is hinged on five dimension pillars

i. The values and characteristics of the existing situation
ii. Normative planning theories and processes
iii. Urban design outlook – 3D development guidelines
iv. Time – change element
v. Urban wealth – Sense of belonging

1.7. Approach and Methodology

The preparation of the Dar es Salaam Master Plan 2016 - 2036 went through four distinct stages: inventory of the existing situation (diagnosis); defining the city vision, planning goals and objectives (visioning); population projections and estimation of land requirements for future growth of the city (prognosis); and the development of planning proposals, phasing and costing of the master plan projects (proposition).

1.7.1 Inventory of the Existing Situation (Diagnosis)

The diagnosis process involved carrying out a survey of the city to collect and analyse data on the demographic profile and trends; its locational context and role of the city in the nation, region and globally; the extent, type and intensity of development; and the adequacy of existing public services and infrastructure of the city. A review of the 1979 master plan, previous master plans and other planning interventions proposed or implemented in the city was also done. The purpose of this analysis was to establish the baseline socio-economic information and assess its growth potential over the 20 years planning period so as to inform the planning policies, proposals and development strategies and reinforce the city as a national commercial hub and a competitive logistics and business centre in the international arena.

1.7.2 Review of previous plans

The 1979 Plan covered a period of twenty years, which expired in 1999. Dar es Salaam did therefore continue to grow for the last 19 years without any comprehensive plan. The review of previous master plans covered the first planning scheme for the Dar es Salaam settlement, which was drawn up in 1891, the 1949, the 1968 and the 1979 Master plans as well as the 1992 Dar es Salaam Sustainable Urban Development Plan (SUDP). The aim of the review was to validate the planning objectives, assess implementation of plans and identify the main challenges encountered during implementation of the master plans.

Other planning interventions including the redevelopment schemes for the Dar es salaam Central Area, Kariakoo, Upanga, Kurasini, Oyster Bay and Magomeni areas; Squatter Clearance programme of the 1960s, the Sites and Services and Squatter Upgrading Project of the 1970s, the Community Infrastructure Projects of the 1990s, the more recent Community Infrastructure Upgrading Programme (CIUP); the on-going regularisation and formalisation of unplanned settlements; and the 20,000 Plots Project were also reviewed. The lessons drawn from those experiences informed the planning proposals to ensure that any setbacks to the implementation of the previous plans of the city are not carried forward.

1.7.3 Data collection methods

Data on socio-economic dynamics of the Dar es Salaam city and its regional and national linkages were collected from secondary and primary sources including the review of published literature; official records; household questionnaire interviews; and transport demand surveys; data on public utilities, social services, including education, health and other community facilities; on-going projects and future development plans and programmes was obtained from official records and interviews with key staff of local governments, relevant central government ministries departments and agencies; private formal and informal sector business organisations like the Chamber of Commerce and Industry, trade organisations and foundations; the Tanzania Electricity Supply Company Ltd. (TANESCO), the Dar es Salaam Urban Water Supply and Sanitation Authority (DAWASA), the Dar es Salaam water supply Company (DAWASCO) and the Tanzania Roads Agency (TANROADS); and Civil Society Organisations (CSOs) including those representing the youth, women, the aged, disabled and the poor.

A household questionnaire survey was undertaken to obtain household level data on demographic, economic and housing characteristics; and access to transport, public utilities and sanitation services; education, health and safety and security. The household questionnaire survey was conducted in a participatory manner, involving six town planners, two from each of the three municipalities who were instrumental in defining the sampling frame and coordinating the interviews and 108 ward and *Mtaa* leaders who supervised the interviews on a house-to-house basis. A sample of 1687 households was selected with a Sample Mean of 562, a Standard Deviation of 28 and a Margin of Error at 1.3, resulting in a 95percent confidence interval of 560.7 to 563.3 calculated as 562 ± 1.3. The sample was meticulously stratified to ensure representation of all the then existing three municipalities; the planned and unplanned residential areas; low, medium and high-income households; and the relative age of the settlements classified as prior to the 1970s, between the 1970s and 2000 and from 2000 to 2016.

Transport demand surveys were carried out using household survey questionnaire interviews of a sample of 1670 households to determine the travel patterns in different Traffic Analysis Zones (TAZ); manual traffic counting on selected road sections and junctions; roadside interviews on main entry and exit roads, and a purposive survey in fast growing commercial centres and industrial areas.

Land use surveys were conducted on an analysis of 2012 and 2016 satellite images and ground investigations by a team of purposefully trained town planners and GIS experts through a windscreen survey along all streets and footpaths of Dar es Salaam to update the base map and develop the existing land use map of the city using the following methodology:

The base map was sub-divided into thematic areas of common characteristics and printed on A1 or A0 maps from the satellite images in a scale of 1:5000 and 1:10000 for use in ground truthing. GIS experts were trained on how to map the land uses as they drove through the specific areas assigned to them, conducting interviews with some of the property owners to obtain information on property boundaries or any conflicts and take photographs of areas with conspicuous land use characteristics or unique land marks. The fieldwork results for each day were plotted on a common base map in the office and the process was reiterated until all the land uses in the entire Dar es Salaam city were updated and accurately mapped. A detailed analysis of the plotted information was done to produce the city land use map for 2016 and to write the report on the existing land use.

1.7.4 Emerging planning Issues, Challenges, Constraints and Opportunities

Based on the analysis of the existing situation and past trends, the planning team identified emerging planning issues, challenges and development constraints including the sheer scale and rapid pace of growth of the Dar es Salaam city and its sprawling nature of expansion; fragmentation of policy and implementation responsibilities across many organizations, demographic challenges paused by a large proportion of youth, most of them unemployed; predominance of the informal economy and unplanned settlements; severe traffic congestion resulting from the mono-centric characteristics of the city; poor infrastructure and inadequate overcrowded social services.

1.7.5 Vision and mission statements, Goals and objectives

The vision and mission of Dar es Salaam city that explains what residents aspire for in their city in the future was defined in collaboration with key stakeholders as ***"A sustainable, competitive and people-centred city."*** (Figure 1.1), in which the conservation of nature takes the centre stage in all intervention strategies for the growth and development of Dar es Salaam into a city that can compete with other global cities in attracting investments and businesses, while providing equal access to basic services and livelihood opportunities for all.

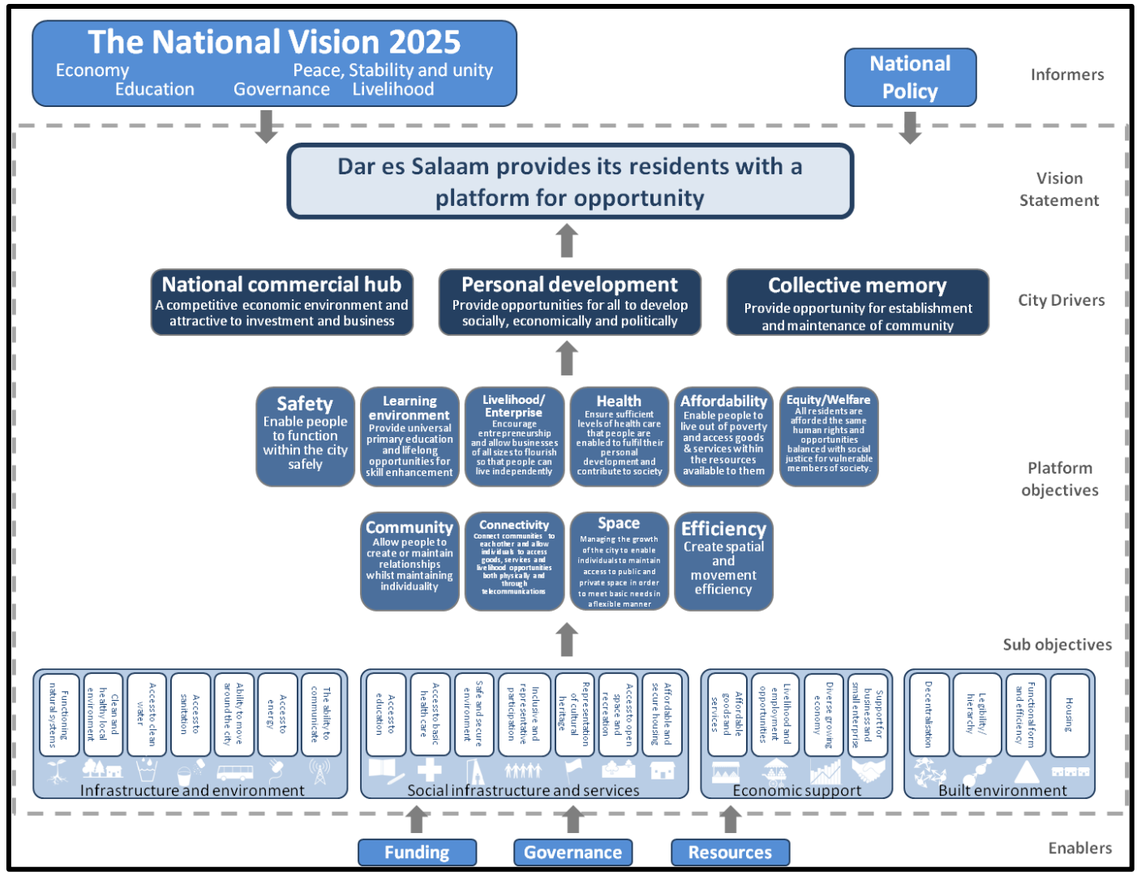


Figure 1.1: Vision for Dar es Salaam City

1.7.6 Goals and objectives of the Master plan

The vision of the city was translated into eight planning goals each of which is elaborated with a set of planning objectives. The main goals of the master plan are to:

i. Create a well-planned city with a distinctive character and preserve its culture and historical heritage;
ii. Make the best use of land and other natural resources through compact development;
iii. Diversification of economic growth strategies for the city;
iv. Ensure an efficient, safe, convenient, cost-effective traffic and circulation system;
v. Provide adequate and good quality social and economic services and ensure adequate access for all sections of society i.e. education, health and other basic services;
vi. Protect the natural environment and conserve the city's natural resources and
vii. Enhance its capacity and that of communities to adapt to and mitigate climate change impacts
viii. Rationally zone and designate land for various categories; and
ix. Improve line infrastructure services to adequate and affordable standards.

These objectives will be used to monitor plan implementation. Based on the lessons from previous planning effort, adequate funding and good governance structures appear to be fundamental to the achievement of the vision of the city.

Population projections and estimation of land requirements for future growth of the city (prognosis)

Trend projections of the future population at the 2012 growth rate of 5.2 per cent per annum indicates that the population of Dar es `salaam would nearly triple from an estimated population of 5,373,623 in 2016 to 15,201,735 in 2036. Due to the existing high cost of living, massive unemployment particularly among the youth who constitute the majority of immigrant populations in cities and the dire economic conditions that discourage large households, Dar es Salaam is likely to be less appealing as a destination for people moving from rural to urban areas in the future.

Beside, new nodes of urban growth are emerging that are likely to be more competitive than Dar es Salaam city in attracting the population moving from rural to urban areas on account of the shift of the capital to Dodoma, exploitation of natural gas in the Mtwara/Mikindani area, dispersal of universities and other higher education facilities previously concentrated in Dar es Salaam and implementation of the Tanzania Strategic Cities Project (TSCP) and the Urban local Government Strengthening Programme, which aims to increase access to urban infrastructures and services in seven secondary cities (Arusha, Dodoma, Kigoma/Ujiji, Mbeya, Mtwara/Mikindani, Mwanza and Tanga) and in 18 intermediate municipalities and towns, will lead to increased economic opportunities in the cities and towns, making viable alternatives as urban destinations of people moving from the rural areas. These factors are likely to reduce the pace of migration into Dar es Salaam.

As a result, the population growth rate for of Dar es Salaam is expected to slow down gradually from the high annual rate of 5.2 per cent in 2012 to a more modest annual growth rate of 3.9 in 2036 resulting in a target population of 13,342,947 for the target year 2036. Estimates of future land requirements for residential development and other land uses, infrastructure requirements and community facilities, is based on this target population, and the national space and planning.

1.7.7 Development of planning proposals, phasing and costing of the master plan (proposition)

Three alternative spatial growth patterns were developed namely, a concentric lateral expansion of the city, compact development and a satellite development pattern. The three options were subjected to Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis to determine the best option. A hybrid alternative was selected that combines the compact development model with the satellite development approach.

1.7.8 The master plan proposals

The preferred development option was elaborated to produce the master plan proposals for socio-economic and physical development and growth of the Dar es Salaam city. The master plan proposals are hinged on the following key pillars that address the underlying causes of current problems facing the city:

i. Conserving the City Centre to preserve the unique character and cultural heritage of the city;
ii. Introducing new Urban Sub-centres to decentralise central city functions and redistribute traffic to overcome the current traffic congestion
iii. Redevelopment and densification of the existing planned areas of the city to optimise utilisation of existing infrastructure facilities and social services;
iv. Regularisation and subsequently redevelopment of the unplanned areas of the city to improve living conditions and capture the high value of land and properties in the informal settlements, which occupy prime land in the city;
v. Introducing two major ring roads to transform the radial pattern of roads into a concentric to increase permeability;
vi. Incorporating the satellite towns of Bagamoyo, Kibaha, Kisarawe and Mkuranga into the future development plans of the Dar es Salaam metropolitan region to enhance the existing synergies and linkages of the city and its satellites;
vii. Introducing new design guidelines, which define the criteria and rules for the development of various areas of the city; and
viii. Establishing the Dar es Salaam Metropolitan Authority (DMA) to manage the city and the metropolitan region through municipal, town and district councils, prepare a comprehensive, integrated development plan of the metropolitan region, coordinate the activities of all utility agencies operating in the metropolitan region, address trans-boundary issues and ensure that land use and other development plans of the municipal, town and district councils comply with the provisions of the metropolitan development plan.

The master plan proposes the following other institutional changes:

i. Establishing an informal settlements unit in the urban councils, supported by a fund and budget line;
ii. Actively involving communities and creating partnership agreements among key public, civic and private sector stakeholders
iii. Assigning clear planning mandates to the Ward Development Committee and the *Mtaa* leaders to enhance public participation and strengthen development control; and
iv. Establishing a master plan implementation-monitoring unit, equipped with modern data processing facilities.

1.7.9 Phasing and costing of the master plan proposals

The master plan will be implemented in three phases: Phase I in the First five years, Phase II of 10 years and Phase III of the final five years of the planning period. The capital works programme for Phase 1 implementation of the master plan has been developed and cost estimates prepared to facilitate budgeting by all implementing agencies.

1.7.10 Public Participation

The master plan was prepared in a participatory manner with the cooperation of local actors and representation of counterpart staff from the three municipal councils, then existing in the city, with the view to involving technical staff in public administration that will be in charge of managing implementation of the plan. The involvement of the local residents in the field survey provided opportunities to enlarge the information and communication about the plan. Further participation will take place during the public hearing and implementation of the master plan.

1.8. Report Structure

The master plan report is composed of this main report and 10 Technical Supplements as listed below:

1) Technical Supplement No 1 - METHODOLOGY
2) Technical Supplement No 2 - CITY GROWTH
3) Technical Supplement No 3 - CITY ECONOMIC AND FINANCIAL BASE
4) Technical Supplement No 4 - DEVELOPMENT VISION
5) Technical Supplement No 5 - ENVIRONMENTAL PROFILE
6) Technical Supplement No 6 - EXISTING AND FUTURE LAND USE PROPOSALS
7) Technical Supplement No 7 - PROVISION OF BASIC INFRASTRUCTURE
8) Technical Supplement No 8 - URBAN RENEWAL
9) Technical Supplement No 9 - PROJECT PROPOSALS
10) Technical Supplement No 10 - INSTITUTIONAL ARRANGEMENTS

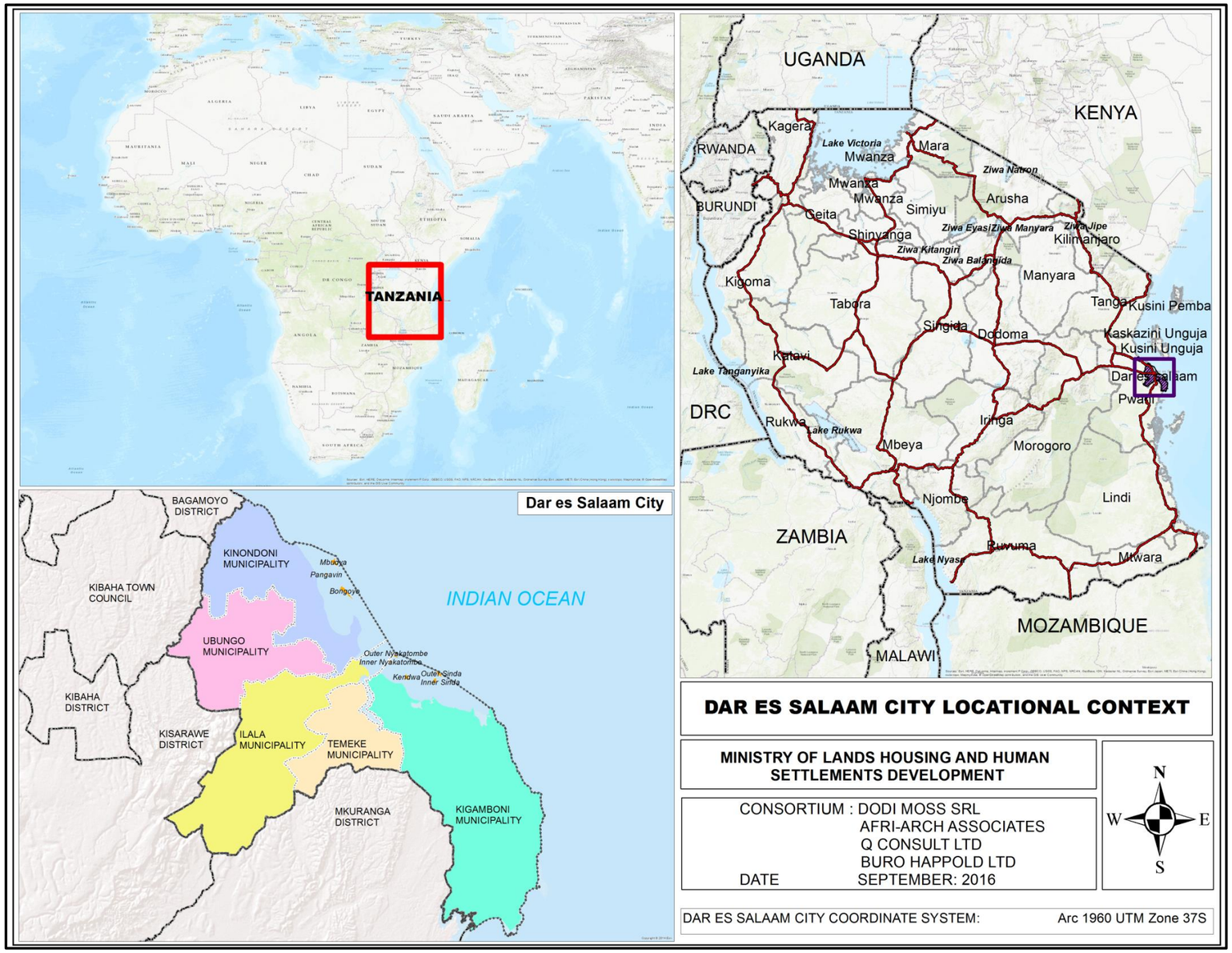
The main report of the master plan comprises an executive summary, the main body of the report, proposals and implementation programs. The main report is structured into 15 chapters with accompanying maps, diagrams, tables and figures deemed necessary to illustrate and elucidate concepts, programmes and strategies. The list of the 15 chapters and a brief description of the contents of each chapter is shown below:

Chapter 1 introduces the master plan and describes its main features while Chapter 2 describes the location context and planning institutional framework. Chapter 3 presents a review of previous plans and institutional framework. Chapter 4 analyses the physical environment. Chapter 5 describes population and demographic characteristics; Chapter 6 describes economy, employment and incomes, while Chapter 7 is a review of the existing land use. Chapter 8 presents an overview of housing and residential development while Chapter 9 contains an analysis of social services and community facilities. Chapter 10 describes public utilities and Chapter 11 discusses transport and communication. Chapter 12 analyses the key development issues as well as the planning considerations. Chapter thirteen documents the generation, development and evaluation of conceptual plans. Chapter 14 presents the proposed Dar es Salaam Master Plan and chapter 15 contains proposals for the Master Plan implementation procedures, development phasing and costing of the first five-year capital works programme.

2.0.LOCATION AND REGIONAL CONTEXT

2.1 Location

Dar es Salaam City is located on the east coast of Tanzania, between latitude 6°45'S and 7°25'S, and longitude 39°E and 39°55'E. It borders the Indian Ocean to the east, and the Coast Region to the north, west and south as shown in Map 2.1.



Map 2.1: Dar es Salaam City Locational Context

Map 2.2: Dar es Salaam City National Context

2.2. The Immediate Impact Region of Dar es Salaam City

The immediate impact region of Dar es Salaam city extends to Bagamoyo, Kibaha, and Kisarawe and Mkuranga towns in the Coast region. Dar es Salaam city is connected to these towns by Bagamoyo, Morogoro, Nyerere and Kilwa roads respectively, all of which are of bitumen surfaced and generally in good condition of maintenance. Kisarawe town is also connected to the Dar es Salaam city through the TAZARA and Central railway lines.

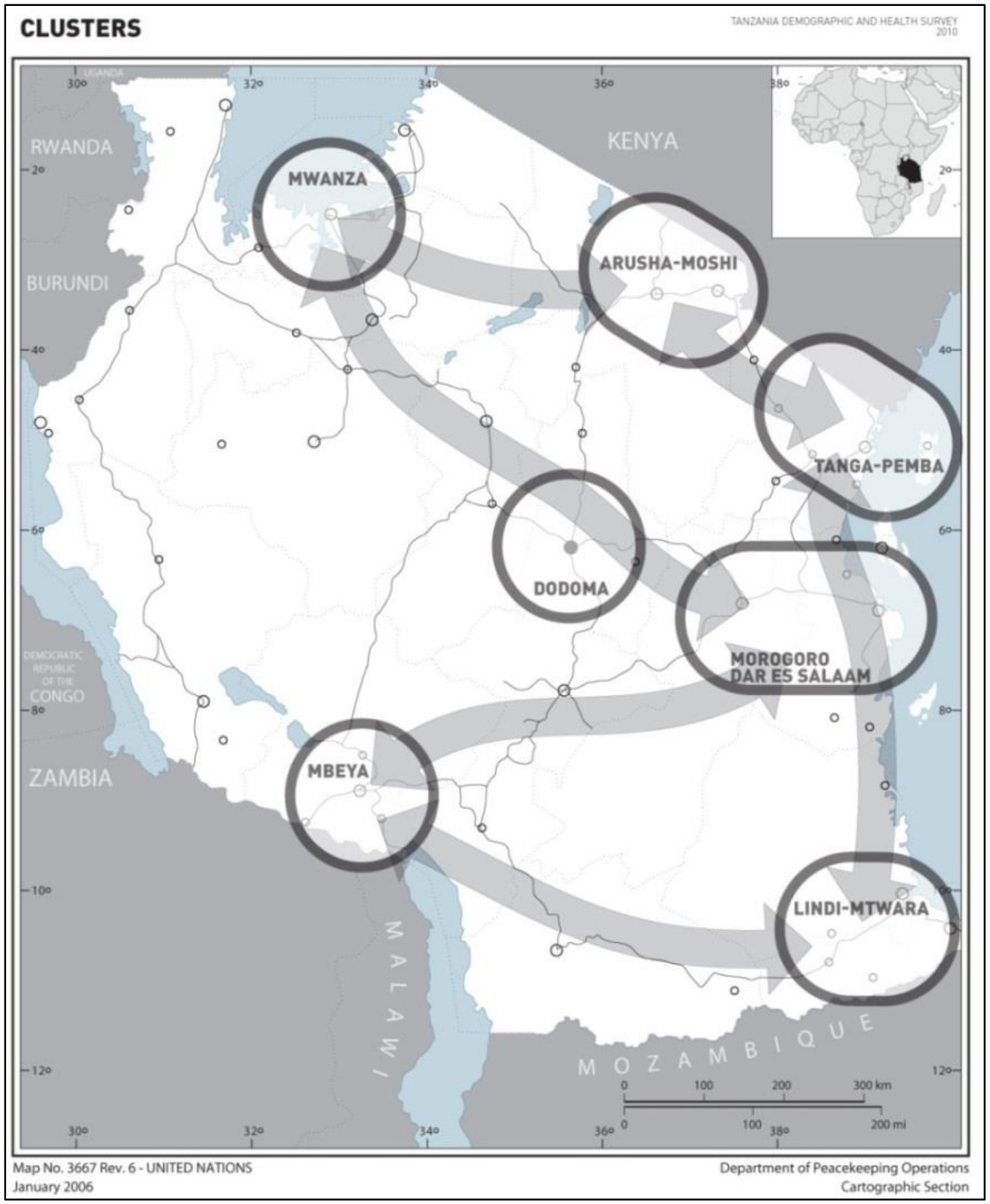
While Dar es Salaam has by far the largest economy on the conglomerate, the satellite towns are increasingly gaining economic significance of their own. On-going and planned initiatives by government to expand and upgrade the road and rail infrastructure are expected to improve connectivity within the impact region and strengthen existing social and economic relations within the region. These initiatives include:

- The construction of a Standard Gauge Rail along the central railway line;
- The proposed construction of the Dar es salaam-Chalinze Expressway;
- Upgrading of the Dar es Salaam - Bagamoyo to dual carriageway;
- Development of the proposed Bagamoyo Economic Development Zone (EDZ) with about 10,000 hectares of land allocated for the development of the Bagamoyo harbour, a railway marshalling yard, Tourism University, processing business units and non-processing zones of social and supportive infrastructure.

Kisarawe town is developing into an important logistics centre in which a major inland dry port is already under construction. Two large-scale factories - a cement factory and a detergents factory are already in operation. Similarly, Mkuranga town is developing into an industrial hub with a cement factory and fruit-canning factory already in operation. Kibaha town, which is located 44 kilometres west of the city, is developing into a major industrial hub, with a Biotech Products, tractors and trucks assembly factories already in operation.

2.2 Dar es Salaam in the National Context

Dar es Salaam is the largest city in Tanzania. Map 2.2 shows that Dar es Salaam is the centre of the largest urban agglomeration in the country.



Map 2.3: Cluster of major urban economic growth nodes in Tanzania

2.3 The regional context of Dar es Salaam City

The Second Five Year Development Plan, percieves Tanzania as, "the place of physical intersection of the transport corridors which link the markets of the Tripartite EAC, SADC and COMESA regional economic groupings." As shown in Figure 2.1, Dar es Salaam is the main gateway to the international markets for these countries.

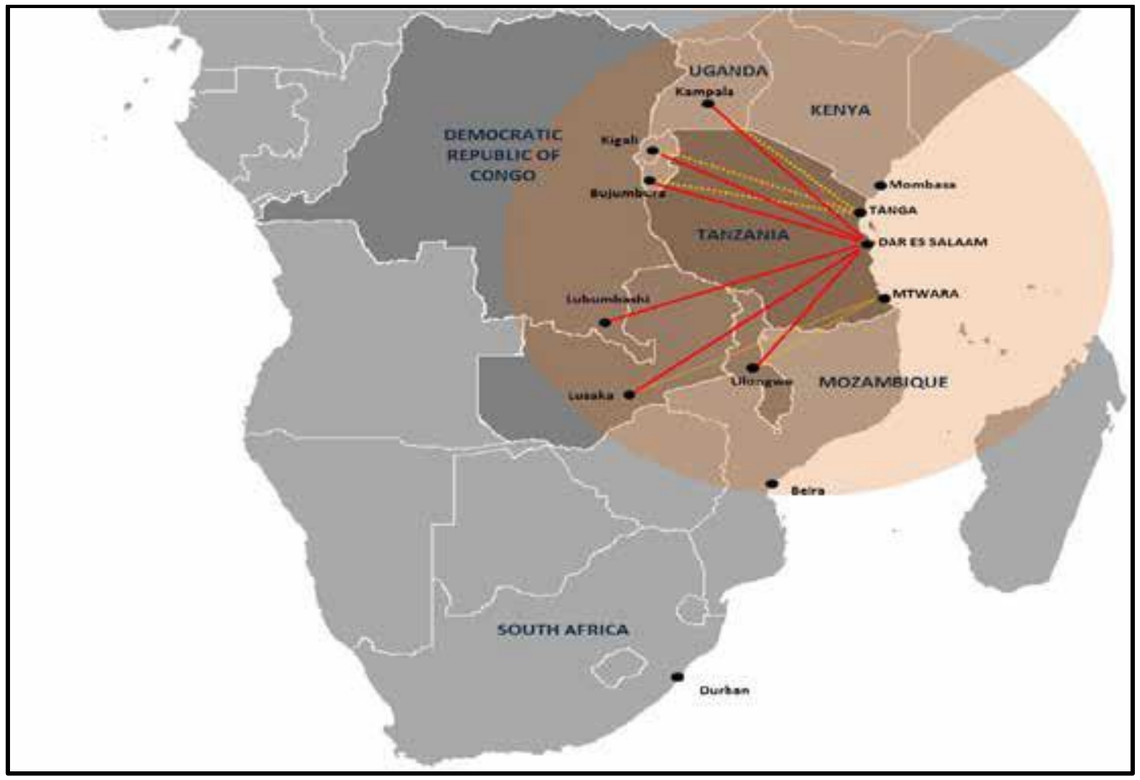
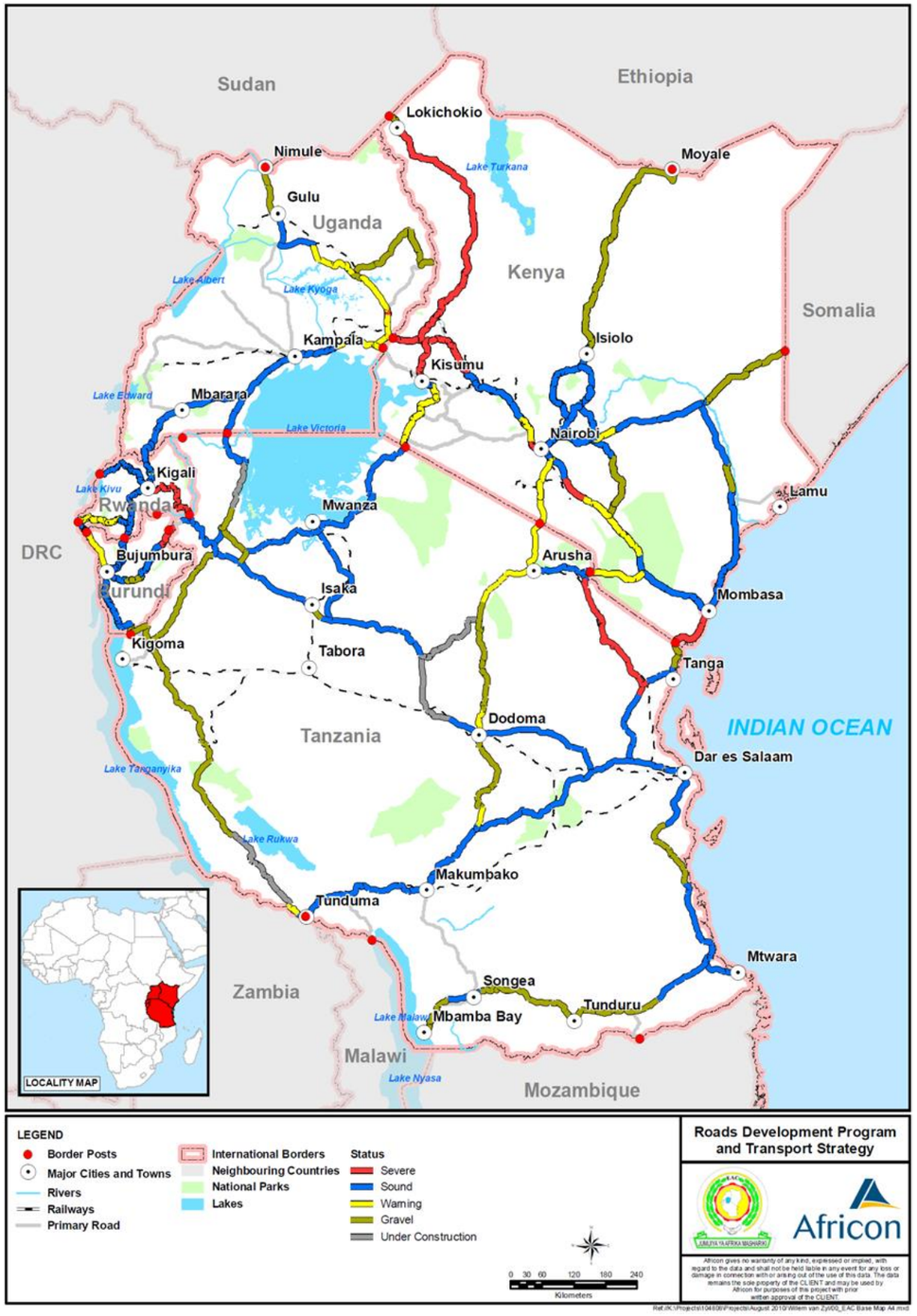


Figure 2.1: Strategic International Shipping Gateway and Trade impact Area of Tanzania
Source: National Second Five Year Development Plan 2017/17 – 2020/21. Available on line at: http://www.mof.go.tz/mofdocs/msemaji/Five percent202016_17_2020_21.pdf

The EAC has prepared a Master Plan with a proposal for the redevelopment and extension of the East Africa Railway network to meet a freight and passenger demand for the year 2030 (shown in Map 2.3)[1], which if implemented, will further augment the strategic position of Dar es salaam as a regional trade and logistics hub



Map 2.4: Map showing the East Africa Transport Network
Source: Africon Consultants. The East African Community

[1]CPCS Transcom International Ltd, 2009, East Africa Railway Master Plan Study, Main Report, EAC, Bridgetown, Barbados.

Dar es Salaam City is one of the fastest growing cities in Sub Saharan Africa. As shown in Figure 2.2 Dar es Salaam city is among the largest of the cities in Africa and it is projected to become the fourth largest city with about 10 million people by 2030.

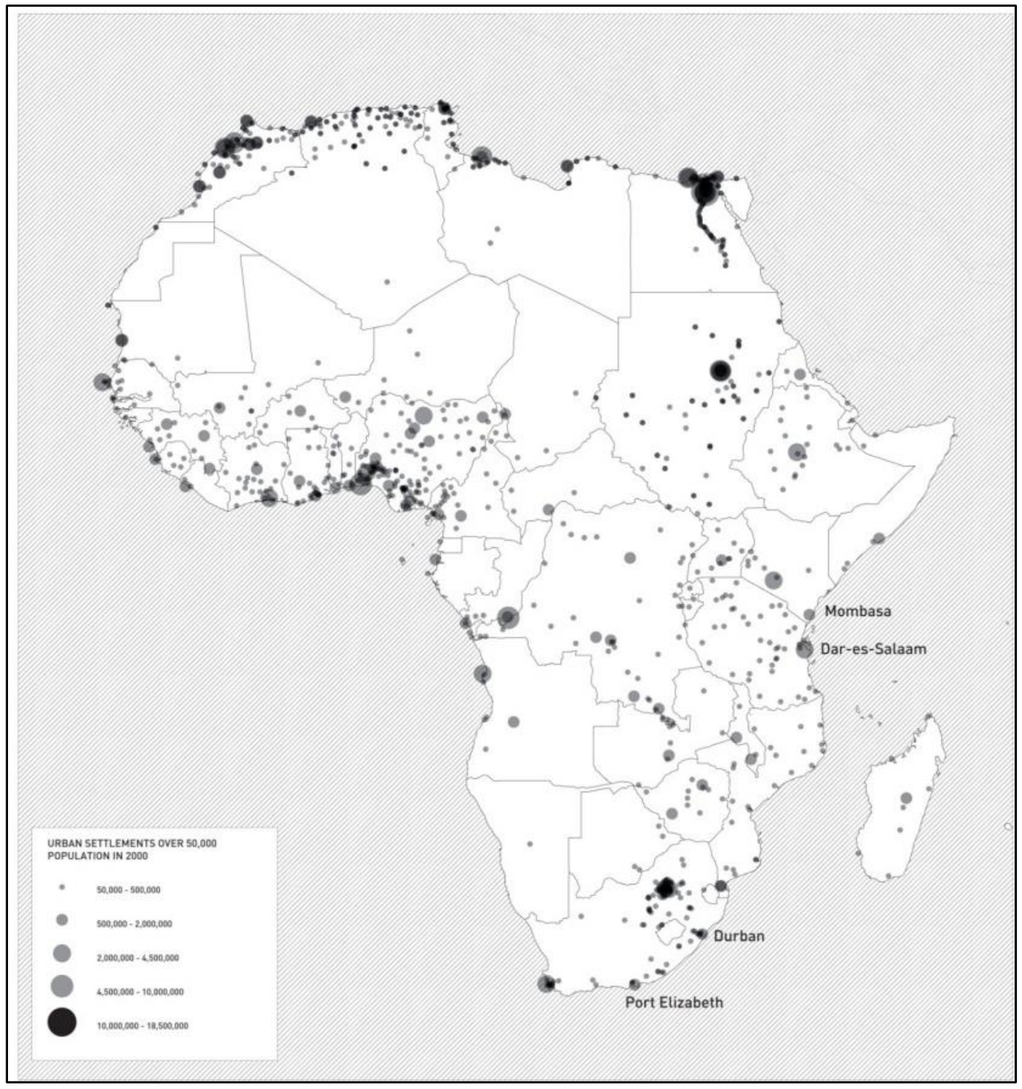
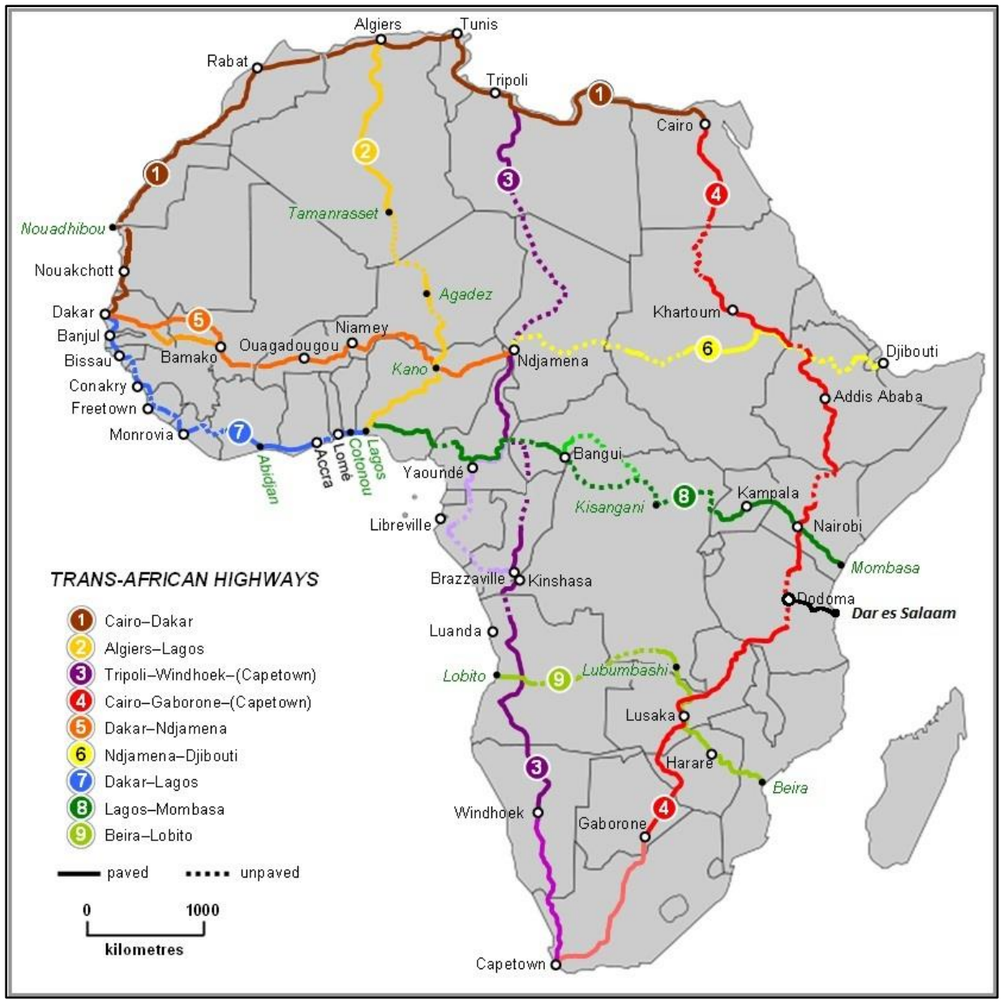


Figure 2.2: Urban Settlements with over 50,000 populations in 2000
Source: Centre for International Earth Science Information Network (CIESIN)

Dar es salaam City is strategically located on the shores of the Indian Ocean making it a potential regional hub within the African continent. The proposed Trans-African Highway system, for example, consists of nine main corridors, exeeding a total length of 59,100 kilometres as shown in Map 2.4. the proposed highway is intended to improve road transport services between important areas of production, consumption and trade; and contribute to the political, economic and social integration and cohesion of the continent.



Map 2.5: The Envisaged Trans- African Highway
Source: TAH project, 2014

2.4 Urban Growth Pattern

Dar es Salaam City stretches about 100 kilometres between the Mpiji River to the north and beyond the Mzinga River in the south, covering a total land area of 1,630.7 square kilometres, which is about 0.2 per cent of the entire area of Tanzania mainland (ILRI, 2007). Four major arterial roads, which radiate outwards from the City centre, form the backbone of the city road network. These are Bagamoyo, Morogoro, Nyerere and Kilwa Roads. Much of the expansion of the city has been taking place along these radial roads. This pattern of growth concentrates vehicular traffic on the radial roads leading to traffic congestion, which is aggravated by the mono-centric character of the city.

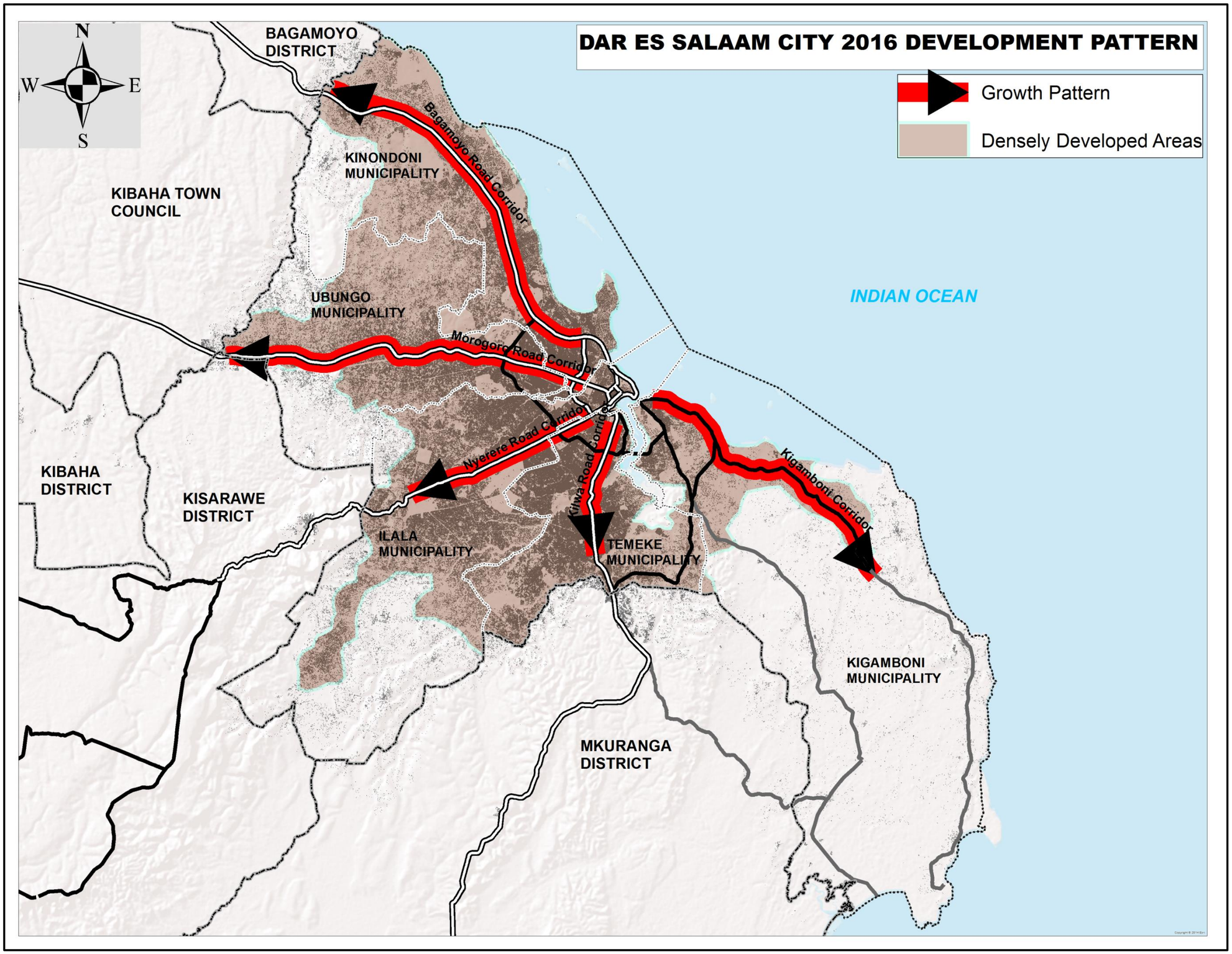


Figure 2.3: Dar es Salaam City– Development along the Main transport corridors

3.0.REVIEW OF PREVIOUS PLANS AND THE EXISTING INSTITUTIONAL FRAMEWORK

3.1 Review of Previous Master Plans

The planning history of the city has evolved through the following phases:

i. The first planning scheme for the Dar es Salaam City was drawn up in 1891 when Dar es Salaam, (then a minor settlement), was declared the capital of the then German East Africa. The scheme set up a grid pattern of streets and developed a radial road system from the harbour to the outskirts of the town.
ii. In 1949 the Dar es Salaam Municipality had its first Master Plan prepared, coinciding with the launch of the first territory-wide development programme
iii. The 1968 master plan.
iv. The 1979 Master plan.
v. The Dar es Salaam Strategic Urban Development Plan (SUDP) of 1992

3.1.1 The 1891 Planning Scheme

The first planning scheme was drawn up in 1891 when Dar es Salaam, then a minor settlement, was declared the capital of the then German East Africa. The 1891 scheme set up a grid pattern of streets and developed a radial road system from the harbour to the outskirts of the town (Figure 1.1). The scheme introduced a Building Ordinance with different rules and standards applying to segregated residential zones for Europeans, Indians and Africans. The business district was largely reserved for the Indian community, while the quiet and green eastern part of the City along the Indian Ocean stretching from Sea View to Oyster Bay areas was reserved for Europeans. The peri-urban areas, separated from the other races by a buffer zone, were allocated to the African natives. The Mnazi Mmoja grounds are part of the initial buffer zone, separating Kariakoo area from the Asian residential and the commercial centre[2].

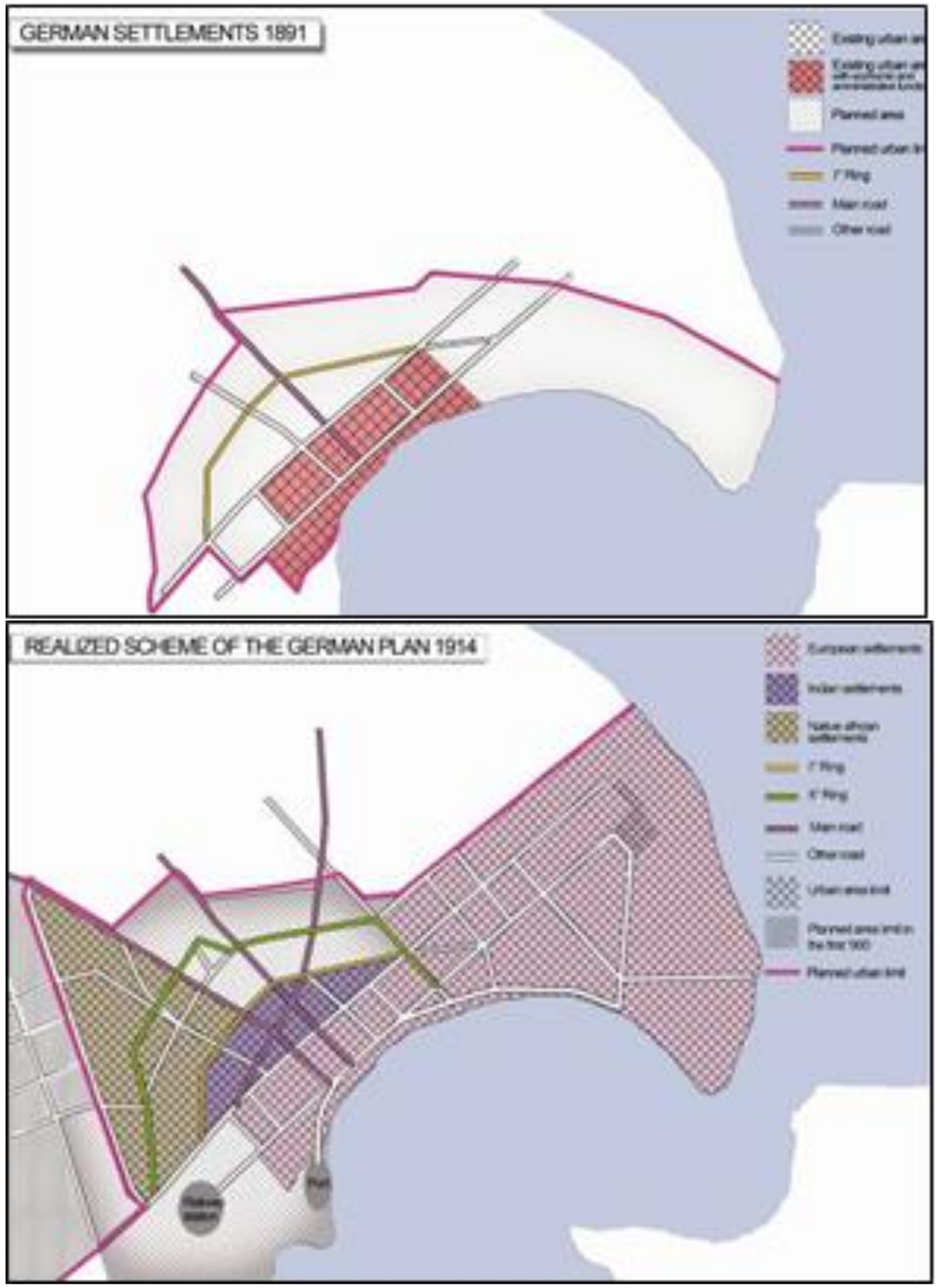


Figure 3.1: Evolution of the pattern of Dar es Salaam City 1891 (L) and 1914 (R)

[1]Source: The first planning scheme for the Dar es Salaam City, 1891

[2] Brennan, Burton, Lawi, "Dar es Salaam. Histories from an emerging African metropolis"

3.1.2 The 1949 Master Plan

The master plan envisaged a population of 200,000 residents. The Master plan outlined a coherent pattern for the city's growth based on strict zoning of separate land uses following on the 1891 planning scheme. It segregated residential areas on racial basis setting aside low-density residences for Europeans in Oyster Bay, medium density residences in Upanga for the Asians and high-density areas in the periphery for Africans. Based on the Garden City concept, the plan introduced the concept of neighbourhood units of 5,000 people, each served by a set of centrally located community facilities. Implementation of the 1949 Master plan (Figure 3.2) was hampered by the freehold system of land tenure. The plan was briefly reviewed in 1958.

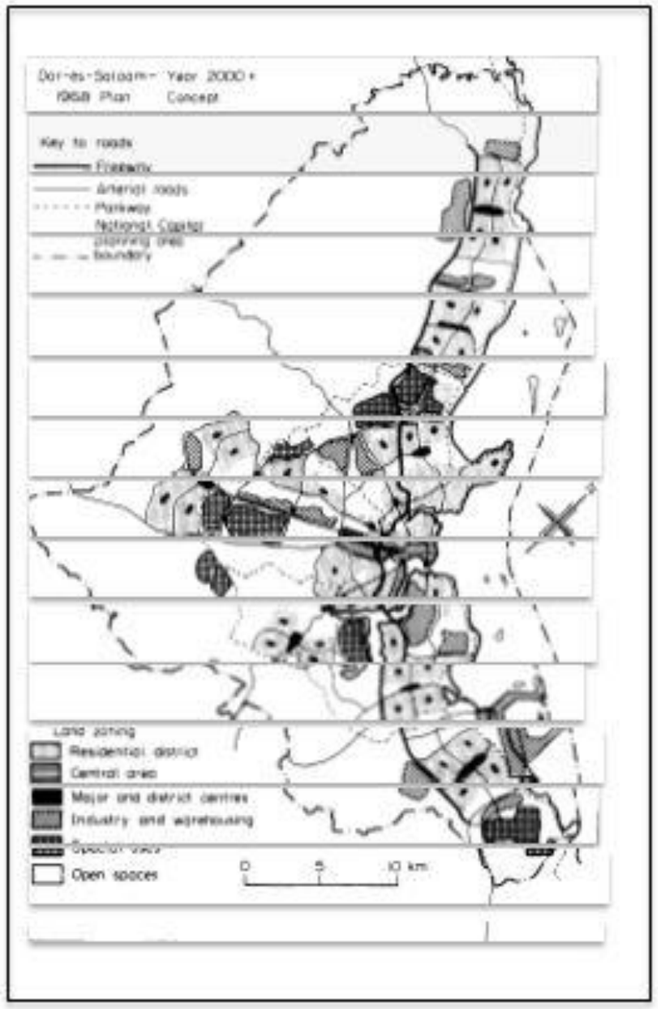


Figure 3.2: Dar es Salaam Master plan 1949

Source: Armstrong, A., 1986, "Colonial and Neo-colonial Urban Planning: Three Generations of Master plans for Dar es Salaam Tanzania"

3.1.3 The 1968 Master Plan

The 1968 Master plan (See Figure 1.5) was prepared in the background of rapid population growth that had reached 275,000 by the mid 1960's and the increasing growth of informal settlements, accommodating about 35 per cent of the population. The 1968 Master plan extended the boundaries of Dar es Salaam City area from Wazo Hill to the north of the City to Mzinga creek, to the south of the City.

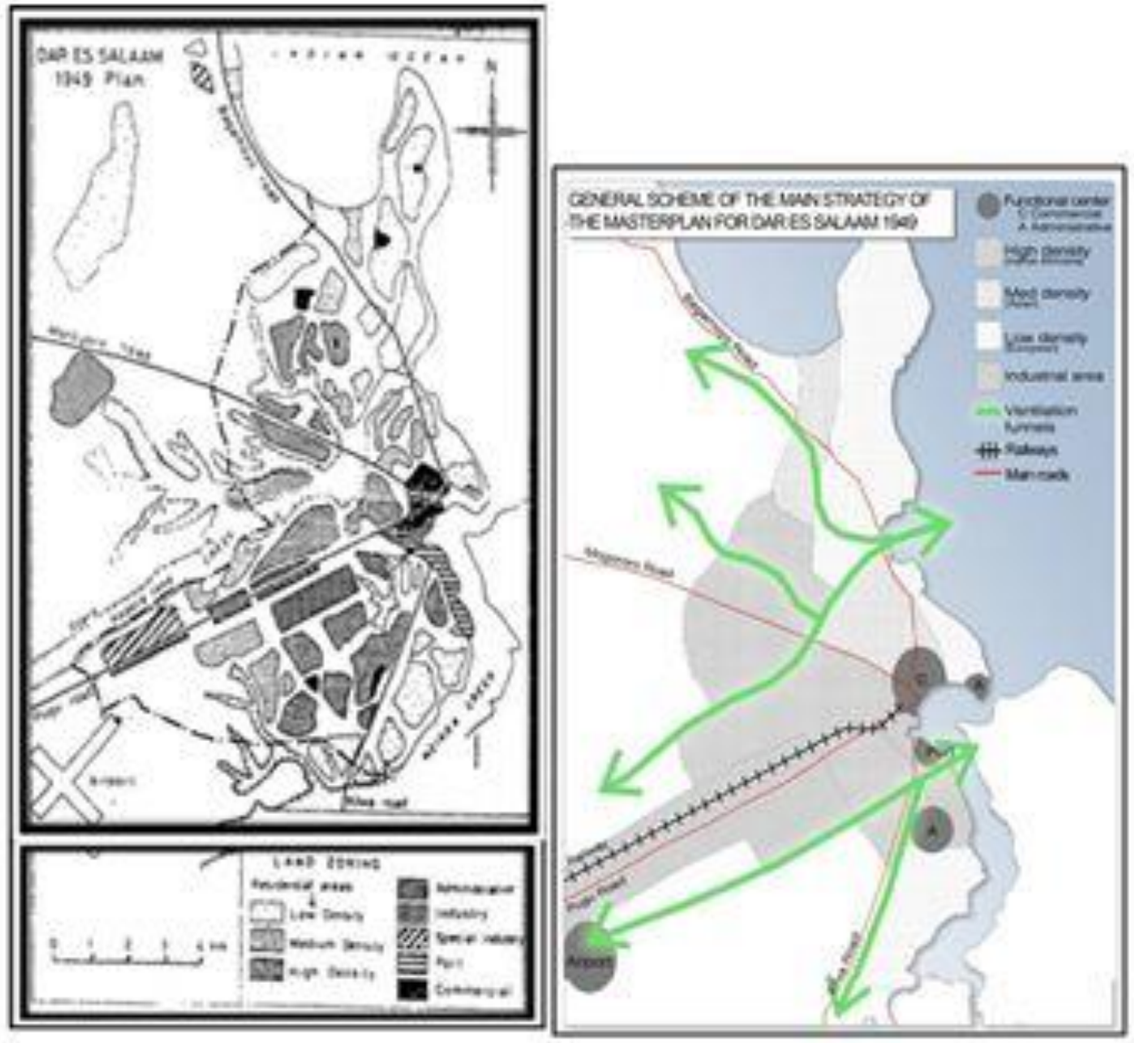


Figure 3.3: General scheme 1968 Master Plan
Source: Armstrong, A., 1986, "Colonial and Neo-colonial Urban Planning: Three Generations of Master plans for Dar es Salaam Tanzania")

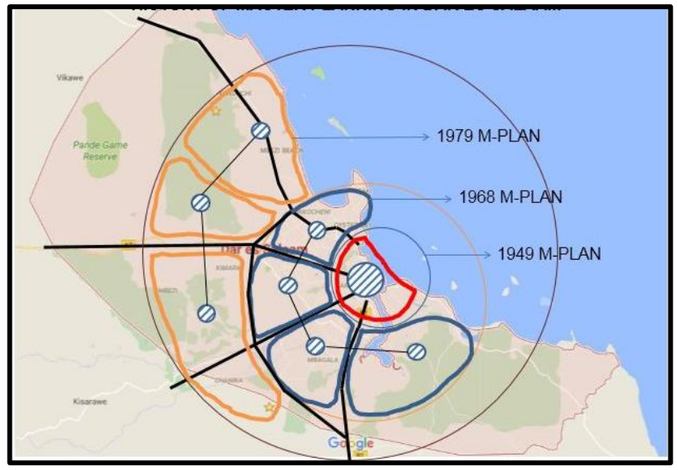
The plan attempted to restructure the radial network system of roads into a grid pattern and conceived a modular structure comprising of 4-5 residential districts of around 40,000 inhabitants, neighbourhood units of 5,000 - 10,000 inhabitants, and 10 cell units.

The Master plan proposed the expansion of new District Centres of Kibaha and Kisarawe to reduce the pressure on the capital city. The 1968 Master plan maintained the segregated land use structure, thereby encouraging spreading of the city. The plan proposed a removal of existing unplanned settlements and prevention of irregular housing; it suggested a 6 per cent population growth rate for the city, far below the 9 per cent growth rate, then prevailing and was over-ambitious in terms of the funding, manpower and administrative capacities available to implement its proposals, at a time when national focus was on rural development.

3.1.4. The 1979 Master Plan

The 1979 Master plan (See Figure 1.6) was prepared amidst continued population influx, proliferation of unplanned housing, stagnation in employment, severe deterioration of the city's infrastructure, intermittent water shortages and a serious cholera outbreak. The new Master plan identified three stages of development to accommodate population growth targets of 1.2, 1.5 and 2.4 million people respectively. It abandoned the rigid segregation of functional zoning in favour of a more flexible mix of land uses by for example, encouraging the location of industry throughout the urban area to reduce travel time and distances. The plan proposed a Utilities Coordinating Committee, to improve coordination of programmes during its implementation; however, the proposal was not implemented. The 1979 Master plan proposed an investment of 982 million Tanzanian shillings in the first five-year development programme, almost five times the amount spent by the City Council on all development projects over the previous five years.

Source: Compiled by the Consultants based on Google Maps



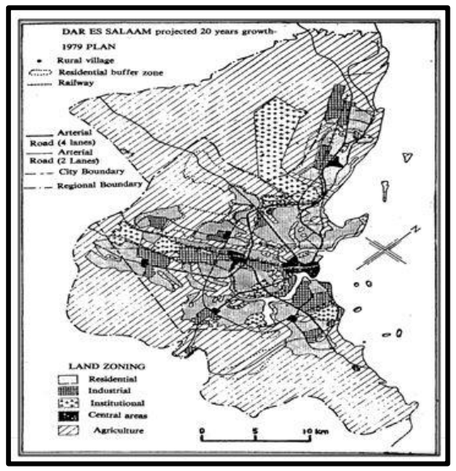


Figure 3.4: Development phases of Dar es Salaam 1949 to 1979. Figure 3.5: Dar es Salaam Master plan 1979

Source: Armstrong, A., 1986, "Colonial and Neo-colonial Urban Planning: Three Generations of Master plans for Dar es Salaam Tanzania")

3.1.4 The Strategic Urban Development Plan 1992

In 1992 the Sustainable Cities Programme introduced the Environmental Planning and Management (EPM) approach in Dar es Salaam City to improve the implementation capacity in partnership with other institutions and to integrate environmental issues into urban planning practices so as to promote environmentally sustainable growth and development of the City.[3] In consultation with key stakeholders the City Council adopted a city environmental profile, identified eight priority environmental issues of poor solid waste management; informal settlements; urban renewal; traffic congestion, conflicts; and air, surface and ground water pollution, and constituted specific working groups to address the eight priority issues.[4] The SUDP process, however, suffered constraints of inadequate support of the Council's departments, poor representation of the key government organs in the working groups, insufficient local capacity to enforce laws and manage partnerships and a failure to mainstream the EPM unit into the operational framework of the Dar es Salaam City and Municipal Councils, (DCC).[5]

3.2 Other planning interventions

In addition to the citywide plans that have been prepared in the past, there have been many plans that have been prepared for specific areas of the city. These are described in the following Sections.

3.2.1 The 20,000 Plots project

In collaboration with the Kinondoni, Ilala and Temeke Municipal councils the Ministry of Lands Housing and Human Settlements Development initiated the 20,000 plots project in 2002, as a pilot scheme to meet the rising demand for planned and surveyed plots in the city. Records indicate that the Dar es Salaam City Council and the Ministry of Lands Housing Human Settlements Development received 243,473 applications for plots, of which only 3.5percent were successful. Other objectives of the project were to reduce urban sprawl, provide basic services and prevent unplanned development by planning of future residential development areas. The project produced and allocated 29,291 surveyed residential plots successfully curbing the shortage of residential plots in peri-urban Dar es Salaam.

3.2.2 Squatter Clearance of 1967- 1972

Tanzania implemented the Slum Clearance Policy in 1967 aiming to upgrade the informal settlements and improve the urban environments through the National Housing Corporation. The slum clearance focused on developing high-standard buildings on the cleared sites. Tanzania abandoned the project by the end of the 1960s on account of high economic and social costs and negligible impact on the provision of the housing stock.

3.2.3 The Sites and Services and Squatter Up-grading Programme 1972-1990

The governments adopted the sites and services programme in the 1970s that was seen as a more realistic approach. The World Bank funded the programme. In implementing the program, governments provided necessary infrastructures such as roads, electricity, water, drainage and waste disposal on public or government-purchased or subdivided plots. The program was expected to recover costs where by the cost of price of plots would have to cover the cost of service provision. After allocation the

[3]World Bank 2002
[4]Nnkya, 1999
[5]Kombe, W. J., ibid

targeted low-income residents were expected to construct houses on their own, in a manner of phasing as their income allows.

The programme in Dar es Salaam city was implemented in three phases. Phase-I implementation produced 6,182 serviced plots and covered 7,600 houses in the upgraded areas. Phase II implementation produced 14,150 serviced plots and included 9,138 houses in the upgraded areas[6]. The third phase was entirely financed by the government, during which 7,000 plots were surveyed and 8,103 houses mapped for upgrading.

Despite some improvement on housing provision, the sites and services program did not achieve its objectives because of mismanagement, the failure of cost recovery (Kironde, 2006) and several other reasons. One is that, the program assumed significant public financing and subsidies, which rendered it unrealistic due to shrinking of budgets yearly as well as reduction of funds inflow from multilateral and bilateral financiers. Bureaucratic regulatory procedures were another hindrance. Procedures resulted in implementation delays, hence cost escalation. The standards established were too high for the local conditions and unaffordable to low-income residents (Fekade, 2000)7.

3.2.4 Participatory Upgrading 1980s-1990s

The Community Infrastructure Upgrading Programme (CIUP) came into force in 2003 with the objective of improving living conditions of low income residents of unplanned settlements by upgrading the existing infrastructure and services, and facilitating their participation in the planning, provision and management of infrastructure services in their respective areas. The project was implemented in two phases. The government financed implementation of the First Phase of the programme from 2003 to 2008 and the World Bank financed the second phase implementation from 2008 to 2012.

3.2.5 Regularization 1990s to date (2017)

The regularisation of Unplanned Settlements in Dar es Salaam was initiated in 2004 to promote security of tenure and curb further densification through property formalisation. The programme involves the identification of properties, creation of property register and issuing residential licenses under Section 23 of the Land Act No.4, 1999. In Dar es Salaam, about 274,039 properties out of 420,000 were identified. By December 2015, a total of 105,000 owners had been issued with licenses and 3 per cent of them had used the licences to access credit in financial institutions.

[6] Source: Ndyuki, H. Community Based Strategies in Upgrading Informal Housing Areas. Sustainable Mwanza Project through Capacity Building for Environment Management. Available on line at: http://www.hdm.lth.se/fileadmin/hdm/alumni/papers/ad1999/ad1999-15.pdf. Last accessed on 26 January 2018

3.2.6 Kurasini Master Plan

The Ministry of Lands, Housing and Human Settlements Development (MLHHD) prepared the Kurasini Redevelopment Scheme in 2011. The primary objective of the redevelopment scheme was to address land constraints affecting operations of the harbour including the shortage of land for expansion of port related facilities at a time when, transit goods destined to or originating from the countries neighbouring countries of Uganda, Burundi, Rwanda, the Democratic Republic of Congo, Malawi and Zambia, which use the port had to be stored in the vicinity of the harbour for ease of handling. Other objectives of the redevelopment scheme were to resolve the problems arising from the existence of land uses that were not compatible to harbour activities. These include planned and unplanned residential developments mixed with urban farming and institutional areas located very close to oil storage facilities and warehouses. Families residing in the area were exposed to the risk of fire accidents or leakages from oil storage tanks and effluents from the warehouses, which sometimes store noxious materials. Additionally, most of the roads in the area were congested because they were narrow and there were no areas reserved for parking of trucks, as a result of which the trucks were parked haphazardly in the area, interfering with traffic circulation and constraining accessibility. The proposed land use plan for Kurasini Area earmarks areas for expansion of port related facilities such as the construction of warehouses, oil storage tanks and truck parking as well as a more efficient transport network for the area.

3.2.7 Kigamboni Master Plan

The Kigamboni Master plan proposes a development model that presumes to realise a new City centre there, through the concentration of all the executive functions that may settle in the metropolitan area in the next twenty to thirty years. The residential forecast of the Kigamboni Master plan remains unchanged and foresees about 500,000 inhabitants in 2036, an increase of 420,000 inhabitants, compared to about 80,000 today. The other fundamental objectives of the Kigamboni Master plan are to remain valid, including:

i. The concept of an Eco-City that will exploit the natural resources available in a sustainable manner;
ii. A pole of attraction for the economy and tourism;
iii. Guaranteed public accesses to the beaches and other recreational activities;
iv. An urban structure in the form of neighbourhoods of 7,000-10,000 people provided with basic community facilities, districts, and mixed-use centres; and
v. Suitable and affordable housing to meet the needs of different income groups.

The main road network in the new city should be linked to the rest of the city through the new bridge, while maintaining the pontoon connection to the city centre and accepting the proposed introduction of water taxis and piers to the islands.

3.2.8 Satellite Centres

The MLHHD proposed to develop five new satellite centres at Bunju in Kinondoni Municipality; Luguruni in Ubungo Municipality; Pugu Kajiungeni, in Ilala Municipality; Kongowe in Temeke Municipality; and Kimbiji in Kigamboni Municipality. The project was conceived as part of efforts to relieve traffic and housing pressure on the commercial capital, decentralise the city services, in order to decongest the city centre and address the challenge of unguided developments in the peri-urban areas.

The satellite cities would have been developed for a mix of residential and commercial property including high-rise buildings, shopping malls, hotels, and trade and banking facilities.

The MLHHD selected the Kibamba-Luguruni satellite centre situated 28 kilometres from the city centre in the Ubungo Municipality as the pilot project. The process started in 2006 with the localization of the satellite centre on 78 hectares of land. The MLHHSD proposed mixed-use development that would include high quality residential houses, commercial functions, public institutions, trade and businesses centres, recreational and infrastructure facilities. The new satellite centres are a form of growth centres planned along the main radial axes, departing from the city centre at a mean distance of about 12-15 kilometres.

3.2.9 The Kawe Satellite Town

The National Housing Corporation is developing the Kawe Satellite City into an eventful central business district, initially slated to operate for 20 hours a day, through a public-private partnership with private real estate developers. The satellite city is planned to have more than 500 buildings and will be accessed by water through construction of marinas, air through the construction of a helipad and by road through the bus rapid transit. The first phase of the project has already commenced with construction of 262 housing units, shopping malls, movie theatres, hotels, restaurants, parking lots in addition to play grounds, swimming pools entertainment spots, among other amenities.

3.2.10 Kariakoo Area Redevelopment Scheme 2002

The Ministry of Lands, Housing and Human Settlements Development prepared a scheme to redevelop the Kariakoo area in 2002 with an aim to transform the existing dilapidated residential and commercial area into a modern, thriving and attractive one. Most of the redevelopment activities involving the replacement of existing dilapidated structures in Kariakoo are carried out on individual initiatives, with little or no intervention or guidance from the city authorities on how the area ought to be developed and there is no investment to expand the existing infrastructure to support the higher density development in the area.

Height limitations by plot size were not supported by any guidelines on plot consolidation and procedures to attain the same and were not enforced. Maximum allowable building height for the high-rise zone were inconsistently specified as 10 storeys, 8 storeys and unlimited in different sections of the report resulting in an ambiguity that is not only confusing to developers and development control staff but also creates room for abuse.

Contrary to the plan proposals, the government did not intervene in the land transfers that took place. Consequently, 93 per cent ownership of buildings in very small plots unilaterally sold their properties to the highest bidder. The plan had proposed an alternative to outright purchase of existing properties in which new developers would have been required to allocate at least one residential flat in each building for continued ownership and occupation of the current land holders in order to avoid complete displacement of existing residents but it was also not followed through in any systematic manner. Besides, there is no evidence that government under the new Land Act No. 4 established the basic monetary value that new developers would be required to compensate the outgoing occupiers with some additional amount to recover cost of public infrastructure in the area as proposed in the plan.

3.2.11 Oyster Bay Redevelopment Plan

Oyster bay-Masaki is a residential area that dates back to the colonial period. In 2007 it was declared a planning area for redevelopment. It is characterised by not more than 2 storey buildings, large plots and scattered residential dwellings. The new redevelopment scheme seeks to maintain this character and provide the much needed commercial space for the growing population. The area was planned as self-sustaining with all the necessary social services and amenities. The current redevelopment plan proposes not more than 2 storeys around the boundary and beachfront roads and not more than 6 storeys at its core.

The Kinondoni Municipal Council prepared and started to implement the Oyster Bay - Masaki Redevelopment Scheme (2011 years to 2031) that was approved in 2011. The new plan has zoned the previously low density and predominantly low-rise residential area into a mixed-use area including multi-storey commercial and office buildings. The Ministry of Lands, Housing and Human Settlements Development, however, suspended implementation of the redevelopment scheme in May, following objections by prominent residents of the area on the grounds that the proposed redevelopment scheme would cause irreversible change of character of the hitherto serene residential community to the detriment of the safety and convenience of the residents.

3.2.12 The Dar es Salaam Central Area Redevelopment Plan

The Dar es Salaam Central Area Redevelopment Plan of 2000, jointly prepared by the Ministry of Lands, Housing and Human Settlements Development and the Ilala Municipal Council aimed at increasing the availability of city centre floor space through vertical development in order to meet rising demands while at the same time, creating a metropolitan image befitting the city of Dar es Salaam. Other objectives of the plan were to preserve the rich history of the Dar es Salaam city centre through conservation of buildings and other features of architectural and cultural significance as well as maintaining the rich mix of business, administrative, cultural, residential and institutional activities, which endows Dar es Salaam city centre a character of its own. Paradoxically the redevelopment scheme also aimed at decongesting the city centre. Implementation of the redevelopment scheme was premised on strong public, private and popular sector collaboration in the provision, improvement and maintenance of infrastructure and services.

3.2.13 Upanga Redevelopment Plan

In collaboration with the Ilala Municipal Council, the Ministry of Lands, Housing and Human Settlements Development prepared the Redevelopment Plan for Upanga Area, which covers 340.63 hectares from 2004 to 2009. The plan aims at transforming the existing Upanga area into a modern, thriving and attractive residential, institutional and commercial residential area of international status through application of modern building technology to create an architecturally attractive and functional physical environment that would meet the increasing demands for administrative and business offices, commercial and cultural activities in Dar es Salaam Central Business District and provide for safe, comfortable and efficient circulation of vehicles and pedestrians. The specific objectives are to:

i. Guide the on-going transformation of the area that was exclusively residential and institutional into a mixed-use urban entity, while overhauling and upgrading the existing water, electricity and storm water drainage systems to suit the new expected population for the area;

ii. Replace existing buildings that are dilapidated with modern high-rise structures of a minimum of 2 storeys and maximum of 20 storeys in order to maximize utilization of the high value land in the area and cater for the increasing pressure for high-class office and commercial premises;
iii. Increase the economic and cultural vitality of the area through densification and appropriate mix of activities, provide adequate social services and infrastructure facilities for the anticipated population of the area population and ensure a balance between interior and exterior space in the built up fabric;
iv. Create conditions for the safe, comfortable and efficient circulation of vehicles particularly pedestrians and adequate parking;
v. Create a distinct metropolitan image and yet maintain a balance between modern architecture and historical elements by preserving the character of Upanga as an attractive mixed use urban area with different land uses fitted into, and alongside the a historic framework through conservation; and
vi. Improve the environmental quality of the area and create a pleasant microclimate in public outdoor spaces by planting appropriate trees and providing outdoor furniture.

3.2.14 Magomeni Redevelopment Plan 2008-2028

Magomeni Redevelopment Plan is a result of the on-going uncontrolled urban renewal that is due to the growing demand for commercial space, office space and infrastructure. Originally planned as a high-density residential area in the 1950s, its land uses are rapidly and uncontrollably transforming from residential to commercial. It is located 3 kilometers from Dar es Salaam city centre and covers an area of 671.83acres. Hazard prone areas that have been encroached upon by informal settlements surround Magomeni Settlement. This urban renewal is driven by its proximity to the city centre, Morogoro Road, Magomeni Hospital and District government offices. It is obvious to planners that the location of Magomeni does not allow for future expansion of the area.

The existing urban character is of low-rise buildings dominated by single storey structures. The redevelopment plan proposes building heights of a minimum of 10 storeys along Morogoro and Kawawa roads, leaving the detailing of maximum storeys to engineers who will determine it according to the soils bearing capacity. This ambiguity will in the long-term cause unfavourable urban design implications. The developer can only be limited by his economic capacity rather than developmental controls in place. It is also proposed that the surrounding areas will vary between 1 to 4 storeys and 4 to 8 storeys.

The special area of Magomeni Kondoa is the designated Magomeni Centre and CBD for Kinondoni district. The redevelopment scheme proposes building heights of maximum 12 storeys and no proposed open space to relieve such densification of buildings. Magomeni Kondoa is not a very viable concept for the fast growing Municipality with the highest population for the following reasons:

i. It has no room for future horizontal expansion, in land and infrastructure. This will put a strain on efficient service delivery;

ii. Its proximity to the city centre maybe an advantage in its growth but it is also a disadvantage because it amplifies the problem of congestion faced by the city centre;

iii. In the best interest of the Municipality, consideration should be on moving the quarters to another location that will allow future expansion and to serve the Municipality community better; and

iv. This new area could benefit with a Municipal centre that will encourage growth of the area.

3.3 The Institutional Framework

3.3.1 Planning Policies

The National Human Settlements Development Policy (NHSDP) of 2000 is the main policy that guides urban planning in Tanzania. The NHSDP underlines that rapid urbanisation in the context of severe limitations in the capacity to manage it has created pressure on urban infrastructure and services which, coupled with inadequate shelter delivery systems has led to the extensive growth of unplanned settlements that account for 60 per cent of the urban housing stock and accommodate 70 per cent of the urban population that live with poor or no access to physical and social infrastructure including water supply, where there is little or no space for circulation and community facilities and where sanitation is poor. The policy notes, however that many unplanned settlements accommodate flourishing informal sector activities which provide employment and income earning opportunities to many urban dwellers. Among other strategies, the policy recommends regularisation, upgrading and gradual formalisation of the unplanned settlements. Other relevant policies include:

i. The National Land Policy of 1995;
ii. The National Environmental Policy;
iii. The Tanzania Development Vision 2025;
iv. The National Strategy for Growth and Reduction of Poverty (NSGRP) (MKUKUTA);
v. The Property and Business Formalization Program (MKURABITA);
vi. National Transport Policy (2003)
vii. The National Water Policy of 2002
viii. Education and Training Policy (2014)
ix. National Health Policy (2007); and
x. National Energy Policy (2003);

3.3.2 Planning Legislation

The Urban Planning Act No.8 of 2007 is the principal legislation that governs urban planning in Tanzania. The purpose of the legislation is to secure efficient use of land resources, orderly and coherently planned growth of human settlements and effective involvement of community groups in urban settlements planning and development. Other key, relevant legislations include:

i. The Land Use Planning Act Cap 116 of 2007;
ii. The Town Planners Registration Act, 2007
iii. The Land Act No. 4 of 1999;
iv. The Land Acquisition Act 1967;
v. The National Environmental Management Act Cap 191 of 2004;
vi. The Highway Act Cap. 167;
vii. The Water Supply and Sanitation Act No 12 of 2009;
viii. The Public Health Act No. 1/09, 2009; and

ix. The Vocational Education and Training Act, 1994.

3.3.3 Planning Regulations and Standards

Several regulations, planning standards and technical instructions have been issued to improve technical and professional practice, and enhance efficiency, transparency and community participation in planning including:

i. Technical Circular No.1 of 2018 on Procedures for Processing Applications for Change of Land Use, plot/Farm Subdivision/ Amalgamation in Tanzania
ii. The urban Planning and Space Standards Regulations 2011
iii. The Town Planners Registration regulations, 2009
iv. Urban Farming Regulation – GN. 215 of 2001
v. Guidelines for planning of small islands of 2012
vi. Urban Development Control Guidelines - GN. 242 of 2008; and
vii. Guidelines for the preparation of general planning Schemes and Detailed Schemes for New Areas, Urban Renewal and Regularisation, 2007

Some of the existing standards and regulations are out-dated, but the key challenge is that even those that remain relevant are not enforced, resulting in uncontrolled development

3.3.4 Impact of Policy Changes on the Implementation of Dar es Salaam Master Plans

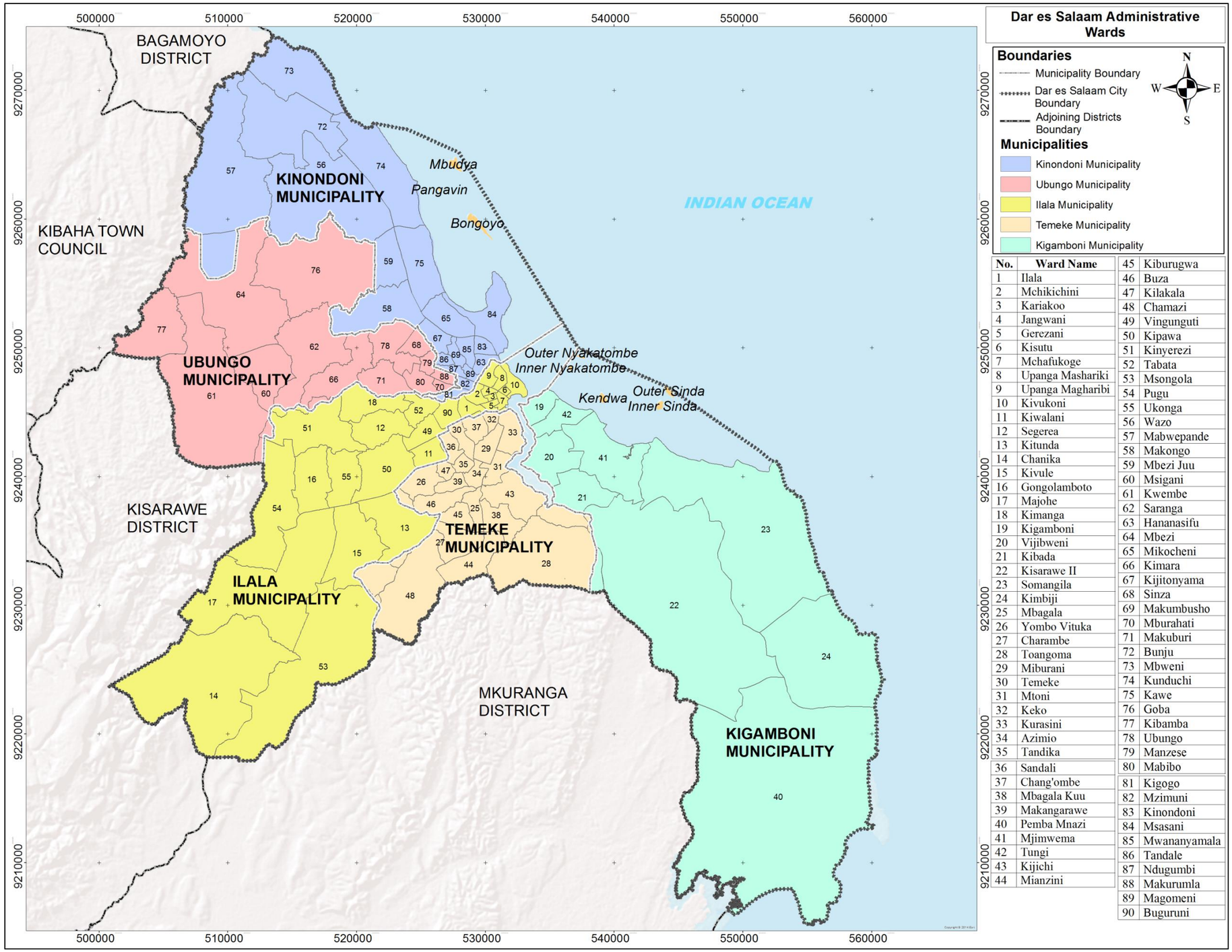
Several policy changes have had critical bearings on the development of the City and this is elaborated below:

- The 1967 Arusha Declaration - emphasized Socialism and Self-reliance with priority assigned to financing of rural development, at the expense of urban development;
- Nationalization of private properties in 1972, which discouraged private, commercial investments in housing or factories. The state-owned enterprises established to manage nationalized entities failed to create sufficient jobs to absorb the wave of rural urban migrants and graduates of the school system, which led to the rapid expansion of the informal sector activities in the city, particularly in the late 1980s and during the 1990s;
- The 1972 decentralization policy that abolished local government authorities and transferred urban planning and urban management responsibilities from urban councils to new regional authorities, promoted rural development. The absence of a local government authority in Dar es Salaam from 1972 to 1982 resulted in severe deterioration of urban infrastructure and services. Even when they were re-introduced in 1982, the local authorities were not reassigned all previous sources of revenue. They depended largely on subsidies from the central government, which was far from adequate leading to poor maintenance of infrastructure and low level of service delivery.
- Liberalization of the economy in 1996 brought back the private sector into the mainstream economy. At the time of liberalization, the informal sector had gained currency in most of urban areas as the formal sector opportunities were declining.

Implementation of the Structural Adjustment Programme (SAP) and downsizing of government led to loss of jobs through layoffs, resulting into an explosion of informal economic activities

3.3.5 The Existing Administrative Structure

Dar es Salaam city is among the 30 regions of Tanzania. The city is subdivided into five municipalities of Ilala, Kinondoni, Temeke, Ubungo and Kigamboni, and 90 wards as shown in Map 3.1. The organograms of the Dar es Salaam City Council and the five municipal councils are shown in Figure 3.6 and Figure 3.7.



No.	Ward Name	No.	Ward Name
1	Ilala	45	Kiburugwa
2	Mchikichini	46	Buza
3	Kariakoo	47	Kilakala
4	Jangwani	48	Chamazi
5	Gerezani	49	Vingunguti
6	Kisutu	50	Kipawa
7	Mchafukoge	51	Kinyerezi
8	Upanga Mashariki	52	Tabata
9	Upanga Magharibi	53	Msongola
10	Kivukoni	54	Pugu
11	Kiwalani	55	Ukonga
12	Segerea	56	Wazo
13	Kitunda	57	Mabwepande
14	Chanika	58	Makongo
15	Kivule	59	Mbezi Juu
16	Gongolamboto	60	Msigani
17	Majohe	61	Kwembe
18	Kimanga	62	Saranga
19	Kigamboni	63	Hananasifu
20	Vijibweni	64	Mbezi
21	Kibada	65	Mikocheni
22	Kisarawe II	66	Kimara
23	Somangila	67	Kijitonyama
24	Kimbiji	68	Sinza
25	Mbagala	69	Makumbusho
26	Yombo Vituka	70	Mburahati
27	Charambe	71	Makuburi
28	Toangoma	72	Bunju
29	Miburani	73	Mbweni
30	Temeke	74	Kunduchi
31	Mtoni	75	Kawe
32	Keko	76	Goba
33	Kurasini	77	Kibamba
34	Azimio	78	Ubungo
35	Tandika	79	Manzese
36	Sandali	80	Mabibo
37	Chang'ombe	81	Kigogo
38	Mbagala Kuu	82	Mzimuni
39	Makangarawe	83	Kinondoni
40	Pemba Mnazi	84	Msasani
41	Mjimwema	85	Mwananyamala
42	Tungi	86	Tandale
43	Kijichi	87	Ndugumbi
44	Mianzini	88	Makurumla
		89	Magomeni
		90	Buguruni

Map 3.1: Administrative Structure of the Dar es Salaam City

9.1.1. 3.3.6. Organograms of the city and municipal councils

The organizational structure of the Dar es Salaam City Council comprises five line departments and four staff units as shown in Figure 3.6. Similar to the municipal councils, the department's report to the full council through the council standing committees.

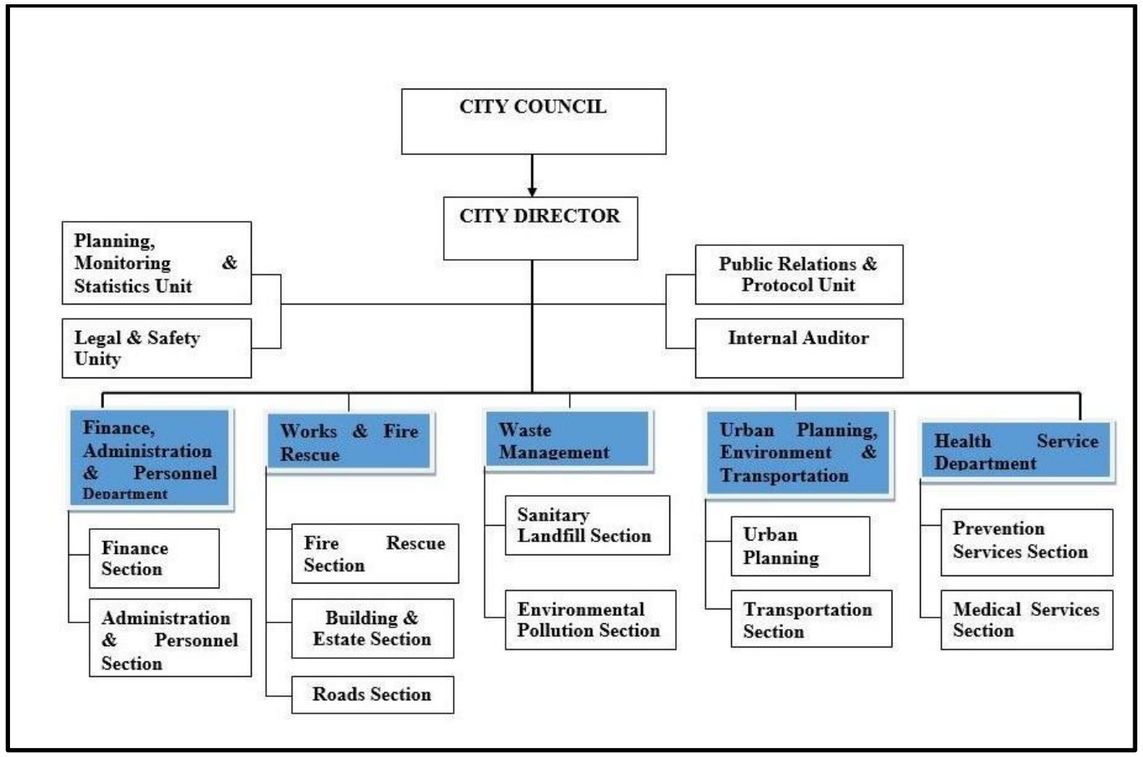


Figure 3.6: Organogram of the Dar es Salaam City Council
Source: http://dcc.go.tz/en/muundo-wa-jiji

All five Municipal Councils have similar administrative structures shown as shown in Figure 1.7.

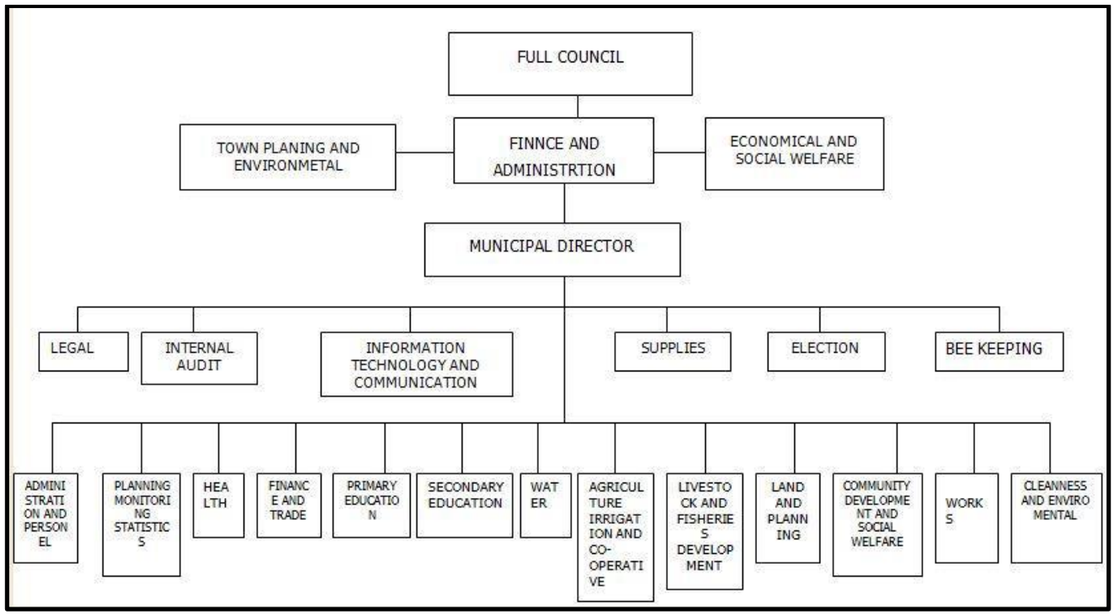


Figure 3.7: Organogram of the five Municipal Councils showing the committee structure
Source: www.ubungomc.go.tz/organization-structure

3.3.7. Institutional roles and responsibilities

The Municipal Councils are responsible for the provision of basic social and economic services to their residents, which include primary education and secondary education, primary health care, solid waste management and cleanliness, district roads, monitoring trade and development activities especially informal sector development and management, cooperatives, agriculture and livestock development, forestry, fisheries, recreational parks, culture, agriculture, and livestock, cooperative development, community development, information and communication technology development urban planning, and urban development. Other roles and functions of the municipalities are:

i. Maintaining peace and security of residents as well as that of public and private properties;
ii. Taking measures to improve and accelerate performance of key sectors of the local economy notably, commerce and industry;
iii. Improving and maintaining quality services in health, education, culture and entertainment for residents; and
iv. Creating conditions conducive to poverty reduction and assisting the youth, elderly, disabled and other disadvantaged groups to be productive in the economy.

The City Council performs a coordinating role and implements projects that cut across the five Municipalities and provides common services such as fire and rescue services and managing the waste disposal site. The functions of the Dar es Salaam City Council are:

i. To coordinate the powers and functions of the five Municipal Authorities regarding infrastructure.

ii. To prepare a coherent City–wide framework for the purpose of enhancing sustainable development.

iii. To promote cooperation between the City Council and amongst local government authorities within the City areas.

iv. To deal with all matters for which there is interdependency among the Municipalities.

v. To support and facilitate the overall performance of the authorities.

vi. To provide peace and security and emergency services such as fire prevention, and control ambulance and auxiliary police.

vii. To perform major functions relating to protocol at ceremonies.

Besides the six LGAs, several other government agencies are responsible for providing a wide range of crucial services in the city, namely the Tanzania Electricity Supply Company Ltd. (TANESCO), Dar es Salaam Water and Sanitation Authority (DAWASA), the Dar es Salaam Water Supply Company Ltd. (DAWASCO), Tanzania Roads Agency (TANROADS) and the Surface and Marine Transport Regulatory Authority (SUMATRA). These agencies operate outside the control and direction of the city authorities.

3.3.8. Limitations and challenges of the existing administrative structure

i. The Dar es Salaam City Council does not have administrative authority over the five municipal councils, which weakens its capacity to coordinate planning activities of these councils.

ii. Neither the municipalities nor the city council have a clear mandate for citywide planning and coordination of development activities;

iii. The Dar es `salaam City Council does not have any mandate over the government agencies operating within its area of jurisdiction and therefore cannot exercise control over the plans and activities of those agencies

iv. There is no coordination among the utility agencies when they implement infrastructure projects in the city. This often leads to duplication of effort and wastage of scarce resources, when for example TANROADS builds a new road only to have DAWASA dig it up to repair existing underground water and wastewater infrastructure or lay down new infrastructure;

v. Investment plans of the utility agencies do not always conform to urban development plans of the LGAs, leading to a mismatch between planned development of the city and the construction investment of infrastructure facilities by the utility and other government agencies. Some housing projects for example, remain unoccupied for lack of water, electricity or both while the utility agencies wait to have customers occupy the houses before connecting the services;

vi. Conflicts frequently arise regarding the management of roads and roadside advertising between the LGAs, TANROADS and the Ministry of Works;

vii. The Tanzania Building Agency (TBA) and the Tanzania Ports Authority (TPA) have independent jurisdiction on building permits over specified areas of the city, resulting in conflicts and unclear lines of accountability regarding development control activities;

viii. Despite tightly knit relations between the Dar es Salaam city and the surrounding districts and towns of Bagamoyo, Kibaha, Kisarawe and Mkuranga, there is no mechanism to manage trans-boundary land use, economic, infrastructure and service delivery issues;

ix. Although about 75 per cent the city population lives in informal settlement, planning departments in the LGAs spend most of their time and resources to planned areas including new developments. Planning intervention in the informal settlements is intermittent and often based on a project approach, which is unsustainable; and,

x. The grassroots *Mtaa* administration and the Ward Executive Committees, which could provide forums for effective local level participatory planning and strengthen development control, have no statutory planning powers.

3.4 Key Lessons

Institutional arrangements for implementation of urban development plans in Dar es Salaam City have been inadequate and often lack co-ordination. Most public agencies mandated to provide specific services in the city implement and maintain projects independent of one another. Poor co-ordination has led to duplication of efforts, dispersal of scarce resources and little accountability.

All previous interventions with respect to unplanned settlements have been intermittent and inconsistent. While some of those interventions have had a positive impact in terms of improving the living conditions in the project areas and increasing access to housing, these gains have been limited in scope and scale and could not be sustained.

Of the several redevelopment schemes, which have been proposed and implemented in Dar es Salaam, only the Kurasini Redevelopment Scheme has been comprehensively implemented with most of its objectives met. In the rest of the schemes, the only visible change has been to replace the existing low rise to modest height buildings with multi-storey structures with little or no improvement or expansion of the infrastructure and services.

In particular, implementation of the Kigamboni Master Plan as proposed would have severely adverse impacts on the entire mobility system of the city that would lead to heavy traffic converging in the city centre and then going through a new tunnel envisaged in the Kigamboni Master plan, or cross the recently built Julius Nyerere Bridge. This would have even further polarised the city, strengthening its present mono-centric character by concentrating a single central area around the harbour. It is strongly recommended in this master plan that the Kigamboni Master plan should be revised to adopt an urban residential structure with the necessary supporting services but not as a commercial hub of the city.

Lessons drawn from this review of previous master plans have provided key inputs to the strategies that are recommended to reorganize the main components of the city and to improve the governance systems and appropriate financing mechanisms so as to ensure effective implementation of the new Master plan.

4. THE PHYSICAL ENVIRONMENT

4.1 The extent of the Planning Area

The planning area includes, the entire area within the boundary of the Dar es Salaam city, covering a total land area of 1,630.7 kilometers^2

4.3. Physiography

4.3.1. Relief, landforms and soil classification

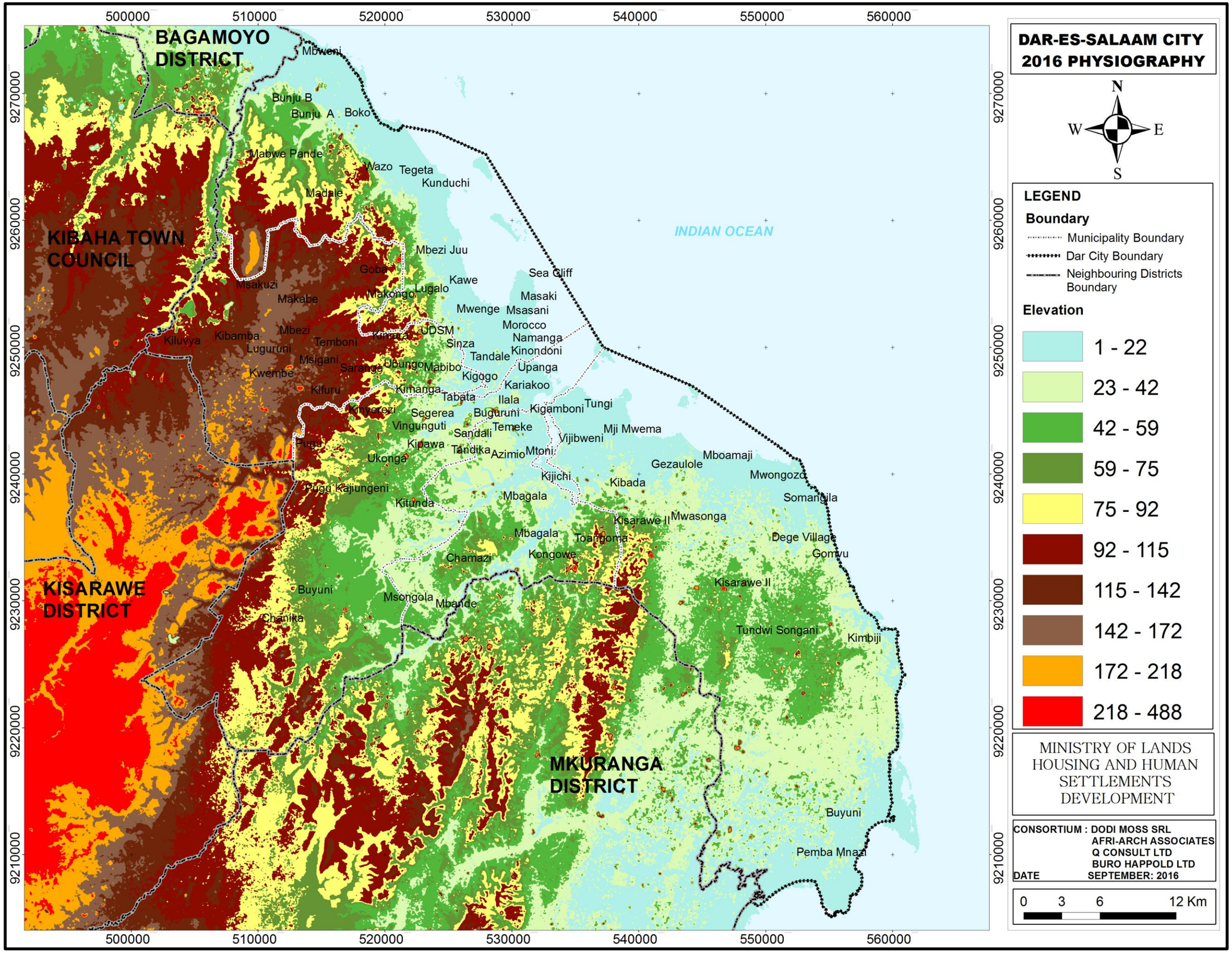
The physical features of the Dar es Salaam city and region can be divided into two contrasted regions: the coastal plain and the inland plateau. Site elevations range from the lowlands of less than 5 metres above mean sea level along the coast to the hilly areas of 60-150 metres above mean sea level, extending to the south-western region of the study area. The dominant part in most of the residential areas is made up of gentle slope terraces and hilly or flat plains ranging from 5-20 metres above mean sea level (URT, 2011). These features are further characterized by four distinct landforms:

i. ***The shore land***, constituted by the land immediately abutting the Indian Ocean, comprising sand dunes, tidal swamps and cliffs**.**

ii. ***The limestone coastal plain*** located west of the shore land extending to Pugu Hills, which is overlain with Pleistocene and sand with fairly uniform relief lying between 15 and 30 m above mean sea level and slopes of less than 3 percent. The width of the plain extends 8 to 10 kilometers to the southeast and west, narrowing to 2 kilometers at Kawe to the north before widening to 8 kilometres at the Mpiji River, and and varies between 5-8 kilometres in width to the southwest where the relief is more irregular, gradually merging into the more elevated headwaters of Mzinga River. A few ponds are found in this landform where rich clay soils and zero gradients impede natural drainage. The coastal plain is composed of poorly graded white buff sand overlying sandy clay of varying permeability in highly variables sequences. The seaward fringe of the plain is generally formed by raised coral reef limestone.

iii. ***The inland alluvial plains,*** flowing from the Pugu Hills to the east, dissect the Coastal plain in a series of steep sided U-shaped valleys, culminating in creeks and mangrove swamps before entering the Indian Ocean. The city's harbor, penetrating 10 kilometers inland along the Kizinga and Mzinga Creeks, forms the principal topographical feature of the region. These valley soils are generally poorly drained silt clays enriched with organic matter.

iv. ***The deeply dissected hills*** form the western boundary of the region with altitudes ranging from 100 to 200 metres above mean sea level with some points reaching 330 metres. Steep, weathered slopes and well-drained unconsolidated gravelly clay bound sand characterise this zone. Occasional outcrops of raised coral limestone also occur around the Wazo-Kunduchi area.



Map 4.1: Dar es Salaam City Physiography

4.3.2. Catchment areas

Dar es Salaam city has four major catchment areas feeding into rivers Mpiji, Msimbazi, Mzinga and Kizinga. Three rivers (Mzinga, Kizinga and Msimbazi) are perennial while Mpiji is a seasonal river.

Table 4.1: Characteristics of the main catchment rivers of Dar es Salaam

River Name	Length (kilometers)	Catchment Area (kilometers2)
Mpiji	12.74	52.06
Msimbazi	35.82	289.21
Kizinga	17.45	432.02
Mzinga	10.40	40.72

i. **Msimbazi River**

Msimbazi River has a length of about 35 kilometres. It flows through Pugu Forest Reserves with tributaries of Sinza, Ubungo and Luhanga and flows to the eastern side towards the Indian Ocean. It is an important water resource for residents of Dar es Salaam and neighbourhoods for drinking, bathing support for agriculture, industrial use and as an environmental buffer. However industrial effluents and illegal sewage systems are threatening the river ecosystem services. The river is highly polluted with heavy metals from industries and detrimental to its functional benefits and even irrigation of vegetable gardens, which is commonly practiced.

ii. **Kizinga and Mzinga Rivers**

The Kizinga and Mzinga river systems flow through the Pugu/Kisarawe hills and consist of sandy sediments favouring infiltration, which recharges the ground water sustaining flow during the dry season. The rivers flow in the northeast direction to the Indian Ocean. Kizinga has a total length of 17.5 kilometres and Mzinga has a total of 10.4 kilometres. Water in the Mzinga and Kizinga rivers meets domestic standards for drinking water. Both rivers flow throughout the year and support domestic water supply in the Mbagala area.

iii. **Mpiji River**

The Mpiji River forms the northern border between Dar es Salaam and Coast Region. It is a seasonal river stretching to about 12.7 kilometres. Despite the growing of the city towards Bagamoyo, the river is still less polluted compared to the other rivers draining the city centre.

iv. **Other Small Rivers**

There are also small and seasonal rivers including, Tegeta, Mbezi, Mlalakuwa, Kijitonyama, Sinza and Tabata. These are essentially temporary rivers largely serving as a drainage network for Dar es Salaam City.

4.3.3. Geology and Soils

The main formations underlining the City are a succession of flat tertiary, quaternary and upper Mesozoic strata. The Upper Mesozoic strata features lime stones, sand stones, with gypsum, coal and salt intrusions near the coast. Contagious lands to the coast stratum are relatively flat with a minor East dip and clear N-S fractures creating a stepped landscape. The cost of construction in this area is high which necessitates the use of non-weather corrosive materials. This also requires consideration for income levels when allocating land for residential or other development in these areas

The soils in Dar es Salaam region can be classified into two major superficial geological deposits. These are the sandy loam soils, well drained and heavy clay waterlogged soils and the sandy loam and sandy clay soils in the high areas. Infertile sand, clay and loamy soils dominate the lowlands and in some parts there are peninsulas with very beautiful sand beaches. Intermediate clay mixed with sandy soils, which characteristically are moderately drained and leached, occupy the middle plateau zone. The soils in the uplands zone are sandy loam, well drained and highly weathered and leached sandy clay soils (URT 2014). The soil structure of Dar es Salaam is shown in figure 4.1.

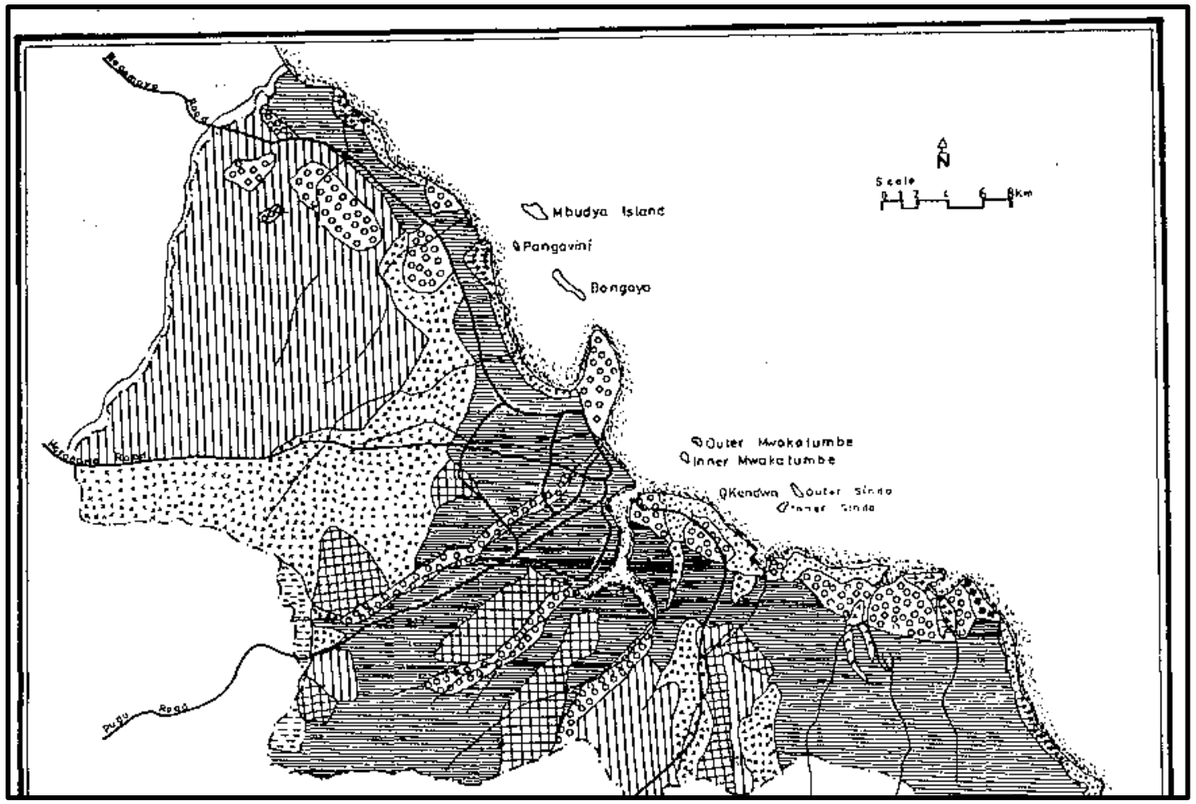


Figure 4.1: A simplified soil map of Dar e Salaam
Source: Lussuga Kironde (1994)

4.3.4. Planning implications

These features have an impact on spatial growth of the city. Sandy soils require deep foundations for buildings while water lodged soils are susceptible to flooding and difficult to build on. Areas characterised by alluvium or saline soils with mangrove and organic soils are best suited for natural vegetation

The clay-bound sands for example are generally soft, poorly consolidated and poorly bedded and therefore unfossiferous and easily weathering. Areas characterised by alluvium or saline soils with mangrove and organic soils are suited for natural vegetation. The areas overlain with sandy clays and clayey sands are also characterised by almost flat relief. This makes such areas suitable for building although problems of drainage may be experienced. The dissected clays and clayey sands located on steeper land are perhaps not the best suited for agriculture since they are loose and liable to erosion, but they are also ill suited for high density urban development. Therefore they are best left to agricultural and low-density uses. The Redzinas are good for building upon, but are also good for the extraction of limestone and coral stone for building purposes, or for cement manufacturing. This causes pollution and environmental degradation.

4.4. Vegetation

4.3.1. The natural vegetation cover

Dar es Salaam vegetation is mostly comprised of woodland and savannah areas, with a large range of palms and crops such as fruit trees and spice crops to be found. There is a very small percentage of forest, with a large number species of plant to be found within the small area such as Kisarawe, Kitunda and Pande forest reserve. Miombo woodland, acacia woodlands and coastal vegetation are found along the Indian Ocean as well as key wetlands can be found within the city and surrounds. The area surrounding the City is characterised by sparse to very sparse vegetation such as grass and short trees.

4.3.2. Afforestation

Dar es Salaam afforestation efforts are controlled well and the government has funded many successful afforestation efforts. The region has a well-developed afforestation programmes including "*Dar es Salaam yangu Mti wangu"* initiated by the Regional Commissioner (R.C), with wide range of protecting pristine green areas and areas along the major roads.

4.3.3. Urban greenery

In Dar es Salaam green areas are quickly disappearing because of population growth, physical densification and poor planning. The Msimbazi river valley and Mabwe Pande Forest, which are a natural heritage, are examples of green land in the city that is frequently invaded for housing construction. The government is aware of the problem in the city and some small re-greening projects have been completed in the city but the developing pace is slow and the organization is difficult.

Land best suited for natural vegetation (excluding forests) is considered to be river valleys, swamps and lakes. Dar es Salaam has many of these which include (with areas in square kilometres shown in brackets) the following: the valleys of rivers Nguva/Kisarawe/Ukooni (2.3 sq. kilometres); Mboamaji (0.5 sq. kilometres); Mwasonga (2.1 sq. kilometres); Mwera (2.0 sq. kilometres); Shangweni (0.5 sq. kilometres); Kisiwani (1.8 sq. kilometres); Kiwanjani (0.3 sq. kilometres); `Mzinga, (including its tributaries of Mkokozi and Bunguni) (18.2 sq. kilometres); the Kizinga (including its tributaries of Kinyamwezi, Yombo, Kurutini, Temeke and Mzinga), (5.8 sq. kilometres); the Msimbazi (including its tributaries of Kinyerezi, Luhanga, Ubungo and Sinza, plus lakes Makurumla, Magomeni, Tenge, Mwananyamala and Tandale) (35 sq. kilometres); and rivers like Kijitonyama, Mlalakuwa, Mbezi, Tegeta, and Mpiji with restricted areas for natural vegetation.

Other areas considered suitable for vegetation are the mangrove tree swamps. These include those at Dege/ Bandrini (2.25 sq. kilometres); Nguva (0.3 sq. kilometres); Kibugumo (1.1 sq. kilometres); the Mzinga Creek fork (2.0 sq. kilometres); the Msimbazi mouth (0.5 sq. kilometres); Jangwani Beach (1.2 sq. kilometres); and from Mbweni northwards along the beach (10 sq. kilometres).

The rivers, streams, lakes and swamps play an important function as natural drainage systems for the Dar es Salaam city. Unfortunately, a number of these rivers, particularly the Msimbazi, have been subjected to uncontrolled and untreated discharges including industrial effluents, causing serious pollution. Valleys for these rivers have traditionally been the targets for small farmers, residential use, and in some cases industrial development. Expansion of uncontrolled settlements into flood plain areas, and uncoordinated developments that block natural drainage patterns have made flooding a widespread problem in the city which can last for several weeks in low-lying areas or in those areas with low soil permeability and/or high groundwater table conditions.

4.5. Extraction of Mineral resources

4.4.1. Sand mining

Sand mining is undertaken within the Dar es Salaam City in areas not designated for such activities. This phenomenon has created conflicts between residents and city authorities and ultimately undermined principles of urban planning. It has created big holes, which essentially affect the aesthetic features of the area. This activity has potentially exacerbated soil erosion and resulted into a loss of productive land. Sand mining has a direct effect of erosion, and also impacts the local wildlife. For example, sea turtles depend on sandy beaches for their nesting, and sand mining has led to the near extinction of gharials (a species of crocodiles) . Removal of physical coastal barriers such as dunes leads to flooding of beachside communities, and the destruction of beautiful beaches that attract tourists.

Large beaches and large coastal dunes can provide excellent protection from storms, tsunamis, and other large wave events. Beach mining increases the vulnerability of all coastal infrastructure and ecosystems that were once protected. The changes of geological landscape that are caused by the creation of depressions and gullies which during the rain seasons lead to flooding and some depression are occupied by water that lead to the production of mosquitoes hence influences the rapid spread of malaria.

Mining at the Kunduchi quarry site and in Kibugumo, Boko-Magereza and Bunju for aggregates and stone for building construction purposes ended when the sites were closed in 2008.

Since mining and quarrying activities is conducted in the river this has led to several impact on the rivers including lowered water table, impacts on agriculture and drinking water supply, collapse of river banks, lowering of river bed and changes to flow regime, damage to river related and road infrastructure, influence soil erosion at the river bank and river bed. (Mwandi I. 2014).

4.4.2. Limestone, Clay and salt mining

Limestone is quarried from Wazo/Kunduchi outcrops for the Tanzania Portland Portland_Cement Factory. Clay is extracted from the upper Msimbazi River valley for the manufacturing of bricks. Salt is mined at the shore of the Indian Ocean for domes c consumption.

4.6. Climatic conditions

4.5.1. Sunshine

Average Daily Sunshine Hours range from 6.5 hours in April to 10 hours in September. The ample sunshine is good for supporting beach tourism, the generation of solar power and crop farming.

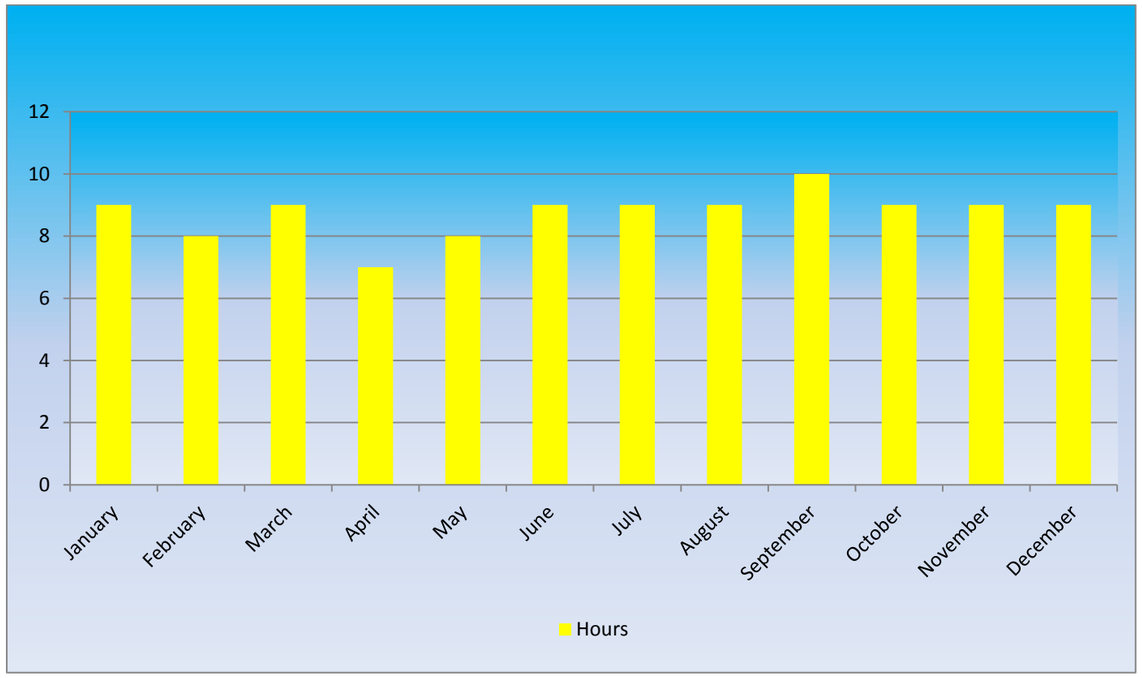


Figure 4.2: Average Daily Sunshine Hours

4.6.1. Temperature and relative humidity

The average annual temperature in the City is 28° Centigrade. Being on the coast, the city experiences high specific humidity of 16.7g/kg. The average annual relative humidity is 77.9 per cent and average monthly relative humidity ranges from 72percent in January to 82percent in April.

4.5.2. Rainfall

There are four active meteorological stations with rainfall data of the past 50 years. The average annual rainfall in the city is estimated to be 869mm. The city experiences two rainy seasons in a year: one in March to May and the other in October to December:

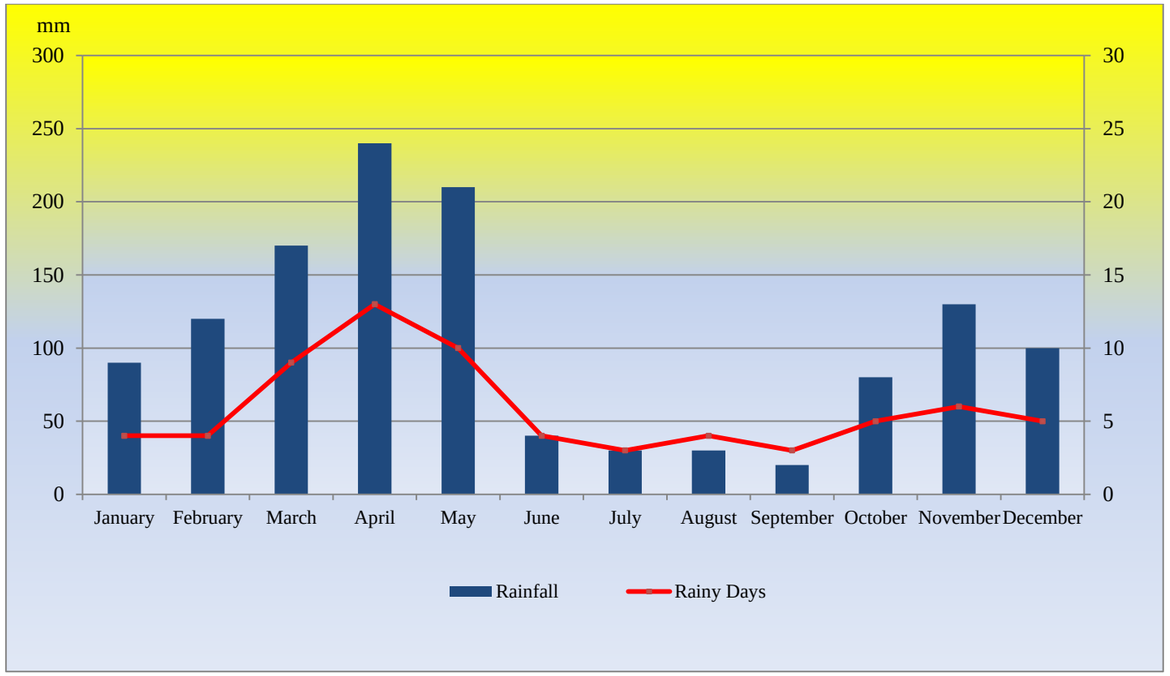


Figure 4.3: Average Monthly Rainfall

4.5.3. Winds

Main winds in Tanzania blow from an easterly direction and are stronger on the coast and weaker inland. Dar es Salaam experiences southwesterly monsoon winds from April to October and northwesterly monsoon winds between November and March.

The summary of the climatic conditions of Dar es Salaam is presented in Table 4.2.

Table 4.2: The climatic conditions of Dar es Salaam City

Climatic Condition	**Average Low/ Month**	**Average High/ Month**	**Annual Average**
Sunshine	7daily hrs. in April	10 daily hrs. in September	8.8 daily hours
Rainfall	20 mm in September	240 mm in April	105mm
Temperature	17 ºC in August, September	31ºC in January, February, March.	High = 29.5 ºC Low= 20.2 ºC
Sea Temperature	25 ºC in August	30 ºC in March	27.7 ºC
Humidity	68 percent in October	82 percent in April	73.0 percent
Wind	0.8m/s in April	4.2m/s in January	3.0 m/s

4.5.4. Planning Implications

i. The relatively high temperatures and humidity imply that streets should be aligned and buildings oriented in such a manner as to maximise wind circulation and cross-ventilation around in buildings.
ii. The best month to swim in the sea is in March when the average sea temperature is 30°C (86°F); this implies that Dar es Salaam tourism industry thrives best during March.
iii. The city records an average of 8.8 hours of sunshine a day; this is relatively long enough compared to an average of 4.3 hours of sunshine a day in the UK, hence this can act as an alternative source to clean energy for the city and its impact regions.
iv. Humidity levels in the city are averagely higher than the 25 percent-60 percent range that is recommended for human comfort.

4.5.5. Anticipated Climate Change in 50 Years

Table 4.3: Anticipated Climate Change in 50 Years

Trends	Level of effect
Decrease in ground water availability	68 per cent
Decreasing soil fertility	60 per cent
Increasing soil aridity	55 per cent
Decreasing air humidity	50 per cent
Overall decrease in rainfall	72 per cent
Changes in seasonal patterns	24 per cent

These problems are exacerbated by current deficiencies in infrastructure provision, poor storm water and coastal management. The key issues associated with climate change will be further assessed in individual risk categories.

4.6. Climate Change and Impacts

The wider global climate change trends are prominently reflected in Tanzania's climate. Research on previous climate trends indicates that the temperature has been increasing over time and is projected to increase further, impacting negatively on human livelihoods. Rise in temperature has resulted in increased water scarcity resulting from increased evapotranspiration (Table 4.3), increased uncertainty of rainfall incidence, and changes in rainfall distribution regimes specifically the onset and cessation of rainfall seasons, increase in intensity and frequency of floods and droughts, as well as a rise in the sea level have been observed. Deteriorating water quality and quantity, loss of biodiversity, declining agricultural productivity and increased health risks due to climate change, are no longer potential threats but rather threats that have already struck the country (Yanda et al., 2006; Shemsanga et al., 2010). Studies show that in Tanzania mean annual temperatures and average daily temperatures will rise by between 2°C and 4°C by 2075 as a direct consequence of climate change (URT, 2003).

The impacts cited above are also reflected in the city of Dar es Salaam in many ways and efforts are being made to ameliorate them.

4.6.1 Climate change adaptation in Dar es Salaam city

Several interventions have been initiated to address climate change-related problems in Dar es Salaam, which include mitigating greenhouse gas emissions. In the transport sector for example, the Government started to phase-out leaded fuel in 2005. Efforts are also underway to reduce sulphur content in the fuel. Further, the use of natural gas, a relatively pollution free energy source for powering vehicles, is being explored. Additionally, in the energy sector, and electricity generation project from methane produced from Vingunguti solid waste dumpsite is being implemented. This project will reduce emission of methane gas into the atmosphere, thereby reducing global warming.

Other initiatives to reduce greenhouse gas emissions include promoting the use of alternative fuel for improved cooking stoves, briquettes from agricultural wastes and saw dust, solar photovoltaic and thermal technologies, and use of liquefied petroleum gas. A total of 16 industries including the Tanzania Portland Portland_Cement Factory, have switched to natural gas, which is produced at Songosongo. The Government is promoting use of natural gas to reduce air pollution, and consequently reduce greenhouse gas emission (URT 2011).

4.6.2 Air Quality

The rapid urban economic development coupled with uncontrolled spatial development of the city has resulted in air pollution that is affecting the city badly. Urban air quality monitoring has shown increased levels of pollutants in some parts of the Dar es Salaam like Gerezani and Kariakoo, which exceed the pollution limits set in the WHO guidelines. In particular, very high levels of inhalable particulate matter (PM10) were reported. The deterioration of air quality in these areas has been mainly linked with increased traffic volume, inadequate parking spaces for heavy-duty trucks, industrial activities and the poor state of vehicles and roads. Air quality monitoring studies in Dar es Salaam have confirmed that motor vehicles are a major source of pollution emphasizing the need for modern and efficient public transport system (Mbuligwe and Kassenga, 1997). Residents living in areas within the vicinity of major roads, such as the Morogoro Road, Julius Nyerere Road, Bagamoyo Road and Nelson Mandela Road, are likely to be exposed to long-term concentrations of Nitrogen dioxide (NO_2), PM10 and other air pollutants that exceed WHO guidelines. Moreover studies also show that air quality deterioration in the city is linked to increase in number and density of high-rise buildings, which hinder pollutant dilution through natural air circulation.

4.6.3 Water Pollution

Abstracted water quality varies depending on the area of the city. Some areas such as those adjacent to Msimbazi, Sinza and Ubungo rivers are known to have blackish ground water. In the estuary near the Mlalakuwa River, water is known to be saltier, reaching 3000 µS/cm. In some cases this is due to salt-water intrusion and/or embedded salt within limestone formations. An inadequate pollution control measure of the anthropogenic activities is the main cause of degradation of the quality of the urban

surface water. In particular, an insufficient wastewater treatment leads to discharge of grey water into the environment seriously aggravating the quality of both surface water and ground water (aquifers).

Many industries discharge untreated effluents directly or through storm water drainage, river creeks and streams or estuary draining into the sea. Some industries discharge their effluent to the Mzinga River. 90 per cent of the population in Dar es Salaam use pit latrines and septic tanks for storage and disposal of liquid waste. As the ground water table is generally high, there are high risks of groundwater contamination from pathogens and other contaminants. Illegal dumping of waste in open spaces and drainage ditches is a common practice in unplanned settlements. The situation becomes worse during the rainy seasons when overflow of pits occurs and solid waste is transported into rivers and drains. Studies have reported high levels of microbiological contamination of groundwater abstracted from shallow wells located in residential areas in the city. Areas like Majumbasita, Kiwalani, Mwananyamala, Mbagala and others are significantly affected (Mato, 2002).

In Dar es Salaam, urban agriculture is a long established practice along various riverbanks. One study showed that all vegetables from Tabata, Buguruni and Sinza had lead levels higher than the recommended WHO value, and the soils had a high level of lead, chromium, zinc and copper. Much of the lead contamination is traffic related, with a strong correlation between average traffic density and soil lead levels. Traffic also contributes to soil contamination with hydrocarbons. At the port, ships handle large quantities of oil and there have been frequent cases of oil leakage from the TAZAMA Pipeline. Several other hydrocarbon based industrial activities exist in Dar es Salaam including the Tanzania Italian Petroleum Oil Refinery (TIPER) at Vijibweni. Both large and informal garages found in the entire city of Dar es Salaam contribute to soil contamination with hydrocarbons.

There is little or no leachate or gas control on landfills in Dar es Salaam, except for the Mtoni landfill. Former and current landfill sites are therefore expected to be a significant source of pollution. Threats of serious biochemical contamination of groundwater in the vicinity of dumpsites cannot be over-emphasized.

4.6.4 Soil erosion

Loss of vegetation cover is a key trigger for soil erosion in Dar es Salaam. This has been caused by natural factors (periods of drought) and human factors (land management decisions). Complex interactions between these two issues have led to catastrophic soil loss. Once vegetation cover is lost, rainwater quickly washes away the topsoil through sheet erosion, leaving subsoil vulnerable and exposed. When rainwater becomes channelled by natural topography or track ways, it easily cuts into the ground creating deep gullies for example in areas like Mbezi Juu, Salasala, Goba, some parts of Bunju, Makongo Juu, some parts of Kigamboni and Mpiji Majohe to mention a few. Where gullies join, flowing storm water creates deep incisions in the landscape. Gullies dissect the landscape, making it difficult for people to drive and walk between communities.

4.6.5 Flooding

Dar es Salaam city suffers severe floods every year following heavy downpour that has left tens of thousands of residents severely affected. This is an addition to several areas in the country that have been affected by the on-going heavy rains. Over 400 households equivalent to over 2,000 individuals every year have been displaced from their homes following the floods where several of these have suffered varied degrees of damage while others have been rendered completely inhabitable after being submerged under flood water. In addition to households' damages, several bridges linking the city centre and its suburbs have been swept away by the ravaging floods rendering communication and transportation between the different parts of the city to be quite difficult. Most of the victims not only lost their livelihoods but also almost all of their essential households like, cooking sets, mattresses, and food reserves. Most affected areas include; Jangwani, Kigogo, Tandale, Mbagala, Kigamboni Tuangoma, Mburahati, Mtoni Kijichi, Mbezi beach and Msasani.

4.6.6 Previous Environmental Conservation efforts

An Act of Parliament established the National Environment Management Council (NEMC) in 1983 to advise Government in the field of environment. It serves as a think-tank for the Government, undertakes environmental information generation, assembly, and exchange. The NEMC has undertaken a number of activities supporting environmental conservation including pollution prevention and control; environmental education and public awareness; and natural resource conservation and management. More specifically, NEMC has sponsored the preparation of the national marine contingency plan; the inventory of destructive activities to the aquatic environment; a wetlands inventory and management strategy; an inventory of natural resources and environmental related projects; environmental impact assessment (EIA) reviews; and the assessment of community participation in natural resource management.

4.6.7 Hazards, disaster risk and vulnerability profile

Seventy per cent of the population of Dar es Salaam lives in unplanned settlements; and fifty per cent of the residents of these informal settlements live on an average income of less than US$1/day (Ndezi, 2009). This fact is an important starting point for discussing the city's vulnerability to climate change, and the strategies for adapting to this. There are large numbers of people, living in poor quality housing, mainly on land that is exposed to a variety of hazards, who are socially, economically and environmentally vulnerable. The city also has severe shortfalls in its sanitation systems. Household surveys revealed that the majority of households in the city (37 per cent) used pour flush latrines with only 29 percent of the households using standard flush toilets for the disposal of human wastes. However, 34 percent of the households were using pit latrines of which 18 per cent were Ventilated Improved Pit (VIP latrines) while 16 per cent were unimproved pit latrines. Adaptive responses need to take these issues into account if they are to respond to the threats posed by climate change – and to meet the needs of low-income urban residents.

According to Dodman et al., (Dodman et al, 2011), sea level rise due to climate change is a serious global threat: with rises of 1–3 meters being anticipated in this century (Dasgupta et al, 2007). On the East African coast, sea-level rise will increase flooding with potential adaptation costs of up to 10 per cent of GDP (Boko et al, 2007). Within the coastal zones of Dar es Salaam city, a rise in sea level of one meter would aggravate the already existing ecological problems through increased rates of coastal erosion, more persistent flooding and loss of wetlands, increased salinization of groundwater and soil as well as greater influx of diverse pollutants. This subsidence is exacerbated by human activities, including the destruction of coral reefs for fishing, sand extraction for construction, lime manufacture from coral rocks, removal of salt pans, and the cutting of poles from mangroves (Ibe and Awosika, 1991). The

projected subsidence rates are 15 centimetres to 95 centimetres by 2100 and a sea level rise of 50 cm would inundate 2,000 square kilometres of land in Tanzania (Elasha-Osman, 2006).

Dar es Salaam is mainly affected by flooding as seen in the past instances of excessive rainfall in the region, even though the amount of rainfall is erratic and varies due to the impact of climate change on temperatures along the Indian Ocean coast. Flooding is normally accompanied by drought which causes scarcity of water in the city resulting in long spells with people carrying out adaptive activities such as drilling bore-holes, transporting water for sale, and women and girls queuing for hours at water points. This situation is further exacerbated by the poor water supply system in Dar es Salaam.

Health workers in Dar es Salaam have also warned of cholera and related dangerous diseases after water shortages, which forces many of the city's 5.3 million residents to use rivers and ponds water for household use. The high-density suburbs of Ubungo, Manzese, Sinza, Kawe, Buguruni and Temeke, as well as the central business district had been particularly hard hit, with thousands of residents drinking untreated water from boreholes and streams, (Dodman et al, 2011).

Various sources reported that the heavy rainfall in early March 2008 caused substantial losses both socially and economically, including damage to smaller bridges and roads, flooding of homes and the death of several children (Dodman et al, 2011, Dar es Salaam Environmental Profile, 2014). The impact of these disasters is most severely experienced in informal settlements that are categorized as poor areas.

This can also be seen in greater detail as from plate 4.1.

Plate 4.1: Image showing informal settlement encroachment to the Msimbazi creek

The image shows many unplanned settlements and construction along the Mzinga creek all the way to the coastline. These unplanned settlements along the narrow stretch of Mpiji River are vulnerable to flooding. Unplanned settlements such as Mbagala and Jangwani area along the Msimbazi River are most prone to flooding. Msasani located in the lowland area of Dar es Salaam has most of the runoff from drainage systems going through to the ocean. This was once a rice field however due to urbanization it has been converted into unplanned settlements constituting a flood risk.

A significant amount of rainwater enters the storm drainage and sewers during the rainy season resulting in flooding because of the solid waste that has clogged the system. "The areas where water logged is common include Buguruni Daya swamp, Buguruni Malapa, Mgoha, Mkenda and Mchikichini Primary School, Kigogo Primary School, Mzimuni Primary School, Matumbi area, Kurasini, Mtoni near equator bar, Msasani area, Mwananyamala, Kigogo bar, Mbagala, Kinondoni "A", Kinondoni "B" and Kinondoni "Shamba" (Vice President's Office, 2011)

"Areas in the Outskirts of the City which are frequently affected by flooding include DCC Magomeni, Keko Magurumbasi, Chang'ombe Machinjioni, Ukonga, Majumbasita, Mwananyamala, Ursino Estate, Mwananyamala Msisiri, Msasani Bonde la Mpunga, Kilimahewa, TSPCA Alykhan Road, Buguruni Moto, Kipawa kwa Gedo, Tabata and Kipawa Viwandani" (Vice President's Office, 2011).

Those within the City centre include the Bibi Titi/Morogoro Road intersection, Msimbazi Street, Msimbazi/Nyerere Road intersection, Co cabs area, Pamba Road, Ohio Street and Charambe (International School). These areas are served by small conduit drainages most of which are blocked up by solid waste and are also too small for the storm water. Most of the storm water is discharged into the Ocean through rivers and streams crossing the city (Vice President's Office, 2011)

The sewerage network is overwhelmed and sewage is frequently found overflowing in different parts of the city. Drainage channels are often filled with garbage making them unable to carry the storm water, which overflows to the environment. Foul water pipes from households, commercial establishments and industrial effluents are indiscriminately connected into rivers and streams causing pollution. Pit latrines and septic tanks are threatening the groundwater with faecal pollution.

4.7. Biodiversity and Coastline Management

4.7.1 Biodiversity

Natural areas within Dar es Salaam are under pressure from a wide variety of competing land uses and economic activities.

The most ecologically diverse areas within Dar es Salaam are the marine, coastal, wetland and riverine areas. The key biodiversity issues in Dar es Salaam relate to population pressure on the edges of the city, deforestation for firewood, destruction of habitat on the intertidal shores particularly mangrove forests, activities such as beach seine fishing techniques, beach tourism, waste deposition and sewage.

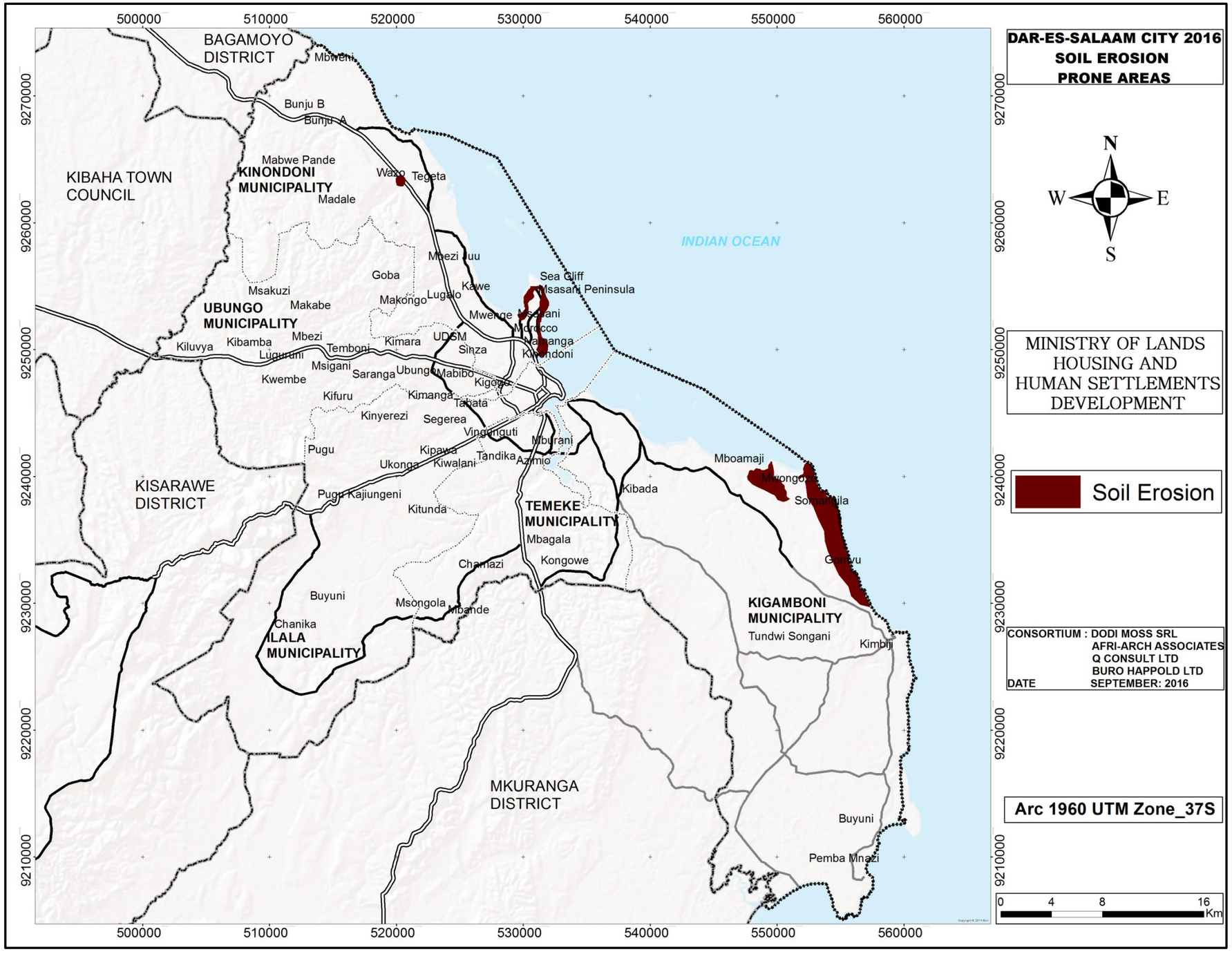
With population numbers anticipated to increase considerably over the planning horizon of this master plan, it is crucial that these areas are protected.

4.7.2 Coastal Management

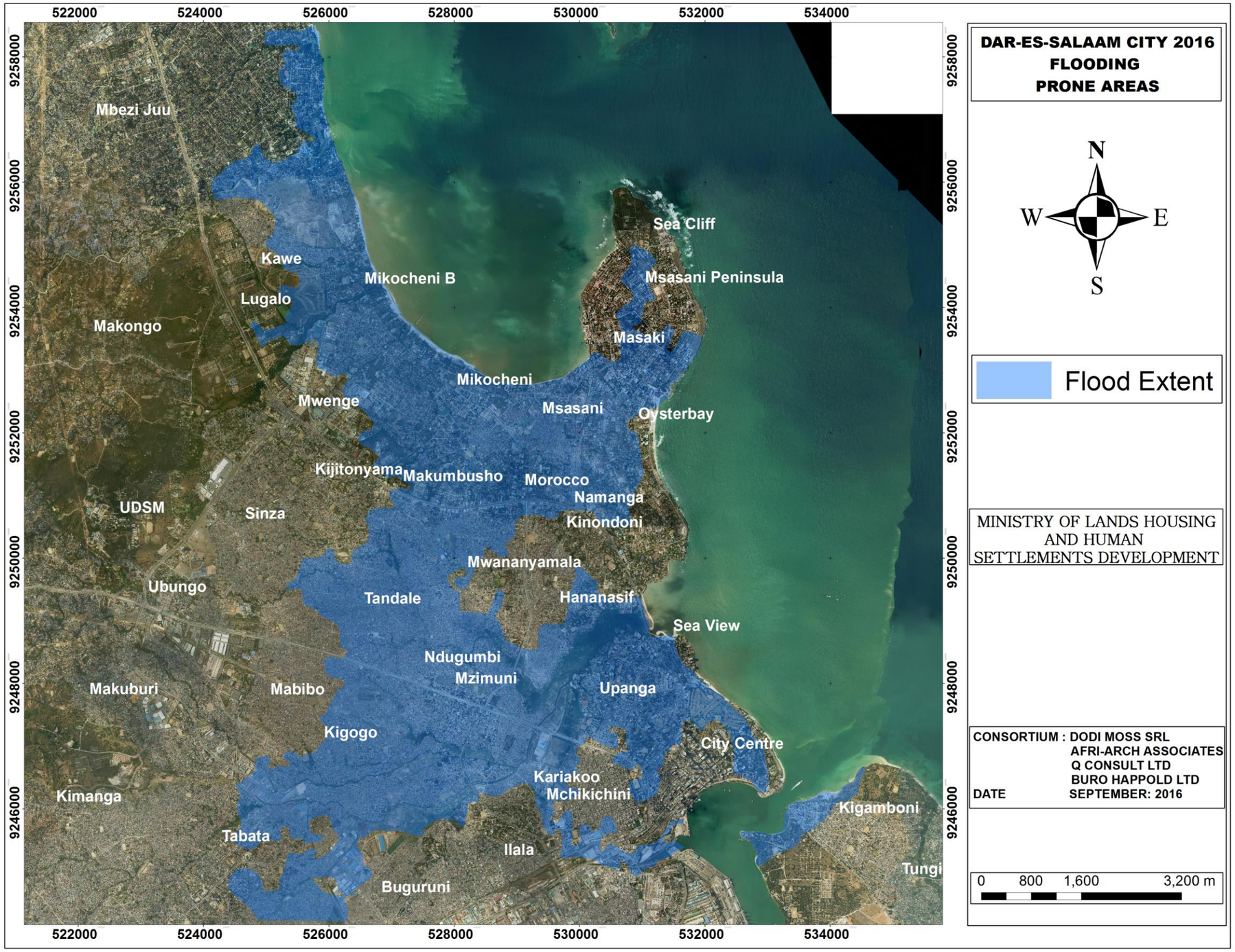
Dar es Salaam is a coastal city. Climate changes that affect sea level and the intensity of coastal storms are therefore likely to exacerbate the vulnerability of coastal communities. Several coastal management projects have been implemented, such as beach conservation projects and other measures to protect mangroves coral reefs including the establishment of marine parks. Excavation of sand has been banned to prevent beach erosion; however, mangroves, which are an important habitat and provide natural flood defence, are at risk from unregulated harvesting. Other examples of on-going poor coastal management practices include dynamiting of coral reefs for fishing, sand extraction for construction, lime manufacture from coral, and the destruction of salt pans.

The city's rapid population growth, poverty and inadequate public education, together with global climate change have been the main drivers of change in the seascape. Degradation of the environment has consequent negative impacts on human wellbeing such as loss of livelihoods and reduction in the availability of food, building materials and firewood. There is no integrated coastal management programme for the whole of the Dar es Salaam area.

Map 4.2 shows areas of the city that are severely affected by coastal erosion including the Kunduchi (north of Dar es Salaam) and Bahari beaches. At the Kunduchi beach area, the coastline has retreated by about 200 metres over the last 50 years, destroying homes, businesses and public buildings. Coastal erosion has also destroyed a sea wall constructed to protect the Ocean Road in the city centre. The average rate of erosion for the city area has been estimated about 3 – 5 m/year. A number of studies have suggested several causes of coastal erosion, in Dar es Salaam such as coastal uplift, sea-level rise and changes in hydrodynamic conditions such as long shore drift, in addition to poor coastal management.



Map 4.2: Soil Erosion Prone Areas



Map 4.3: Dar es Salaam Flooding Prone Areas

4.6.2. Planning implications

1) Rapid growth of unplanned urbanization in Dar es Salaam has led to flood risk in many informal settlements, with a wide range of associated health and other problems for residents
2) Disaster risk management has not been adequately addressed and needs to be integrated in all aspects of urban planning in Dar es Salaam
3) The ecological and hydrological role of wetlands is not well understood or incorporated in urban development planning
4) The sustainability of infrastructure development initiatives and their maintenance is poor. Coordination among local stakeholders is needed. Industries need to be relocated away from residential areas and will require access to a waste stabilization pond. Finally, there is need to undertake community level programmes to raise public awareness of improved sanitation practices.

4.6.3. Key constraints in dealing effectively with climate change, disaster risk, and the urban poor include:

1) Lack of high-resolution digital maps is a limitation for comprehensive risk assessment.
2) Poor information systems caused by the lack of databases including out-dated valuation rolls inhibit significant increase in revenue generation that would be needed to increase both service coverage and quality, particularly taking into account the additional requirements for building resilience in order to reduce the risk posed by climate change for the city. Priorities in meeting the challenges include improving information systems; optimizing the potential of property tax, simplifying the procedures for assessing development levy; developing vigilant collection strategies and enhancing the law enforcement capacity.
3) Limited financial and technical capacity hinders progress in addressing climate change, natural disasters and urban poverty reduction. At the community level for example, it is important to build capacity on the link between unsanitary waste disposal practices, stagnant water, unclean drinking water, and disease incidence. At the same time, environmental committees and community-based organizations need to be trained about the need for organized waste collection and its link to reduced vector/insect breeding and disease.
4) At the local level research capacity needs to be built to better understand the likely impacts of climate change in the long term for the poor of Dar es Salaam.
5) It is important to build a common understanding of the long-term sectoral impacts of climate change for Dar es Salaam in the city planning departments.
6) At the national level, the capacity of the Tanzania Meteorological Agency needs to be improved in weather and climate monitoring, including in more accurate prediction of severe weather and extreme climatic events, and in analysis and interpretation of data. Improvements are also needed in disseminating alerts and early warnings.
7) Links need to be forged and enhanced between climate experts and journalists to ensure effective dissemination of climate change information.

5. POPULATION AND DEMOGRAPHIC CHARACTERISTICS

5.1 Population

5.1.1 Regional and District Population

Dar es Salaam city has experienced continued rapid population growth over the past several decades. The 2012 Population and Housing Census revealed that Dar es Salaam city had 4,364,541 persons with the number of males being 2,125,786 and that of females being 2,238,755. Dar es Salaam accounted for 10 per cent of the total population of Tanzania Mainland (43,625,354) whereas the average population density was person 3,133 per square kilometre. The Tanzania Mainland Population had grown to 51,557,365 by 2016 with Dar es Salaam City population amounting to 5,373,623.

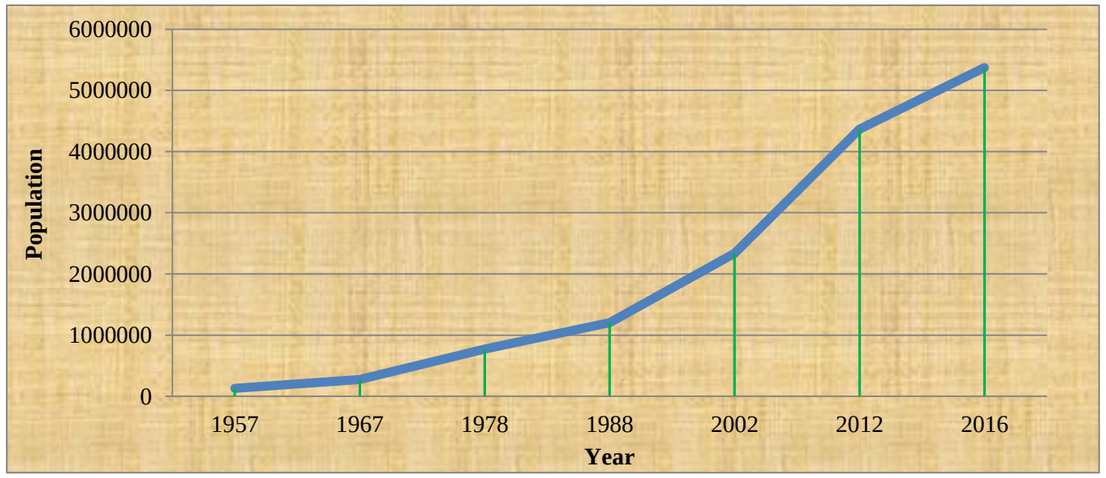


Figure 5.1: Tanzania's population growth 1957 - 2016

5.1.2 Urbanisation rate of Dar es Salaam City

Table 5.1 brings together the key census figures. It shows that a spurt in urbanisation occurred in the 1967-1978 period (which probably started soon after independence in 1961), with Dar es Salaam and regional capitals growing by close to 10 per cent p.a. while 'other urban areas' grew more than twice as fast (mainly as a result of many more settlements being categorised as urban). Subsequently, urbanisation slowed somewhat although still proceeding at about twice the rate of population growth; and 'other urban areas' continued to grow faster than Dar es Salaam and the regional capitals, although Dar es Salaam accelerated to 5.6 per cent p.a. in the most recent period, 2002-2012. The effect is shown in Table 5.1, which reveals that the share of Dar es Salaam in the urban population dropping from about 40 per cent in 1967 to 30 per cent in 1988, and then rising again to 34 per cent in 2012. By the year 2002 the population for Dar es Salaam city was 2,487,288 people equivalent to 7.4 per cent of the national population.

At the same time the share of regional capitals fell steadily from over 53 per cent in 1967 to about 31 per cent in 2012,while the share of smaller towns rose dramatically to equal that of Dar es Salaam by 2002. Presumably, the tenor of policy over this period was rather anti-urban, and indeed local governments were abolished between 1972 and 1982. In 2004, Tanzania introduced Township Authorities for settlements with populations above 10,000. Table 5.1 shows for example, that, the number of towns (other than regional capitals) in mainland Tanzania with populations over 10,000 increased from none in 1967 to 116 in 2012. These statistics clearly demonstrated the dominance of Dar es Salaam as a primate city in the country accounting for 33.6 per cent of the total urban population in Mainland Tanzania

Table 5.1: Tanzania urbanization trends 1957-2012

Category	Population size and other attributes					
	1957	1967	1978	1988	2002	2012
Dar as Salaam Urban (Growth rate in percent p.a.)	128742	272821 (7.8)	769445 (9.88)	1205443 (4.59)	2336055 (4.84)	4364541 (5.6)
Regional Capitals (Growth rate in percent p.a.)	207963	363135 (5.73)	919949 (8.82)	1484512 (4.90)	2593163 (4.06)	3989447 (4.40)
Other Urban (Growth rate in percent p.a.)	27365	49136 (7.08)	568527 (24.93)	1309927 (8.71)	2625620 (5.09)	4341764 (5.16)
Total urban (Growth rate in percent p.a.)	364072	685092 (6.53)	2257921 (11.45)	3999882 (5.88)	7554838 (4.65)	12701238 (5.33)
Rural Population (Growth rate in percent p.a.)	8424394	11290665 (2.97)	14778578 (2.48)	18507165 (2.28)	25907011 (2.43)	30924116 (1.79)
Total Population (Growth rate in percent p.a.)	8788466	11975757 (3.14)	17036499 (3.26)	22507047 (2.82)	33461849 (2.87	43625354 (2.69)
Dar (percent of total urban)	35.4	39.8	34.1	30.1	30.9	34.4
Regional Centres (percent of total urban)	57.1	53.0	40.7	37.1	34.3	31.4
Other Urban (percent of total urban)	7.5	7.2	25.2	32.8	34.8	34.2
Number of towns (Pop. 10,000 +)	0	0	14	38	81	116
Urban Pop (Per cent of total)	4.1	5.7	13.3	17.8	22.6	29.1

Source: *International Growth Centre, IGC_Ph2_Final_270515, 2015*

The population growth trends for the period from 1957 to 2012 indicates that, whereas the total Tanzania mainland population increased about 5 - fold, that of Dar es Salaam increased 34-fold and that of the regional capitals increased 19-fold.

Table 5.2 presents the population estimates for each Municipality up to 2016 and the estimated population density using the 2012 population and housing Census statistics. Most population is concentrated around the central business district.

5.3.1. Population densities

Temeke municipality commands the highest population density with a vast 9199 persons per square kilometre followed by Ilala, Ubungo and Kinondoni municipalities at 4051, 3908 and 3854 persons per square kilometre respectively. Kigamboni municipality has the least population density of 359 people per square kilometre. This means that Kigamboni municipality has a lot of vast amount of land, which is either under-developed or undeveloped. Hence, Kigamboni municipality has the most potential for future growth and development of the city.

Table 5.2: Dar as Salaam City 2016 Population Projection and Densities

Municipality	Population in 2012	Population projection (2016)	Percent Share (2016)	Coverage area (in Hectares)	Population Density per Hectare (2016)
Kinondoni	881525	1087097	20.2	28205	38.5
Ubungo	854843	1054192	19.6	26977	39.1
Ilala	1259292	1552959	28.9	38331	40.5
Temeke	1205949	1487176	27.6	16166	92.0
Kigamboni	162932	200928	3.7	55909	3.6
Total	4, 364, 541	5, 382, 352	100.0	165,588	32.5

Source: Projection based on Tanzania Population and Housing Census, 2012

5.1.3 Migration and population growth

Between 2002 and 2012, the Dar es Salaam city population had been increasing at a rate of 5.6 per cent, which is above the national average annual population growth rate of 2.7 per cent. This growth pattern is a result of high rates of rural – urban migration, encouraged by better access to services and other opportunities such as education, markets and employment in Dar es Salaam compared to other areas of the nation. The population increase within Dar es Salaam city is however, also attributed to higher birth rates coupled with decreased mortality rate due to opportunities for better health. The 2012 population census statistics indicated that Dar es Salaam is largely composed of migrants and that Dar es Salaam City clearly dominates in terms of its contribution to in-migration, accounting for about 30 per cent of in-migration.

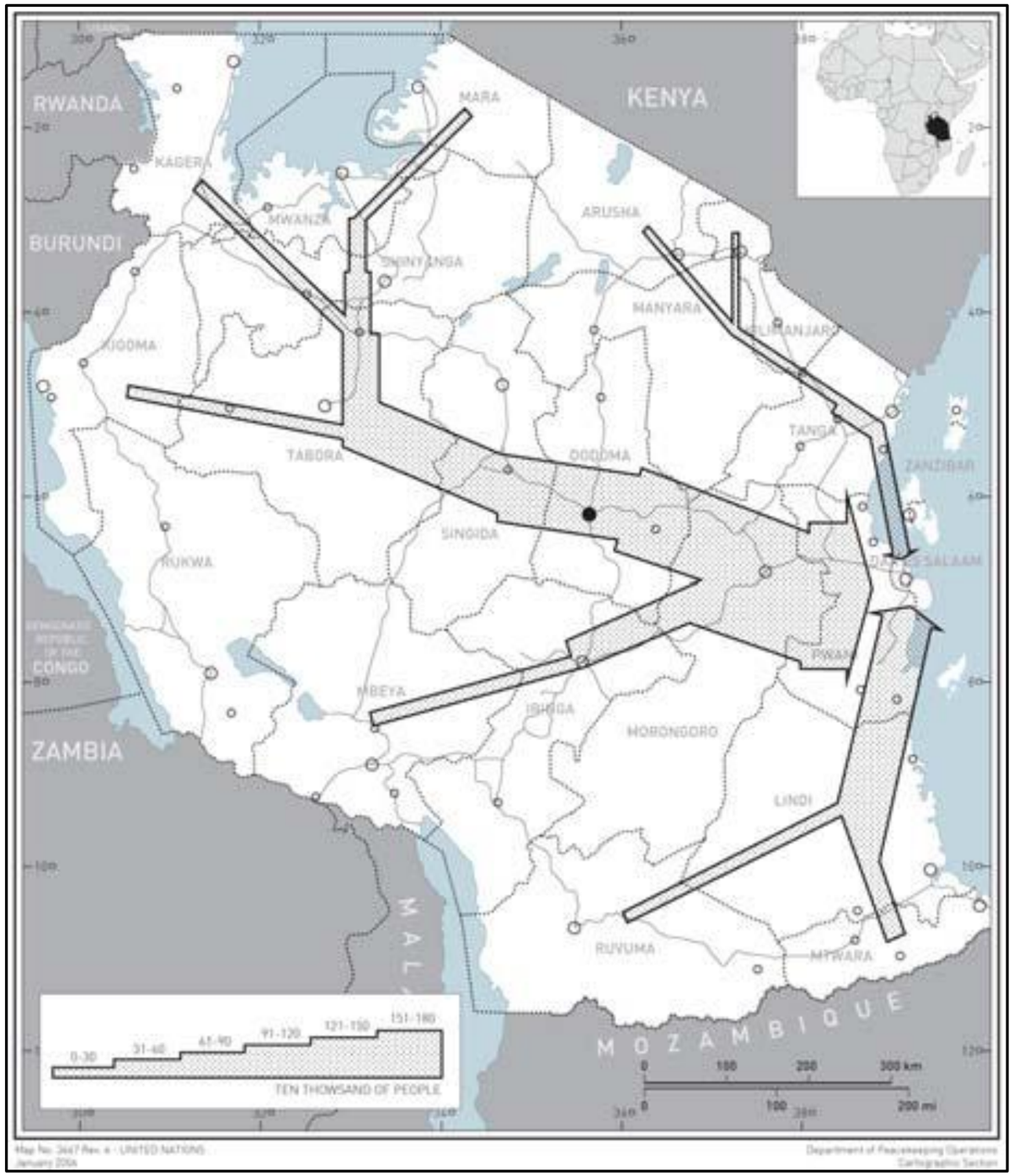


Figure 5.2: Population migration trends in Tanzania

5.1.4 Life Expectancy

Life expectancy in the city of Dar es Salaam has risen from 50 years in 1988 to 51 in 2002 and 61 years in 2012. By international standard these figures are rather low. This rise of life expectancy over a decade is attributed to increased economic growth and reduced abject income poverty.

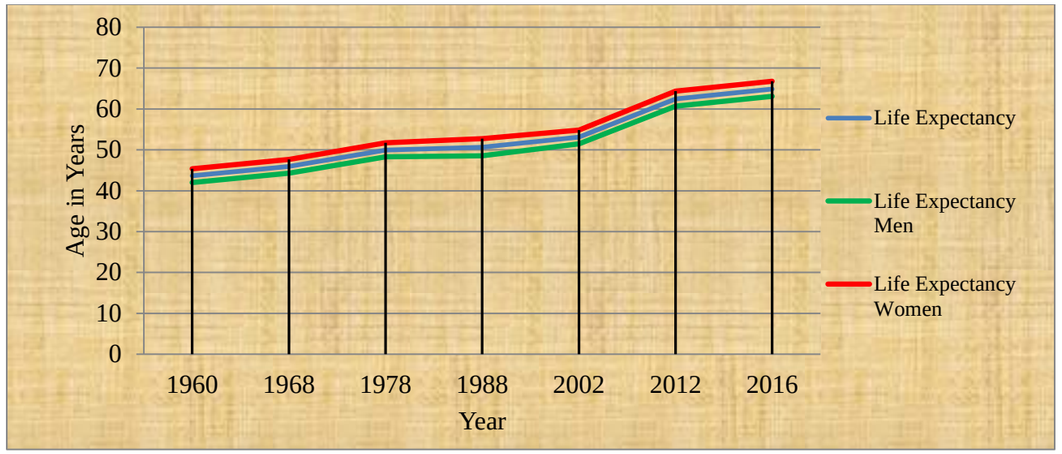


Figure 5.3: Life Expectancy at Birth – Tanzania

5.1.5 Dependency Ratio

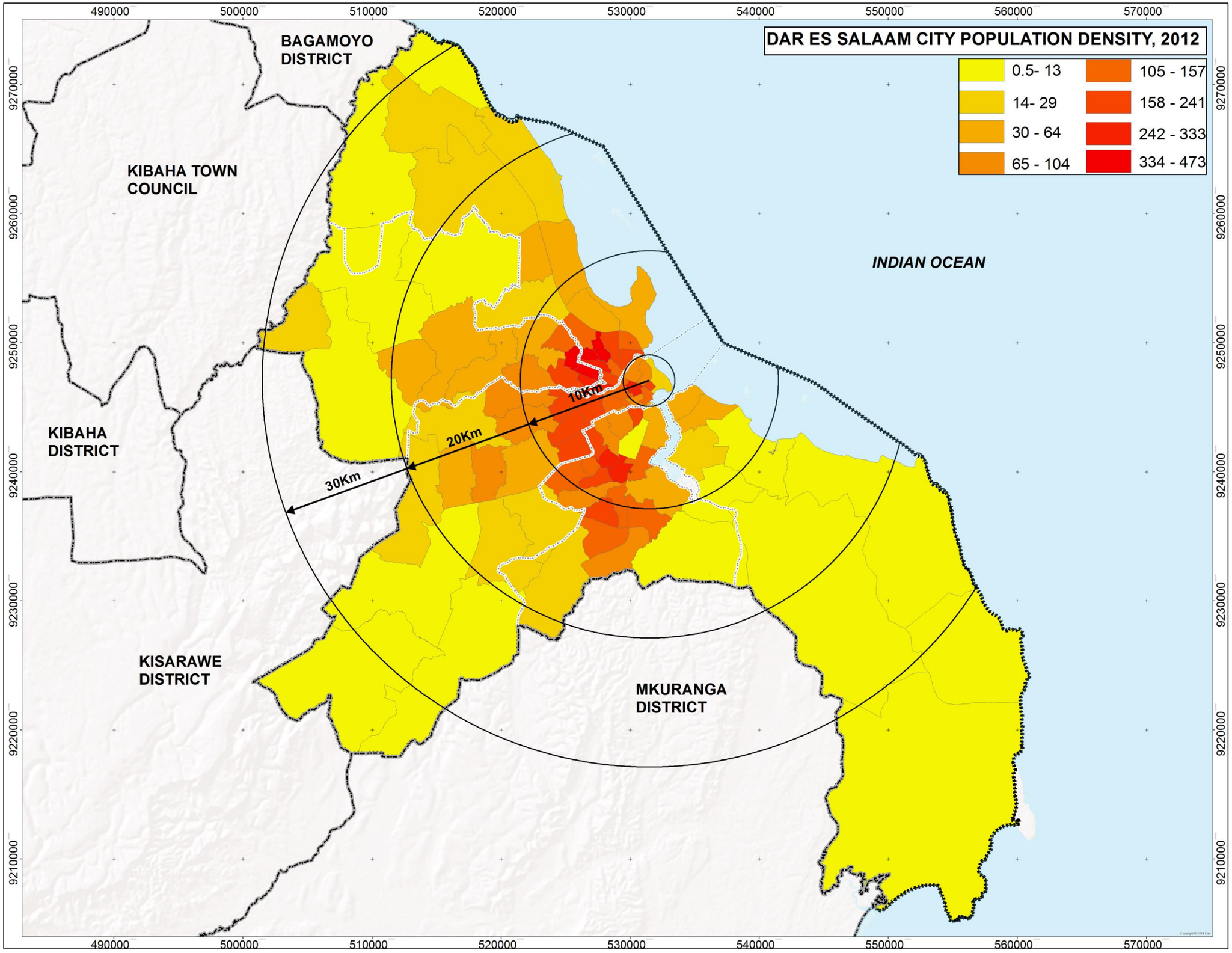
Of the 4,364,541 people who were enumerated during the census in 2012, 12.1 per cent were children aged 0-4 years, 31.6 per cent were children aged 0-14 years, and 37.8 per cent were the youth aged between 0-17 years. On the other hand, 66.3 per cent were persons aged between 15-65 years while elders (65+) constituted 2.1 per cent of the total population (4,364,541). This implies that in Dar es Salaam Region there are few elderly persons compared to other regions like Mtwara and Kilimanjaro where the percentage share of elders to their total population was 6.7 and 7.0 respectively. Moreover, Dar es Salaam seems to have the lowest dependency ratio of 50.8 compared to other regions like Simiyu (119.7), which is a newly created region. This implies that most people in Dar es Salaam are in the working age group with few dependants. This might be attributed to the fact that most of the residents in Dar es Salaam are tenants who can afford 1- 2 rooms to live in - and thus, they cannot accommodate their elderly parents and grandparents into those small spaces. Considering that the population of Dar es Salaam is mainly increasing due to a migration from the rural areas, this implies that most of the immigrants are in the young working age group, leaving their old folks in the countryside.

The 2012 PHC shows regional variations in age-dependency ratios. Figure 2.2 show that the highest age dependency ratio was recorded in Simiyu (119.7); Mara (113.2), Geita and Rukwa (112.9 each) and the lowest was in Dar es Salaam (50. 8).

Table 5.3: Dependency Ratio- Key findings by region, Tanzania 2012

Region	Population	Population 0-4 Years (% of total)	Population 0-14 Years (% of total)	Population 0-17 Years (% of total)	Population 15 – 64 Years (% of total)	Population 65+ years (% of total)	Age Dependency Ratio	Women of Reproductive Age (% of total female population)	Population living in Urban Areas (% of total)
Tanzania	**44,928,923**	**16.2**	**43.9**	**50.1**	**52.2**	**3.9**	**91.5**	**47.3**	**29.6**
Tanzania Mainland	**43,625,354**	**16.2**	**43.9**	**50.1**	**52.2**	**3.9**	**91.7**	**47.2**	**29.1**
Dodoma	2,083,588	16.0	45.5	51.3	49.6	4.9	101.5	44.1	15.4
Arusha	1,694,310	14.8	41.7	48.4	55.1	3.2	81.5	51.0	33.0
Kilimanjaro	1,640,087	11.7	37.8	44.9	55.1	7.0	81.4	46.4	24.2
Tanga	2,045,205	14.9	43.3	49.3	51.8	4.8	93.0	46.9	21.6
Morogoro	2,218,492	14.6	41.3	47.2	54.4	4.3	83.8	48.0	28.7
Pwani	1,098,668	14.0	39.9	45.6	53.9	6.2	85.6	47.5	32.8
Dar es Salaam	4,364,541	12.1	31.6	37.8	66.3	2.1	50.8	61.9	100.0
Lindi	864,652	13.0	39.3	44.5	54.4	6.3	84.0	47.9	18.7
Mtwara	1,270,854	13.3	38.5	43.7	54.8	6.7	82.4	47.2	22.9
Ruvuma	1,376,891	14.9	43.0	48.9	53.0	4.0	88.7	46.8	24.6
Iringa	941,238	13.7	42.0	48.4	53.6	4.4	86.5	47.1	27.2
Mbeya	2,707,410	15.6	43.0	49.5	53.0	4.0	88.8	48.5	33.2
Singida	1,370,637	17.4	47.0	52.8	48.3	4.7	107.0	43.5	12.5
Tabora	2,291,623	18.6	48.4	54.6	48.1	3.5	107.9	44.0	12.5
Rukwa	1,004,539	19.7	50.5	56.4	47.0	2.6	112.9	43.2	23.6
Kigoma	2,127,930	19.3	48.8	55.1	47.5	3.7	110.4	43.1	17.2
Shinyanga	1,534,808	18.4	47.6	54.0	49.1	3.3	103.8	44.9	16.6
Kagera	2,458,023	18.3	47.7	54.0	48.8	3.5	105.0	43.6	9.2
Mwanza	2,772,509	18.0	46.7	53.1	50.3	3.0	98.9	46.3	33.3
Mara	1,743,830	19.0	49.6	55.6	46.9	3.5	113.2	42.9	17.4
Manyara	1,425,131	17.6	47.1	53.2	49.1	3.8	103.6	44.0	13.8
Njombe	702,097	13.3	41.9	48.3	53.5	4.6	87.0	47.2	23.6
Katavi	564,604	19.8	49.5	55.5	47.9	2.6	108.7	43.6	27.8
Simiyu	1,584,157	19.9	51.3	57.8	45.5	3.2	119.7	42.3	7.0
Geita	1,739,530	19.6	50.5	57.0	47.0	2.5	112.9	43.7	16.0

Source: Tanzania Population and Housing Census, 2012



Map 5.1: Dar es Salaam City Population Density

5.2 Planning Area Demographic characteristics

5.2.1 Population age-sex structure

According to the 2012 PHC the sex ratio (the male/female ratio) for persons living in Dar es Salaam city were 95; meaning that for every 100 females there were 95 males (Dar es Salaam Regional Social Economic Profile, 2014 and PHC 2012). Table 2.3 shows the age and sex ratio both by District and regional wise based on the 2012 population census.

Table 5.4: Dar as Salaam Population household size and Sex Ratio

Municipality	Male	Female	Total	Sex Ratio
Kinondoni MC	565,575	598,602	1,164,177	94
Ilala MC	746,240	782,248	1,528,489	95
Temeke MC	736,134	773,995	1,510,129	95
Ubungo MC	512,350	546,248	1,058,597	94
Kigamboni MC	101,680	102,349	204,029	99
Total	2,661,979	2,803,442	5,465,420	95

Source: National Bureau of Statistics (NBS), Divisional population projection for year 2016 based on the 2012 population and housing census

The age composition of the population of Dar es Salaam region demonstrates a clear predominance of young persons and children. Figure 5.3 also shows a high proportion of the working age population, consistent with Dar es Salaam's role as an attractive location for young working age people.

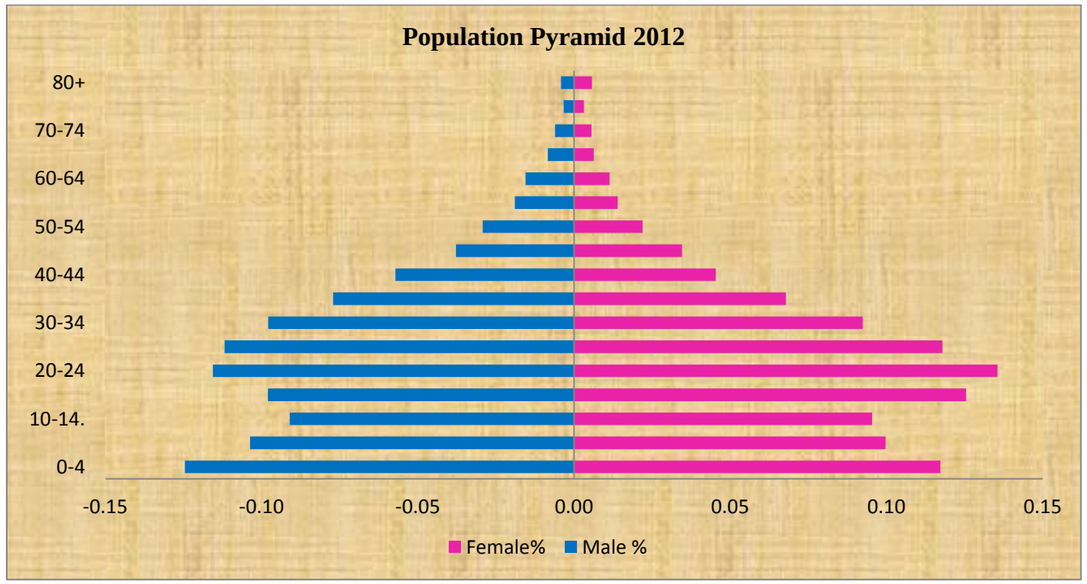


Figure 5.4: Population Pyramid (Five-Year Age Group by Sex), 2012
Source: 2012 Population and Housing Census (PHC) result

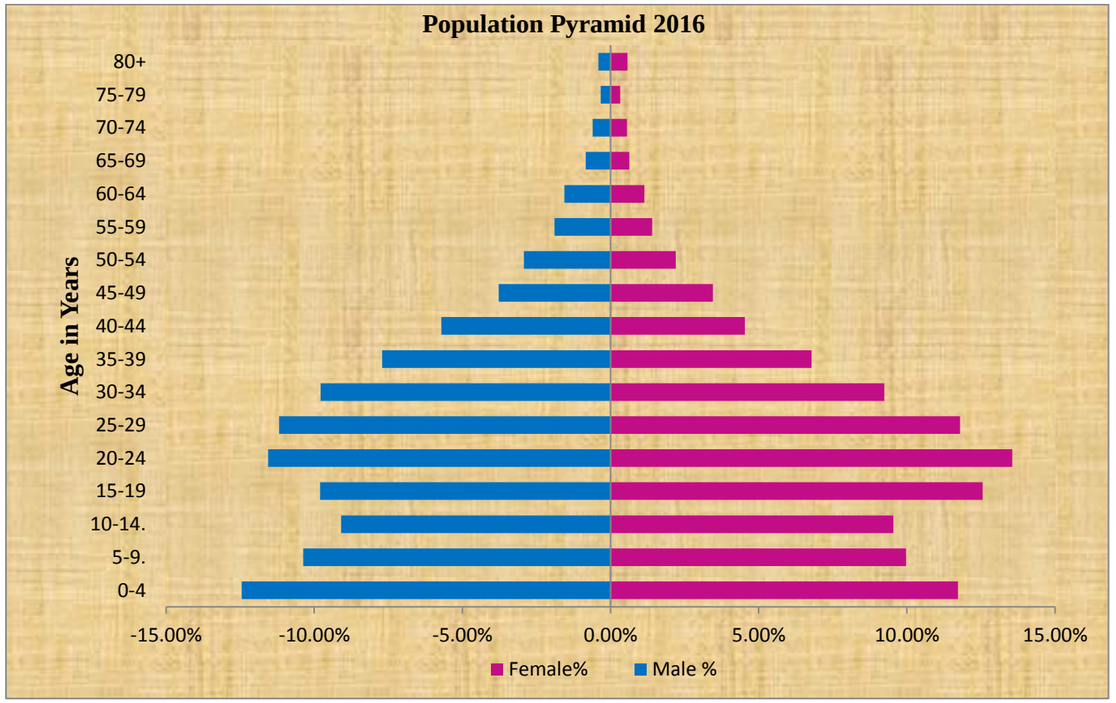


Figure 5.5: Population Pyramid (Five-Year Age Groups by Sex), 2016
Source: 2012 Population and Housing Census (PHC) result

5.2.2 Household size and composition

The average household size in Tanzania has remained almost constant between 2002 and 2012 Censuses, declining slightly from 4.9 persons per household in 2002 to 4.8 in 2012. In the case of Dar es Salaam, the average household size is 4.0, significantly lower than the national average.

5.3 Challenges and Opportunities

5.3.1 Challenges

i. The high rate of population growth exceeds the capacity of the Dar es Salaam local government authorities to deliver planned and serviced land or provide adequate social services and infrastructure to match the increase in population, leading to vast growth of unplanned settlement that lack in most of the basic services and infrastructure

ii. Most of the young population migrating to Dar es salaam fail to obtain jobs in the formal sector leading to rapid growth of low paying informal sector activities

iii. Temeke Municipality has the largest population density of averagely 9199 persons per square kilometre mostly informal. This implies that the cost of regularisation and redevelopment will be higher than in other municipalities.

5.3.2 Opportunities

i. The government's central administration of Tanzania is under relocation to Dodoma Headquarters from Dar es Salaam. This is expected to ease both the resident and catchment population of the city;
ii. Kigamboni Municipality is sparsely populated at an average of 359 persons per square kilometre; this is an opportunity to channel future development growth to the vast amount of under or un-developed land of about 289.433 square kilometres in the area; and
iii. The high population growth rate translates into a supply of a large pool of labour base that can be harnessed to propel industrial development in the city.

6. ECONOMY, EMPLOYMENT AND INCOMES

6.1 Overview of the National Economy

The Growth Domestic Product (GDP) is one of the most common measures of economic growth. The GDP per capita is obtained by dividing the country's gross domestic product, adjusted by inflation, by the total population. According to the World Bank, Tanzania has sustained relatively high economic growth over the last decade, averaging 6–7 per cent a year (WB 2007).8 According to the National Bureau of Statistics (NBS 2016),9 the national annual GDP growth for 2016 was 7.0 per cent, the same rate as in 2015. In 2016, agriculture, forestry and fishing activities grew by 2.1 per cent compared to 2.3 per cent recorded in 2015; industrial and construction activities grew by 10.7 per cent in 2016 compared to 11.3 per cent in 2015 and services grew by 7.6 per cent compared to 6.9 per cent in 2015. In the year ending June 2016, inflation was 5.5 per cent compared with the medium-term target of 5.0 percept and 6.1 per cent recorded in the corresponding period in 2015 (BOT 2016)10. The current account deficit was about US$1.9 billion (equivalent to 4.2 per cent of GDP) in June 2016 (WB 2017). The total GDP at 2007 prices was TZS 47,174 billion in 2016 compared to Tanzania Shillings (TZS) 44,101 billion in 2015. Agriculture, Forestry and fishing accounted for 31 per cent of the GDP in 2016, Industry and Construction, 27 per cent and Services, 42 per cent (NBS 2016).

Manufacturing is an important part of Tanzania's economy, and has been growing at a rate of 7-8 per cent in the period 2005-2007 (TIC), year. According to the Bank of Tanzania (BOT 2016) manufacturing accounted for 5.2 per cent of the national GDP in 2015, down from 5.6 per cent in 2014. Manufactured goods however, accounted for 27.3 per cent of all exports in the Financial Year 2015/2016.

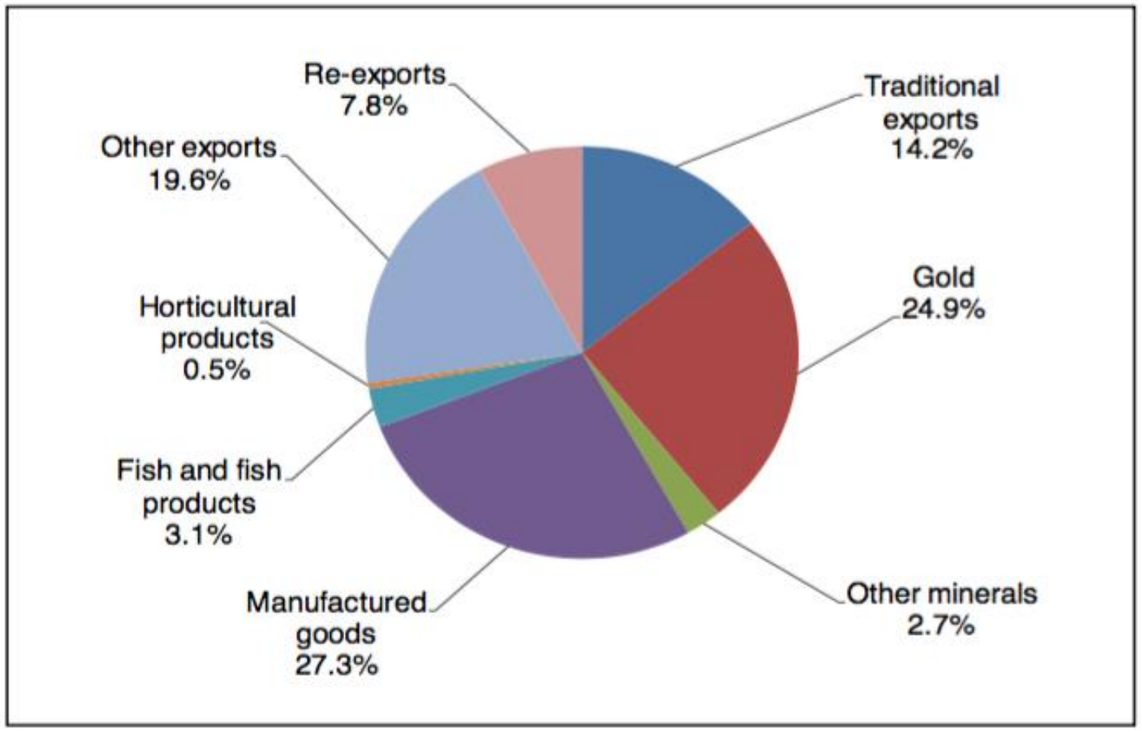


Figure 6.1: Tanzania Composition of Export Commodities 2015/16
Source: BOT 2016

Economic growth is one of the most effective ways to reduce poverty. Although Tanzania's poverty rate fell from 60 per cent in 2007 to an estimated 47 per cent in 2016, based on the US Dollars 1.90 per day global poverty line, about 12 million Tanzanians, equivalent to 21.8 per cent of the estimated population of 55 million in 2016, still live in extreme poverty on earnings of less than US Dollars 0.60 per day (ibid.). Tanzania is implementing the Second Five Year Development Plan, 2016/17 to 2020/21 (FYDP II), which picks up on interventions which fell short under MKUKUTA II and FYDP I. Based on a credible, realistic financing plan, the country's fiscal and debt sustainability will be maintained. The private sector can also be leveraged, not only as a source of financing for FYDP II through public private partnerships (PPPs), but also as the actual driver of industrialization (WB 2017).

[8] Source: WB 2007 World Bank Group. Tanzania Overview. Available on line at http://www.worldbank.org/en/country/tanzania/overview

[9] Source: NBS 2016 National Bureau of Statistics. National Accounts of Tanzania Mainland 2007-2016. Available on line at http://www.nbs.go.tz/nbs/takwimu/na/National_Accounts_Statistics_of_Tanzania percent20_Mainland_2016.pdf

[10] Source; BOT 2016 Bank of Tanzania Annual Report 2015/2016. Available on line at https://www.bot.go.tz/Publications/EconomicAndOperationsAnnualReports/BOT percent20ANNUAL percent20REPORT percent202015-16.pdf. Last Accessed on 9 April 2018.

6.2 The Dar es Salaam City Regional GDP

According to the National Accounts of Tanzania Mainland Report 2007-2016 (NBS 2016), the Growth Domestic Product at current prices for Dar es Salaam region amounted to TZS 15,631,679 million in 2015. It was projected to increase by about 13.0 per cent to TZS 17,640,153 million in 2016 and to account for 17.02 per cent of the national GDP for 2016. The GDP for Dar es Salaam increased nearly fourfold from TZS 4,174,004 million in 2007 to TZS 15,631,679 million in 2015 and its share of the national GDP also increased from 15.59 per cent to 17.20 per cent over the same period as shown in Table 6.1. As a result of the growth of the regional economy, the annual GDP Per Capita for Dar es Salaam doubled from TZS 1,448,528 to TZS 3,025,543 over the same period (See Table 6.2).

Table 6.1: Dar es Salaam GDP and its share of the national GDP at Current Market Prices, 2007 – 2016 TZS Million

Year	2007	2010	2011	2012	2013	2014	2015	2016 Projected
TZS	4,174,004	7,368,793	8,807,745	10,402,309	12,259,974	13,711,568	15,631,679	17,640,153
percent	15.59	16.81	16.69	16.93	17.28	17.20	17.20	17.20

Source: Tanzania National Bureau of Statistics, 2015

Table 6-2 shows that the Regional per Capita Gross Domestic Product at current prices for Dar es Salaam increased from TZS 1, 448,528 in 2007 to TZS 3,025,543 in 2015 considerably higher than the national average of TZS 1,918,928. In 2016, per capita GDP for Dar es Salaam is projected to reach 3,227,593, when it will be higher than the projected national per capita GDP of TZS 2,131,299.

Table 6.2; Dar es Salaam Regional and National per Capita GDP at Current Market Prices in TZS, 2007 – 2016

Year	2007	2010	2011	2012	2013	2014	2015	2016 Projected
Dar es Salaam	1,448,528	2,363,207	2,756,812	2,383,368	2,655,398	2,797,694	3,025,543	3,227,593
Tanzania	699,127	1,045,848	1,222,224	1,408,223	1,582,797	1,724,416	1,918,928	2,131,299

Source: Tanzania National Bureau of Statistics, 2015

6.3 Dar es Salaam Main Economic Activities

Dar es Salaam is Tanzania's main engine of economic growth and serves as an industrial, fishing, and commercial centre (including mining-related trade). The city is endowed with a major harbour and it attracts commerce and transportation activities from both the formal and informal sectors. Service sector investment and civil service employment decreased after structural adjustment policies which were adopted in 1985. Increasing rates of unemployment and underemployment played a role in the growth of the informal sector and informal settlements. Urban agriculture is also carried out within the city, providing a means of livelihood for some households. A large percentage of urban farming within Dar es Salaam includes livestock keeping, the cultivation of fruits, vegetables, cassava, legumes, sweet potatoes, cashew nuts and coconuts. Until 2015 when the government decided to accelerate its decision to move to the new capital in Dodoma, Dar es Salaam was also the main administrative centre of the nation.

6.4 Dar es Salaam Economic Analysis by Sector

6.4.1 Industrial Manufacturing

Dar es Salaam is a major industrial centre in Tanzania comprising of small, medium and large-scale enterprises. Dar es Salaam has the largest concentration of manufacturing industries in Tanzania mainly comprising light manufacturing industries that produce a variety of goods both for domestic and export markets. The city accounts for about 40 per cent of the total industrial manufacturing units in the country and contributes about 45 per cent of Tanzania's gross industrial manufacturing output. As shown in Table 6.4, Dar es Salaam accounts for 43.1 per cent of the total national Manufacturing Value Added (MVA) of TZS 1,962,081 million for large establishments and for 27.4 per cent of the total MVA for small establishments

The key manufacturing activities in Dar es Salaam include, light manufacturing, textiles, beverages publishing and glass. These are mainly located along the major transport routes, including Nyerere, Morogoro, Nelson Mandela and Bagamoyo Roads. Table 6.3 indicates that there are 29,060 industrial establishments operating in Dar es Salaam. Of these industrial establishments, 12,733 units or 43.8 per cent were registered while 16,327 units or 56.2 per cent were unregistered.

Table 6.3: Dar es Salaam - Number of Manufacturing units by Type of Activity

Unit	Industrial Activity	Number of Establishments
1.	Agriculture, forestry and fishing	6
2.	Mining and quarrying	26
3.	Manufacturing	8,759
4.	Electricity, gas, steam and air conditioning supply	12
5.	Water supply; sewerage, waste management and remediation activities	100
6.	Construction	136
7.	Wholesale and retail trade; repair of motor vehicles and motorcycles	13,744
8.	Transportation and storage	456
9.	Accommodation and food service activities	1,499
10.	Information and communication	128
11.	Financial and insurance activities	705
12.	Real estate activities	36
13.	Professional, scientific and technical activities	399
14.	Administrative and support service activities	312
15.	Public administration and defense; compulsory social security	128

16.	Education	895
17.	Human health and social work activities	362
18.	Arts, entertainment and recreation	144
19.	Other service activities	1,210
20.	Activities of extraterritorial organizations and bodies	3
Total Number of establishments		**29,060**

Source: National Bureau of Statistics (NBS), 2016 and the Ministry of Industry, Trade and Investment (MITI), 2016. The 2013 Census of Industrial Production: Analytical Report. Dar es Salaam, Tanzania.

Table 6.4: Industrial Manufacturing Value Added for Large and Small Establishments, Dar es Salaam, and CIP-2013

Value in TZS (Million)								
Large Establishments			**Small Establishments**			**Total**		
Gross Output	Intermediate Consumption	MVA	Gross Output	Intermediate Consumption	MVA	Gross Output	Intermediate Consumption	MVA
5449573	3487491	1962081	172085	74662	97422	5621657	3562154	2059503

Source: National Bureau of Statistics (NBS), 2016 and the Ministry of Industry, Trade and Investment (MITI), 2016. The 2013 Census of Industrial Production: Analytical Report. Dar es Salaam, Tanzania.

6.4.2 Commerce and Trade

As shown in Figure 6.2, commerce and trade services represent a very broad sector in Dar es Salaam, which is common to most large cities. Commerce and trade activities service other sectors and development markets. Commerce is a key employment sector and it is directly related to the growth of the city's other main sectors such as port activities, retail and wholesale trade and manufacturing. The key commercial activities include: Transportation and storage; wholesale and retail; banking and finance; accountancy; legal services; utility services provision; general consultancy; computer and IT services; real estate and development; and headquarters for regional businesses (e.g. natural resource extraction businesses).

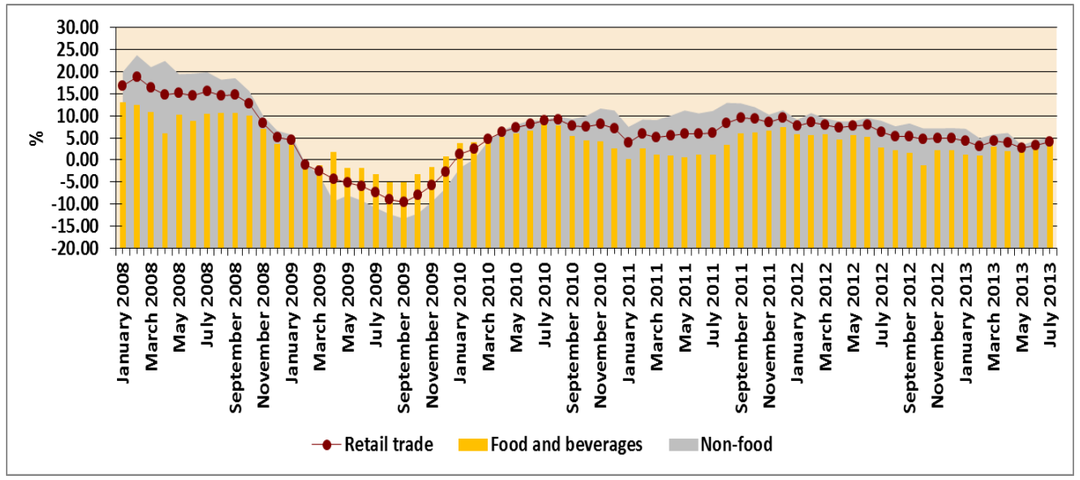


Figure 6.2; Commerce and trade establishments in Dar es Salaam, January 2008 – July 2013

6.3.1. Tourism

Dar es Salaam city has diverse tourist attractions including beautiful mangrove forests, the Pugu Hills, a wide range of hotels ranging from five stars to low class accommodation facilities; attractive unspoiled islands of Bongoyo, Mbudya, Fundu Yasin and Pangavini; beaches in Northern side Kunduchi and Southern beaches of Kigamboni; the Waterfront; museums and architecture; historical buildings; arts and crafts; and people and their diverse cultures. The Dar es Salaam Zoo in Kigamboni Peninsula provides an opportunity for city residents to view animals while within the city. Moreover, Mikumi and Saadani national parks in Morogoro and the latter in Tanga Region are the nearest national parks where some city residents and foreigners prefer to go. The distance from Dar es Salaam to Mikumi National Park is about 250 kilometres while that to Saadani National Park is about 300 kilometres. Dar es Salaam city is about 1 hour by boat or 45 minutes by air to the beautiful and historical town of Zanzibar Island. Bagamoyo Town in the Coast Region (45 kilometres from Dar es Salaam City Centre) is another area where people go for tours from Dar es Salaam. Bagamoyo is rich in history. It has the first church built by that European missionaries in Tanzania in the 18th Century and was also used as a port for shipping slaves from Tanganyika to Europe and Americas, through Zanzibar. Dar es Salaam City too is well connected with reliable transport, by road and air, with the best national parks and tourist attractions of the Northern Tourist Circuit. The Southern Tourist Circuit is connected to the city by the Tanzania to Zambia road, railway and air transport. The city is thus a port of entry for many tourists from outside Tanzania who visit Tanzania's famous National parks

6.4.3 Fishing

Fishing is one of main economic activities in Dar es Salaam and is a source of revenue for all districts in the Region. The Indian Ocean is the mainstay of fishing industry in Dar es Salaam. Kivukoni Fish Market near Dar es Salaam harbour is the biggest fish market and the place where majority of petty fish traders from all districts in the region earn their livelihood through buying and reselling fish at a profit. The most common fish sold at the market are octopus, squid and kingfish.

6.4.4 Agriculture and Animal Husbandry

i. Urban Farming

According to the Town and Country Planning (Urban Farming) Regulations 1992, published as Government Notice Published on 5/2/93 "urban farming" means the carrying out of plant and animal husbandry activities within statutory township boundaries. In Dar es Salaam, 139,300 hectares or about 26.9 per cent of the Region's total land area of 139,300 hectares is suitable for agriculture (URT 2014) of which 15,244 hectares or 40.7 per cent were under cultivation.

Over the years, government policies and attitudes toward urban agriculture have changed. Financial constraints during the 1970s and 1980s, an era marked by declining minimum wages and food price inflation (Binns and Lynch 1998), and Julius Nyerere's call for self-sufficiency raised the profile of urban agriculture in the eyes of policy makers, although translating this appreciation into policy has been more difficult due to:

- The national and local institutional environment generally biased against the practice of urban agriculture and a consequent lack of support for the specific needs of urban farming; and,
- Public health concerns over the relative safety of urban agricultural products, particularly because irrigation is often intermittent and waters sources are often dependent on polluted sources.

ii. Animal Husbandry

Livestock is an important component of urban agriculture in Dar es Salaam. In 2012/13 there were 44,809 cattle, 22,941 goats and 4,228 sheep kept in Dar es Salaam. Other livestock that are kept include102 donkeys and 25,816 pigs. Poultry keeping is an important part of the livestock industry. There were 430,163 indigenous chicken and 6,134,471 broilers kept in the city in 2012/2013 (URT 2014). The turnover of day-old-chicks (DOCs) from the large-scale incubators in Dar es Salaam amounts to 4.7 million per annum. According to the Dar es Salaam Regional Agriculture and Livestock Development Officer (RALDO) Dar es Salaam livestock keepers produce about 95,000 litres of dairy milk, 6,000 trays of eggs and 11,000 kilogram of poultry meat per day.

Although urban agriculture is recognized as serving an important role in providing food and generating income in Dar es Salaam, the practice is largely unregulated and unplanned. Key problems include:

i. A general lack of awareness of the role urban agriculture plays in the dietary, economic, and social life of urban residents and consequent marginalization of agriculture by government officials and city planners;
ii. Insecure tenure arrangements and fear of expropriation of farmers;
iii. Rapid urbanization and competition for space, particularly in the peri-urban areas, coupled with a lack of protected lands reserved for agriculture
iv. The local government does not generally regulate urban farming and allocates no land specifically for agricultural uses. Kinondoni municipal council has designated only fifteen hectares to agriculture, primarily for demonstration plots.

The Annual Agricultural Sample Survey, 2014/15 farming season revealed that 21,855 persons were involved directly into agriculture in Dar es Salaam city, of whom 17,598 (80.52 percent) were engaged in crop farming, 1009 (4.62 percent) in livestock keeping and 3,248 (14.86) in both crop farming and livestock keeping. The survey identified 2, 854 farm units in the city, of which 7079 (32.39 percent) were registered and 14775 (67.61 percent) were not registered. The farms occupied a total of 89,742 acres, equivalent to about 36,317 hectares acres of land in the city. Farmers in the city cultivate both seasonal and perennial crops. The production statistics are shown in Table 6.5 for seasonal crops and Table 6.6 for perennial crops.

Table 6.5: Short and Long rainy season's crop farming in Dar es Salaam; 2014/15

Crops	Short Rainy Season							Long Rainy Season						
	No. of Operators	Planted Area (ha)	Area Harvested (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Quantity Sold (tonnes)	Average Price (TZS/Kg)	No. of Operators	Planted Area (ha)	Area Harvested (ha)	Quantity Harvested (tonnes)	Yield (tons/ha)	Quantity Sold (tonnes)	Average Price (TZS/Kg)
Maize	1069	532	322	293	0.91	0	0	1,599	901	577	380	0.7	0	0
Paddy	523	372	171	406	2.37	75	700	5,575	3,251	2,843	3,428	1.2	170	738
Sweet Potatoes	3,990	3,891	3,885	12,001	3.09	10,709	584	1,786	707	707	879	1.2	510	653
Cowpeas	539	115	115	29	0.25	28	1,400	Unknown	Un-known	Unknown	Unknown	Un-known	Un-known	Unknown
Pigeon peas	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	503	102	102	50	0.5	1	1,200
Groundnuts	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	189	194	194	190	1.0	179	2,000
Okra	635	274	219	190	0.87	162	675	1,150	695	695	2,458	3.5	1,734	468
Watermelon	652	390	366	1,210	3.31	5,836	438	600	373	373	3,333	8.9	3,186	293
Tomatoes	704	120	112	471	4.21	441	1,283	0	0	0	0	0.0	0	0
Amaranths	503	203	203	70	0.34	70	700	Unknown	Un-known	Unknown	Unknown	Un-known	Un-known	Unknown
Total	8615	5897	5393	14670	15.35	17321	5780	11,402	6223	5491	10718	17	5780	5352

Source: Compiled from the United Republic Of Tanzania 2014/15 Annual Agricultural Sample Survey Report, 2016

Table 6.6: Perennial crop farming in Dar es Salaam; 2014/15

Crops	Crops						
	No. of Farmers	Planted Area (ha)	Harvested Area (ha)	Quantity Harvested (ha)	Yield (tonnes/ha)	Quantity Sold (tonne)	Average Price (TZS/Kg)
Cashewnuts	198	600	593	122	0	106	1458
Banana	827	634	593	1,311	2	0	0
Mango	342	320	312	411	1	367	946
Cassava	3,800	1,343	1,268	1,783	1	1,056	1,224
Total	5167	2897	2766	3627	4	1529	3628

Source: Compiled from the United Republic Of Tanzania 2014/15 Annual Agricultural Sample Survey Report, 2016

Analysis of the socio-economic context indicates that industries, construction, commerce and trade, logistics and port related activities, tourism, recreation, fishing and services have the highest potential for the future economic development of the city

6.5 Employment and incomes

6.5.1 Employment Status

According to the Formal Sector Employment and Earnings Survey Report 2015, Dar es Salaam Region had 715,000 persons employed for a wage in 2015, constituting the largest proportion of the 2,334,969 employees in Tanzania Mainland. Consequently, Dar es Salaam city had the largest annual wage bill of TZS 7,387 billion in 2015, having increased from TZS 5,525 billion recorded in 2014. Morogoro and Arusha regions had second and third largest annual wage bills in 2015 with TZS 1,771 and TZS 1,168 billion respectively.

Unemployment rates are high especially among the youth, most of who end up taking employment in the informal sector. Data from household surveys, which is presented in Figure 6.3 shows that 13 per cent the workforce in Dar es Salaam was in wage employment in 2016 while a majority of 57 per cent engaged in self- employment activities.

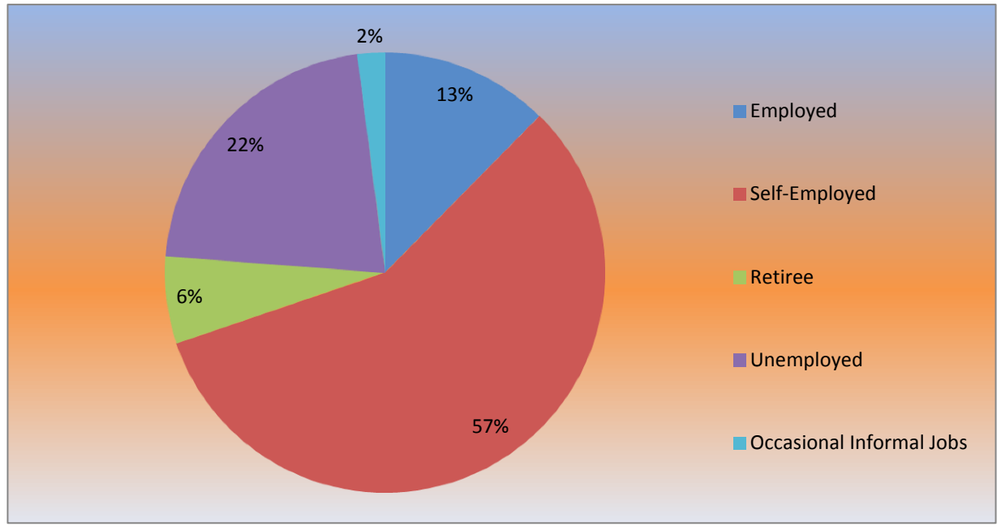


Figure 6.3: Dar es Salaam city employment status, 2016

However, most of the wage earning employees hold jobs in the private formal sectors, while the government employs 20 per cent of the resident population in the city. Informal sectors employ typically 14 per cent of the city residents.

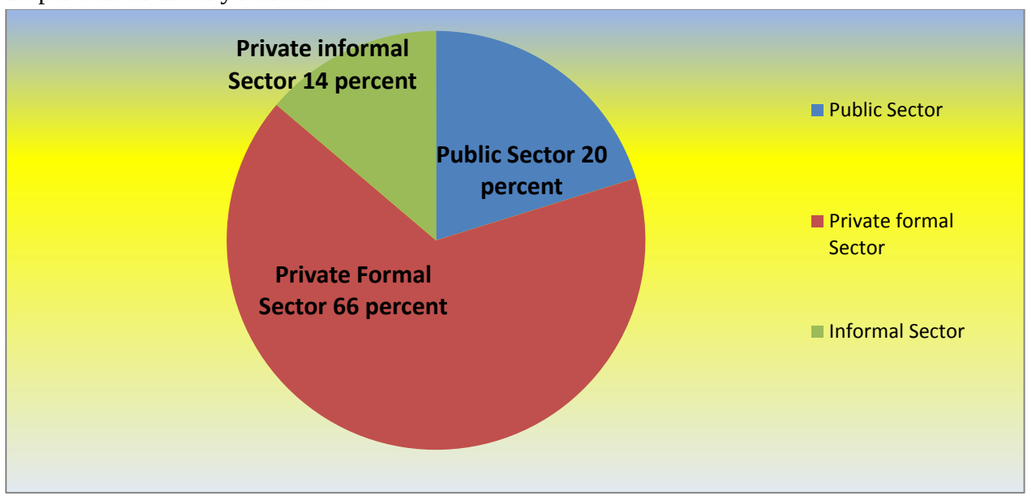


Figure 6.4: Employment Type in Dar es Salaam
Source: Household Surveys, 2016

6.5.1 Principal Employing Sectors

The main employment sectors in Dar es Salaam City include social services, processing industries, trade and commerce, transportation and communication, construction, agriculture and livestock keeping,

fisheries, tourism and hospitality and mining. Social services employ the most, accounting for 34 per cent of employment as indicated in the Figure 6.5.

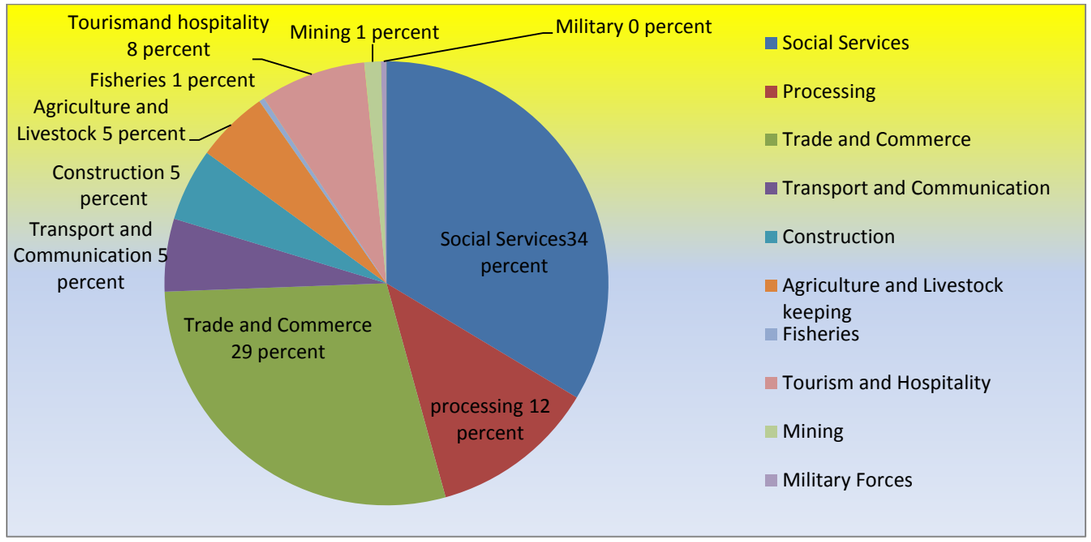


Figure 6.5: Principle Employing Sectors in Dar es Salaam City
Source: House hold Surveys, 2016

6.5.2 Distance to Work

One per cent of the Dar es Salaam City population work in their neighbourhoods within a distance of less than 500 metres. Most of them use non-motorized means of transport by walking or cycling to work. Some do use motorbikes and motor tricycle-bikes (Bajaj). Figure 6.6 indicates that a large proportion of workers (62 per cent) live at a distance of workplaces located 1-2 kilometres from their work places. They mainly travel to work using mini-buses (Dala-Dala). About 10 per cent travel more than 10 kilometres to work.

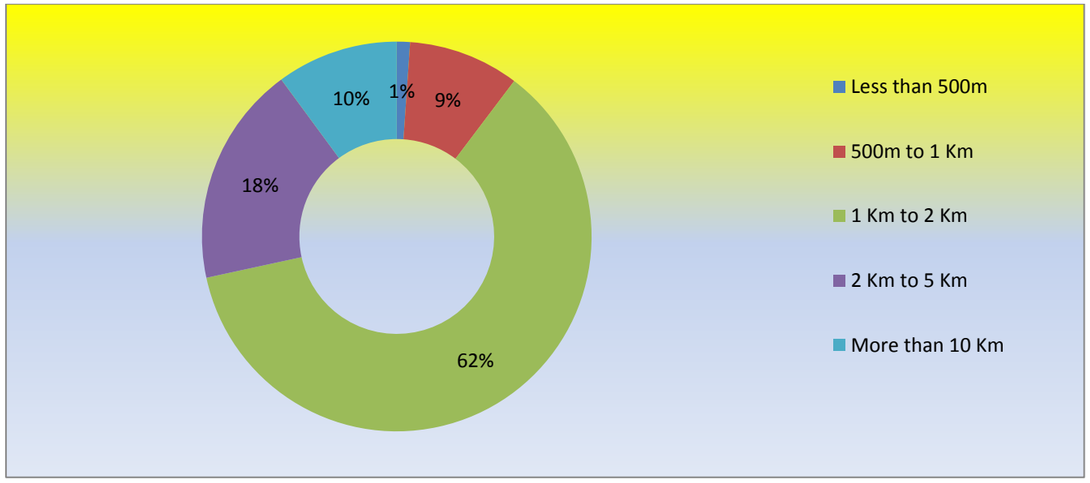


Figure 6.6: Distance to Work
Source: House hold Surveys, 2016

6.5.3 Unemployment

The level of unemployment is measured by the unemployment rate, which is defined as the percentage of persons in the labour force who are unemployed. According to the Integrated Labour Force Survey Tanzania, 2014, the Dar es Salaam city has the highest unemployment rate of 21.5 per cent in Tanzania mainland (See Table 6.7). These figures are consistent with the findings of the household questionnaire surveys conducted in 2016, which revealed an unemployment rate of 22 per cent in Dar es Salaam.

Table 6.7: Comparative levels of unemployment by sex and location in Tanzania

Sex	Dar es Salaam	Other Urban	All Urban	Rural	National
Male	11.3	7.2	8.5	8.0	8.2
Female	32.2	12.5	18.2	8.9	12.3
Both Sexes	21.5	9.9	13.4	8.4	10.3

Source: Integrated Labour Force Survey Tanzania, 2014

Gender analysis of unemployment in Dar es Salaam (See Table 6.8) indicates that females constitute a disproportionately higher rate of unemployment of 73.4 per cent compared to males who constitute 26 per cent of the unemployed. Youth aged 15-24 constitute a higher proportion of unemployment of 41.1 per cent followed by those aged 25-35 years who account for 37.8 per cent of the unemployed. Persons aged 35-64 age group form 20.3 per cent of the unemployed in the city.

Table 6.8: Unemployment Rates by Gender and Age in Dar es Salaam, 2014

Sex	Age Group and (percent unemployed)				Total
	15-24	25-35	36-64	65+	
Male	75,394 (14.2)	37,557 (7.1)	25,004 (4.7)	2,897 (0.5)	140,852 (26.6)
Female	142,063 (26.8)	162,411 (30.7)	82,501 (15.6)	1,593 (0.3)	388,568 (73.4)
Total	**217,457** (41.1)	**199,968** (37.8)	**107,505** (20.3)	**4,490** (0.8)	**529,420** (100)

Source: Integrated Labour Force Survey Tanzania, 2014

6.5.4 Household Incomes

Approximately 38.8 per cent of households interviewed in Dar es Salaam in 2016 stated a monthly income ranging between TZS 200, 001/= and 500, 000/= as portrayed in Figure 6.7.

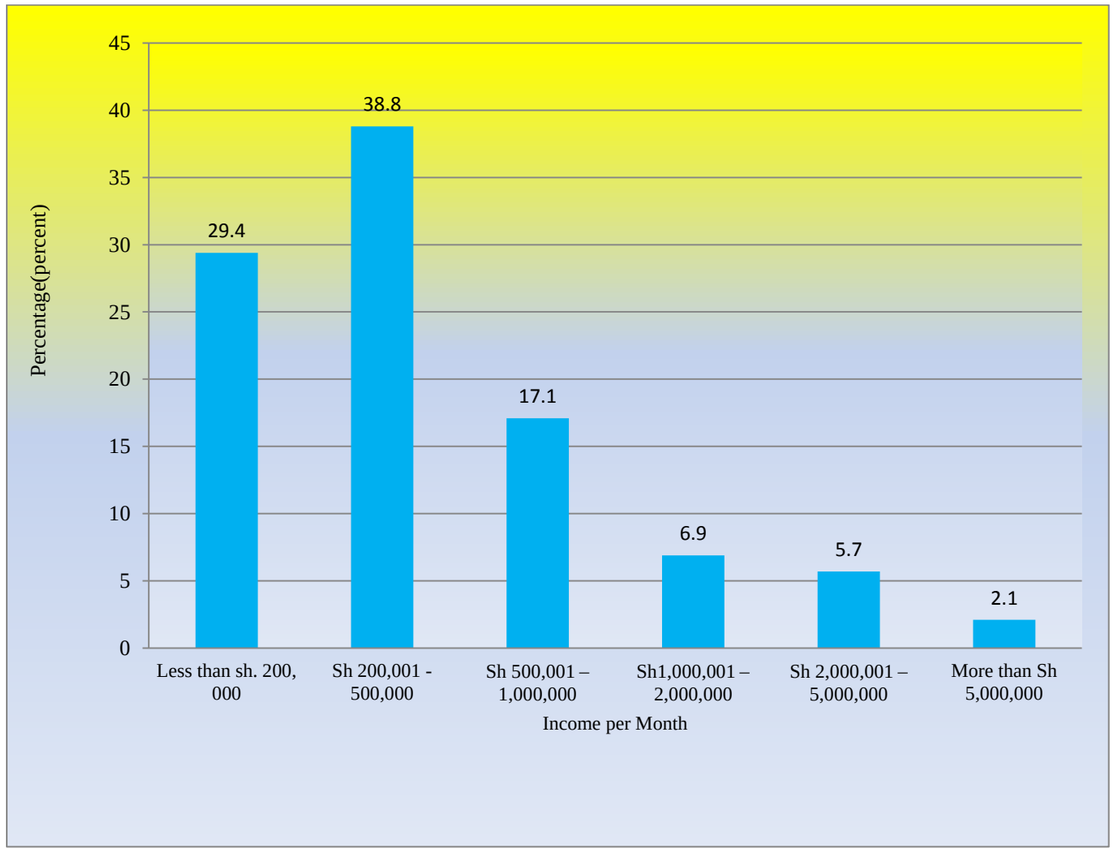


Figure 6.7: Average Household Incomes per Month

6.5.5 Household expenditure

The 2016 household surveys reveal that 48.7 per cent of the residents in the city spent between TZS 200,001 and TZS 500,000 of their income monthly *(See Figure 6.8).* This implies that most of Dar es Salaam residents spend 75 per cent of their income on household expenditure drawing from economic budgeting guideline for income. It also implies that the remaining 25 per cent of income represents savings.

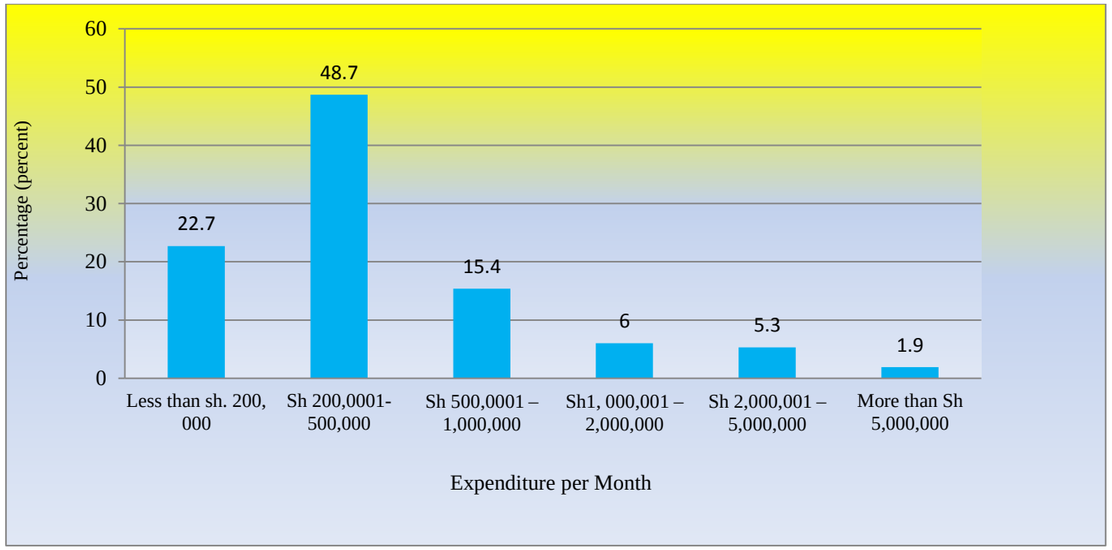


Figure 6.8: Average Household Expenditure per Month

Results of the household survey conducted in 2016 which are shown in Figure 6.9, indicate that 41.8 per cent of the households in the city reported having only one person in the household who was earning an income for the entire household while a significant 4.8 per cent of the households reported having no member who was earning any income to support the household. Only 2.3 per cent of the households in Dar es Salaam have all 4 of their members earning of the household an income.

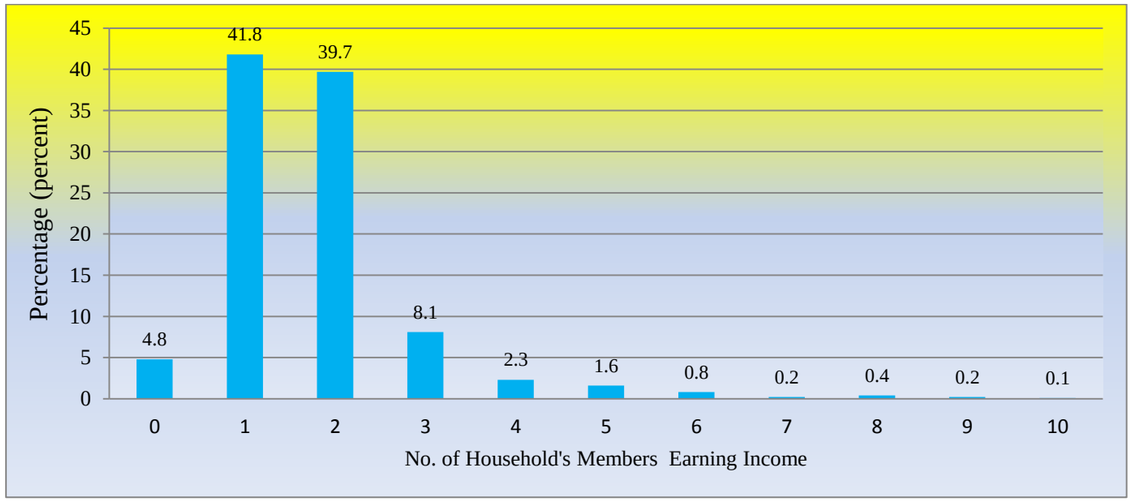


Figure 6.9: Income Distribution and Composition

6.5.6 Mean Monthly Incomes

The Integrated Labour Survey, 2014 report reveals that Mean Monthly Incomes of Paid Employees, the self-employed and those engaged in agriculture, which are aged 15 years and above are highest in Dar es

Salaam, followed by other urban areas. The mean monthly incomes across the three sectors are lowest in the rural areas

Table 6.9: Mean Monthly Incomes of Persons Aged 15 Years and above by Area, 2014

Source of Income	**Mean Monthly Incomes in TZS by locality**		
	Dar es salaam	**Other Urban**	**Rural**
Paid employment	418,845	293,834	236233
Self-employment	383,748	219,346	142, 036
Agriculture	266,551	164,776	121861

Source: Integrated Labour Survey, 2014

There is a significant gender gap in that Mean Monthly Incomes with males earning more than females in all areas and across most of the sectors, except for Dar es Salaam where females earn more in agriculture than males (See Table 6.10). Similarly in the rural areas, women in paid employment earn an average of TZS 254,614 compared to males who earn an average of TZS 230,325.

Table 6.10: Gender Gap in Mean Monthly Incomes of Persons Aged 15 Years and above in Dar es Salaam, 2014

Source of Income	**Mean Monthly Income in TZS by Sex**		
	Male	**Female**	**Both**
Paid employment	473,463	321,533	418,845
Self-employment	511,022	237,968	383,748
Agriculture	248,655	293,021	266,551

Source: Integrated Labour Survey, 2014

6.5.7 Poverty Index

According to the Household Budget Survey (HBS) 2016/17; the Basic Needs Poverty Line is TZS 36,482 per adult equivalent per month and food poverty Line are TZS 26,085 per adult equivalent per month. There is a close relationship between the mean monthly income levels and the poverty status by area.

Dar es Salaam, which recorded the highest mean monthly incomes, has the lowest levels of food and basic needs poverty at 1.0 and 4.2 percent respectively, followed by other urban areas with poverty levels of 8.7 and 21.7 respectively. The rural areas, which had the lowest Mean Monthly Incomes, have the highest rates of food and basic needs poverty of 11.3 and 33.3 per cent respectively

Table 6.11: Income Poverty Status (Percent) by Area

Areas	**Food Poverty**	**Basic Need Poverty**
Dar es Salaam	1.0	4.2
Other Urban	8.7	21.7
Rural	11.3	33.3
Tanzania Mainland	9.7	28.2

6.5.8 GINI Coefficient

Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 1 implies perfect inequality. Table 6.12 shows that the Gini Coefficient for Tanzania increased from 0.37 in 2010/2011 to 0.39 in 2012/2013 then reverted to 0.37 in2014/2015. That for Dar es Salaam declined from 0.32 in 2010/2011 to 0.29 in 2014/2015, lower than the Gini coefficient 0.34 for other urban areas and 0.32 for rural areas.

Table 6.12; The Gini Coefficient index by Area in Tanzania

Area	**NPS 2010/11**	**NPS 2012/13**	**NPS 2014/15**
Tanzania	**0.37**	**0.39**	**0.37**
Urban	0.31	0.36	0.33
Rural	0.37	0.34	0.32
Tanzania Mainland	**0.37**	**0.39**	**0.37**
Dar es Salaam	0.32	0.32	0.29
Other Urban	0.35	0.35	0.34
Rural	0.31	0.34	0.32

Source: NBS, 2017 Tanzania. National Panel Survey Wave 4, 2014/2015, February 2017

6.6 Resource base of the Dar es Salaam LGAs

Dar es Salaam City LGAs obtain revenue from tax and other own sources, grants from the central government and through borrowing as shown in Table 6-13. Other potential revenue sources include donor assistance and community contributions.

Table 6.13; Revenue Sources of the Dar es Salaam local Government Authorities

S/N	**Revenue Category**	**Source**
1.	Property Taxes	Property rate
2.	Taxes on goods and services	Crop cess (maximum 5 percent of farm gate price) Forest produce cess
3.	Taxes on specific services	Guest house levy

4.	Business and professional licenses	Commercial fishing license fee Intoxicating liquor license fee Private health facility license fee Taxi license fee Plying permit fees Other business licenses fees
5.	Motor vehicle, Other Equipment and Ferry Licenses	Vehicle license fees Fishing vessel license fees
6.	Other taxes on the use of goods, permission to use goods	Forest produce license fee Building materials extraction license fee Hunting licenses fees Muzzle loading guns license fees Scaffolding/ Hoarding permit fees
7.	Turnover taxes	Service levy
8.	Entrepreneurial and property income	Dividends Other Domestic Property Income Interest Land rent
9.	Administrative fees and charges	Market stalls / slabs due *Magulio* fees Auction mart fees Meat inspection charges Land survey service fee Building permit fee Permit fees for billboards, posters or hoarding Tender fee Abattoir slaughter service fee Artificial insemination service fee Livestock dipping service fee Livestock market fee Fish landing facilities fee Fish auction fee Health facility user charges Clean water service fee Refuse collection service fee Cesspit emptying service fee Clearing drains service fee Revenue from sale of building plans Building valuation service fee

		Central bus stand fees Sale of seedlings Insurance commission service fee Revenue from renting of houses Revenue from renting of assets Parking fees
10.	Fines, penalties and forfeitures	Stray animals penalty Share of fines imposed by magistrates court Other fines and penalties
11.	**Grants from central government**	
12.	**Borrowing**	

Table 6-14: revenues of the Dar es Salaam LGAs 2015/2016

SN	Council	Own Source	Recurrent Grants	Dev. grants	Total
1.	DCC	6,924,627,505	0	1,440,000	6,926,067,505
2.	Ilala MC	41,317,967,000	105,681,748,000	8,199,630,780	155,199,345,780
3.	Kinondoni MC	60,451,684,781	100,876,484,972	10,576,100,420	171,904,270,173
4.	Temeke MC	40,970,831,782	97,577,484,226	3,723,198,631	142,271,514,639
Total		**101,422,516,563**	**304,135,717,198**	**22,500,369,831**	**476,301,198,097**

Source: NAO Local Governments Audit Report 2015/2016. http://www.nao.go.tz/?wpfb_dl=227

6.7 Challenges and Opportunities

6.7.1 Challenges

Land use compatibility issues: The majority of the manufacturing industries are located close to residential neighbourhoods and other sensitive land use areas; these impose hazardous and industrial noise pollution effects.

Minimal Industrial Environmental Impacts Assessments: Industrial and business zones produce wastes and toxic substances that end up into the surrounding environment without procedural processing due to lack of proper EIAs.

6.7.2 Opportunities

Connectivity to the regional transport networks to the port is critical to facilitate the import of raw materials for manufacturing and export of final goods. It will however, be necessary to improve the regulatory environment to attract new businesses to the city.

7. LAND USE

7.1. Introduction and Background Information

Dar es Salaam region has a total surface area of 183,018.13 hectares out of which 18,197.79 hectares or 10 per cent of the land area. The remaining 164,820.345 hectares are land area. Dar es Salaam region is the smallest region in Tanzania Mainland and occupies about 0.16 per cent of Tanzania Mainland's total land area of 88,334,300 hectares.

Dar es Salaam City stretches 70.4 kilometres from north to south, and 60.6 kilometres from east to west with geographical coordinate's alignment of: Left 500702.327238 m, Right 560861.431959 m, Top 9274517.451305 m and Bottom 9205356.135770 m. This chapter describes the existing land uses and outlines development strategies for each category of the existing land uses in the city in 2016. The description outlines the specific types of use, existing services and facilities and highlights the major changes that have taken place since preparation of the last Master plan in 1979 and identifies key problem areas. The strategies describe how best to develop the existing land uses so that the general intent and specific proposals of the master plan can be achieved.

7.2. Overview of Urban Land Use Conditions, 2016

Major land uses in Dares Salaam today include the residential (formal and informal); institutional, industrial, agriculture, hazard land and open spaces. Up to 1963, most of the urban land uses in Dar es Salaam were planned, with the exception of a few informal settlements of Keko, Buguruni, Ubungo and Temeke. The extent of the land use development was confined to within a radius of 6 kilometres. In the post-independence period however, rapid horizontal expansion of the city occurred, predominantly along its radial road networks fuelled by rapid population influx and individuals developing their own houses. By 1978, the land use coverage of the city had extended to 14 kilometres along Pugu road extending as far as Ukonga, about 12 kilometres along Morogoro and Bagamoyo roads thereby engulfing the suburbs of Kimara and Kawe respectively. The southern extension along Kilwa road was rather limited to about 6 kilometres extending to the present settlements of Temeke and Chang'ombe.

Although pockets of land remained undeveloped between these arterial roads, the extent of the built up areas of the city was generally limited to within the 12-kilometre radius.

The previous master plan had a timeframe from 1979 to 1999, this master plan (2016) is been prepared 17 years after the expiration of the 1979 master plan thus suggesting that Dar es salaam city, has been developing without any guidance for the past 13 years.

By 1992, the extent of the land use coverage predominantly remained within the 12-kilometre radius but with extended development along Bagamoyo road including settlements of Mbezi and Tegeta up to 16 kilometres and 10 kilometres along Kilwa road including settlements of Mbagala and Mtoni.

In the year 2012, the extent of the land use coverage shows consolidation on the formerly sparsely developed areas between the major roads and further extended growth along these roads. The northern extension along Bagamoyo road had reached about 32 kilometres, about 30 kilometres westwards along Morogoro road, about 25 kilometres south westwards along Nyerere road and 20 kilometres southwards along Kilwa road. In essence one cannot tell the boundary of the city while riding/driving along the major roads because of the continuous development there in.

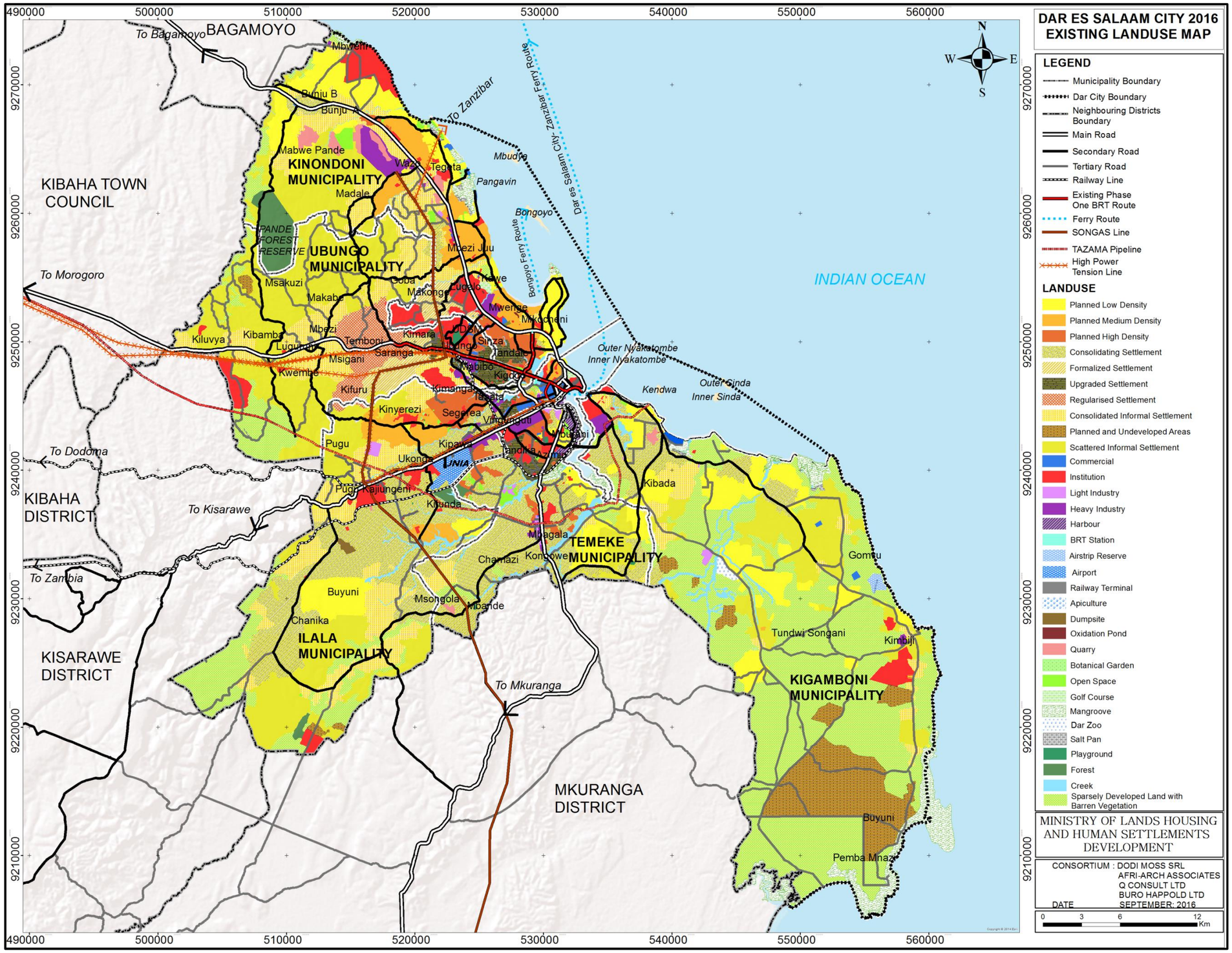
7.2.1. The existing urban structure

Urban structure is the arrangement of land use in urban areas, in other words, how the land use of a city is set out. Dar es Salaam is structured as "four radial roads" that grows outward to the city boundary and beyond, like four fingers. These radial roads include Kilwa road, Nyerere road, Bagamoyo road and Morogoro road.

Furthermore, Dar es Salaam also radiates outward from a central point in a series of rings. The innermost ring represents the central business district, which is surrounded by Bibi Titi and Nyerere road. The Second ring starts from Kilwa road through Changombe road to Kawawa road via Kigogo road and through Morocco road to Ali Hassan Mwinyi road. The third ring runs from the port through Mandela road to Ubungo and via Sam Nujoma road to Mwenge. The fourth ring starts from the port through Mandela road to TAZARA then turns left to Pugu road then follows Kinyerezi Segerea road to Mbezi Louis and through Mabwepande to Bunju.

7.3. Broad Land use distribution

General land use in Dar es Salaam is categorized into 6 main types: residential; institutional; industrial; transportation; hazard areas; and open spaces. Further residential land use in Dar es Salaam can be categorized into planned and unplanned settlements. The unplanned residential settlements in Dar es Salaam fall into four distinct types: scattered unplanned settlement mixed with agriculture; regularised informal settlements; upgraded informal settlements and consolidating informal settlements as shown in Table 7.1 and Map 7.1.



Map 7.1: Dar es Salaam Existing Land Use Map, 2016

Table 7.1: Dar es Salaam Existing Land Use Composition, 2016

Land Use Category	Specific Type of Land Use	Area in Hectares	Percentage
Residential	1) Planned low density	15038.9	9.12%
	2) Planned medium density	5136.1	3.12%
	3) Planned high density	3105.8	1.88%
	4) Planned and undeveloped areas	6796.0	4.12%
	5) Formalized settlements	2087.6	1.27%
	6) Regularized informal settlements	2621.7	1.59%
	7) Upgraded settlements	1904.7	1.16%
	8) Consolidating settlements	22664.3	13.75%
	9) Consolidated informal settlements	18417.9	11.17%
	10) Scattered informal settlements	30220.9	18.34%
Sub Total		**107,993.9**	**65.52%**
Commercial	Service Trade	22.4	0.01%
	Commercial	1123.9	0.68%
Sub-Total		**1146.3**	**0.70%**
Institutions	1) Institutions/offices	3597.9	2.18%
	2) Military	3644.7	2.21%
Sub Total		**6826.1**	**4.14%**
Industry	1) Power substations	33.2	0.02%
	2) Warehouse	58.6	0.04%
	3) Light industry	414.9	0.25%
	4) Heavy industry	1977.9	1.20%
	5) Harbour	428.4	0.26%
Sub Total		**2913.0**	**1.77%**
Transportation	1) BRT	13.4	0.01%
	2) Railway terminal	45.6	0.03%
	3) Bus terminal	45.3	0.03%
	4) Parking	8.3	0.01%
	5) Airport & Airstrip reserve	795.2	0.48%
Sub Total		**908.8**	**0.55%**

Land Use Category	Specific Type of Land Use	Area in Hectares	Percentage
Social Utilities	1) Pugu dumpsite	89.9	0.05%
	2) Oxidation ponds	49.7	0.03%
	3) Cemetery	67.8	0.04%
Sub-Total		**207.4**	**0.13%**
Environmental Conservation	1) Quarry	718.9	0.44%
Sub-Total		**718.9**	0.44%
	1) Salt pans	131.6	0.08%
	2) Mangrove	5498.7	3.34%
	3) Creek	3014.4	1.83%
	4) Forest	2004.2	1.22%
Sub Total		**10648.9**	**6.46%**
Open Spaces/Recreation	1) Play grounds	128.8	0.08%
	2) Dar zoo	148.1	0.09%
	3) Open spaces	573.7	0.35%
	4) Golf course	113.2	0.07%
	5) Botanical garden	58.3	0.04%
Sub-Total		**1022.1**	**0.62%**
Urban Agriculture	1) Dairy farm	12.2	0.01%
	2) Bee forest	8.7	0.01%
Sub-Total		**20.9**	**0.01%**
Sparsely developed land with barren vegetation		30156.8	**18.3%**
Net Total Area for Landuses		162,563.1	**98.63%**
Circulation and Infrastructure		2256.7	**1.37%**
GRAND TOTAL		**164,819.8**	**100%**

7.4. Analysis of the existing land use categories

7.4.1 Residential

Residential land uses account for 66.8 per cent of the total land in Dar es Salaam. The residential land use can be categorized into two major land uses namely planned and informal. Planned accounts for 18.6 per cent of all land while informal settlements accounts for 48.2 per cent of the total land in Dar es Salaam. The planned residential and informal settlements are further subdivided into low density, medium density and high density residential areas; whilst the informal sentiments can be categorized as formalized, regularized informal, upgraded settlements, consolidating informal settlements, consolidated informal and scattered informal.

7.4.1.1. Planned Low and Medium Density

Low-density developments in Dar es Salaam occupy 15038.9 hectares of land. Residential settlements that fall into this category of residential developments include Gerezani, Kurasini, Msasani Peninsular, Oyster Bay, Kawe, Ada Estate, and Regent estate all planned in colonial times.

Gerezani was built before 1940 as a housing scheme for European workers of the Railways Corporation and Kurasini for European port officials. Oyster Bay was reserved for European government officials. A wide variety of housing types are to be found in these areas, including bungalows that were originally built for European government officials and detached two to three storey villa types of houses, constructed on large plots of about 2,000 square metres, thus encouraging sprawled urban development patterns. These areas are currently being redeveloped with multi storey commercial buildings and residential apartments. Most of these areas are transforming into mixed-use developments combining, residential activities with commercial, warehousing and in some cases industrial activities as well. Oyster Bay, Masaki and Msasani areas in particular have undergone a dramatic densification process, especially after the government sold the government houses to civil servants who resided in them. Kinondoni Municipal Council prepared the Oyster Bay/Masaki Redevelopment Scheme to guide the transformation process of these areas.

More recently planned medium and low-density residential settlements starting from 1980s include Mbezi Beach, Tegeta, Mlalakua Salasala and Jangwani Beach. These areas were developed as part of the extension area of Oyster Bay type of residences for the high-income earners. The 20,000 plots project areas are also laid out for medium and low-density residential plots.

7.4.1.2.Planned High Density Residential Areas

These areas are unevenly distributed around the city. In some cases they were planned mainly by the National Housing evaporation (NHC) and other parastatal organizations in the 1960s and 1970s as isolated groups of three to six storey residential apartment buildings amidst low-rise residential developments. Dominant areas in this category are Ilala, Mwenge, Ubungo, Tandika, Keko, Buguruni, Chang'ombe and TAZARA. Where such blocks of flats are clustered close to each other, they have resulted into relatively higher floor area ratios and land coverage. Typical apartment blocks in Mwenge area of five storeys on a plot area covering 20,510 square metres fall also in this group.

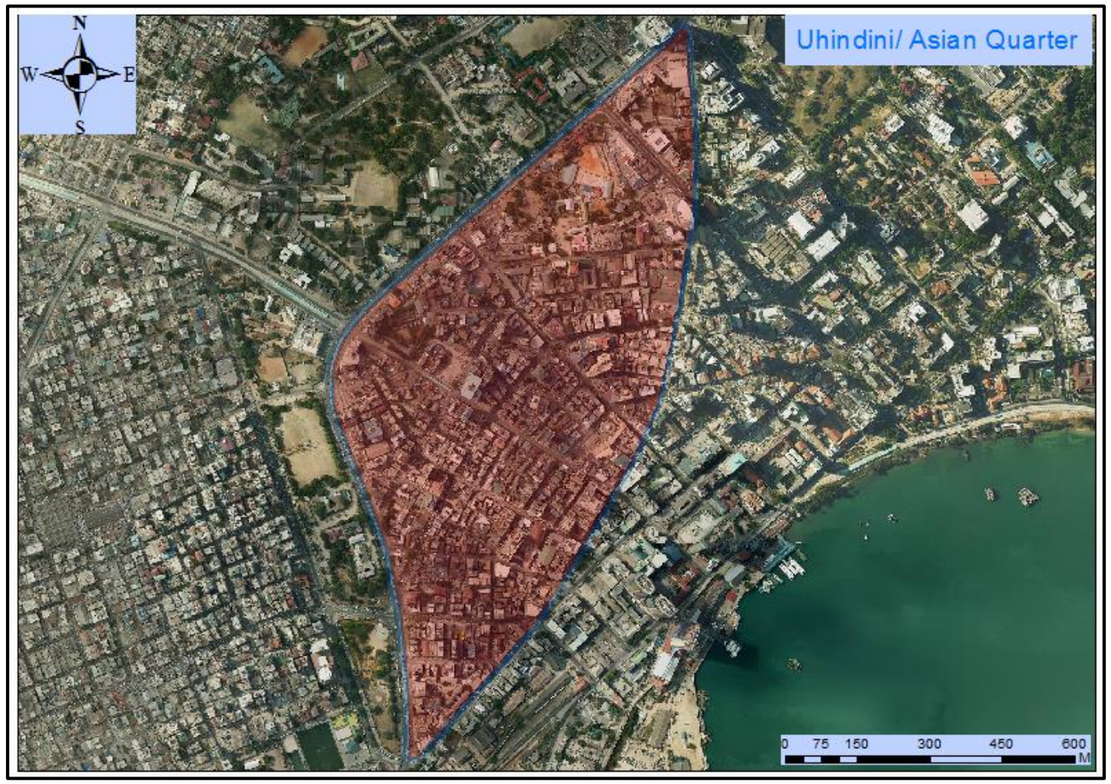
Other high-density residential settlements include the low-rise Swahili houses in Kinondoni, Magomeni, Ilala and Temeke. The pattern of street network for Magomeni and Ilala is the gridiron pattern, illustrating a layout planning typical of neighbourhoods that were planned during the colonial period for Africans. However, over the three decades, these settlements have started transforming from predominantly Swahili type of houses to blocks of apartments, one of an overspill area to the burgeoning commercial, office and residential requirements of the city centre.

The newly planned high-density areas include Sinza, Kijitonyama, Tegeta, Mbagala and Mtoni,

7.4.2 Commercial and Trading

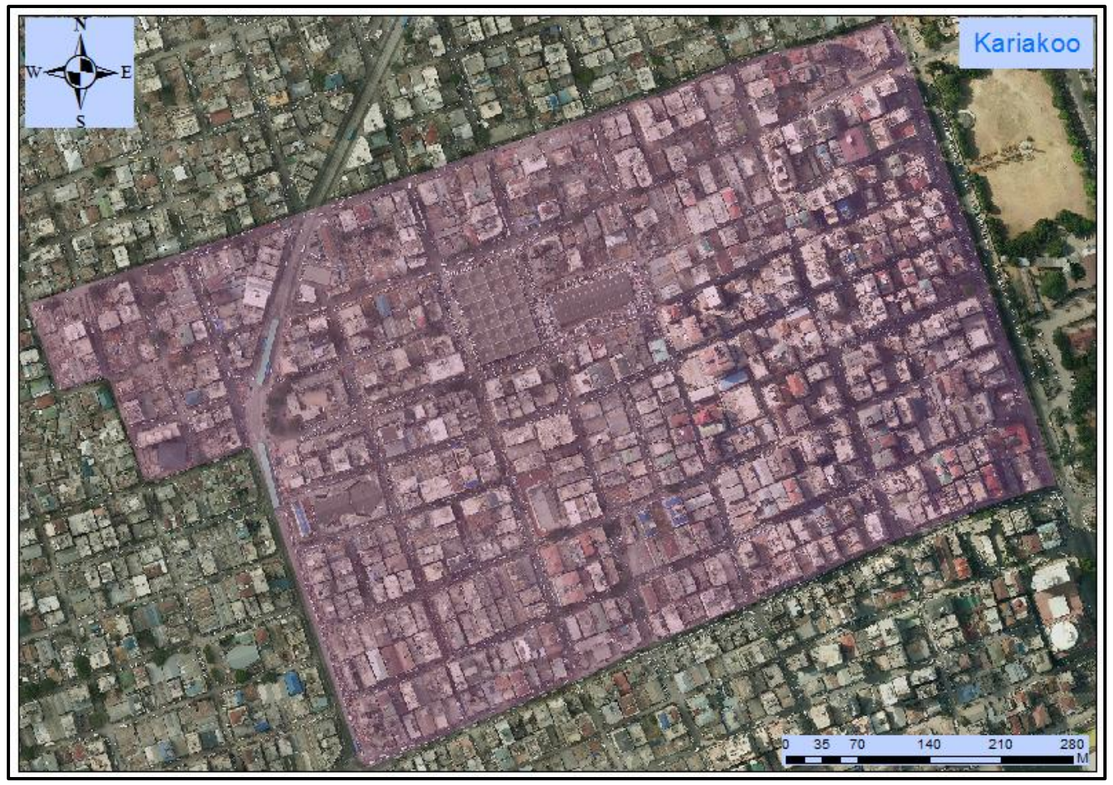
7.4.2.1.The Western District: Uhindini or Asian quarters,

This zone is bound between Bibi Titi Mohammed Street, Nkurumah Street and Upanga Road. It covers an area of 60.34 hectares. It was predominantly characterised by three to four storey compact apartment buildings with commercial activities on the ground floor and residences on the upper floors. Currently, this zone is characterised by high-rise towers with commercial activities on the ground floor and offices accommodation in the other floors. The residential character of the CBD is changing rapidly.



7.4.2.2.Kariakoo: A mixed commercial and residential zone.

Kariakoo district currently features a mixed use of land covering 40.3 hectares. Commercial-residential land-use is predominant. The district is divided into three distinct zones namely: western, central and the southern zones



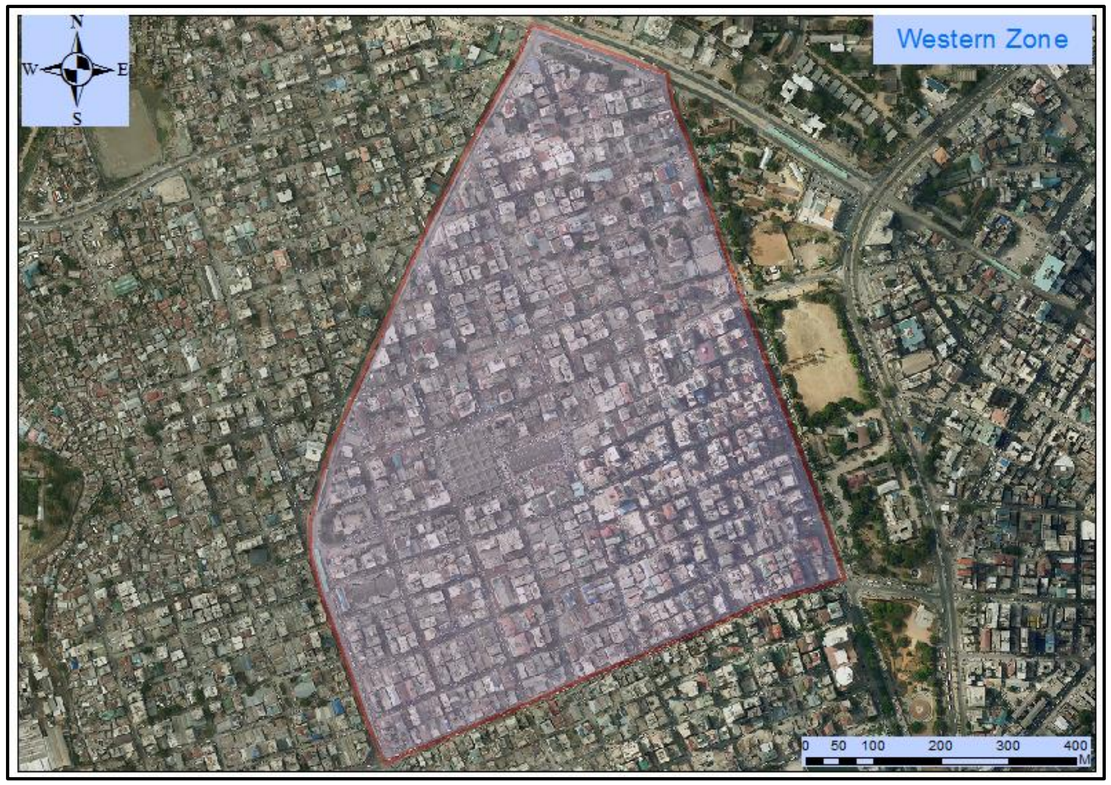


Figure 7-3: image of the Western Zone of Kariakoo

7.4.2.3.The western zone

Msimbazi, Uhuru Street and Lumumba Streets define the border of the western zone covering an area of 51.6 hectares. It features a mix of residential, commercial and public institutions as well as open spaces. About 70 per cent of the existing land in the area is composed of mixed residential and commercial buildings. The main institutional areas found in this zone include educational, religious and other cultural facilities.

7.4.2.4.The Uhindini/Asian Quarter

Bibi Titi Mohammed Road, Nkrumah Street, India Street and Upanga Road border the Uhindini/Asian Quarter area. This is purely a commercial area today, which covers an area of 95 hectares. The district is experiencing rapid conversion, with new high rise buildings replacing previously existing Indian apartment buildings of 2 and 4 stories high. These changes are creating conflicts on the existing urban fabric and streetscape as well as overloading the existing services and infrastructure in the CBD.

7.4.2.5.The central zone

The central zone is bounded by Msimbazi, Uhuru, Bibi Titi, and Morogoro road. The focal point for the central zone is the Kariakoo market complex, which is surrounded by many commercial activities. The remaining parts of the central zone feature commercial and residential use.

7.4.2.6.The southern zone

The Msimbazi Creek, Shaurimoyo Street and Nyerere Road define the border of this area. It features a mix of residential, commercial and public institutions as well as open spaces. About 70per cent of the existing land in the area is composed of mixed residential and commercial buildings. The main institutional uses found in this zone include educational, religious and other cultural facilities.

7.4.2.7.Urban Markets

Markets in urban Dar es Salaam provide an important social and economic service to the residents. City residents obtain various household needs such as fruits, vegetables, meat, flour, rice, and other types of food from markets. Markets also serve as a workplace for residents who conduct business in them and they are important source of revenue to the local authorities. Markets tend to attract other trade and commercial businesses around them. Consequently, markets generate a significant amount of traffic. Markets are important sources of low cost food items sold in large or small quantities, which is

especially convenient to low-income earners who cannot afford to buy supplies in large quantities or from the supermarket.

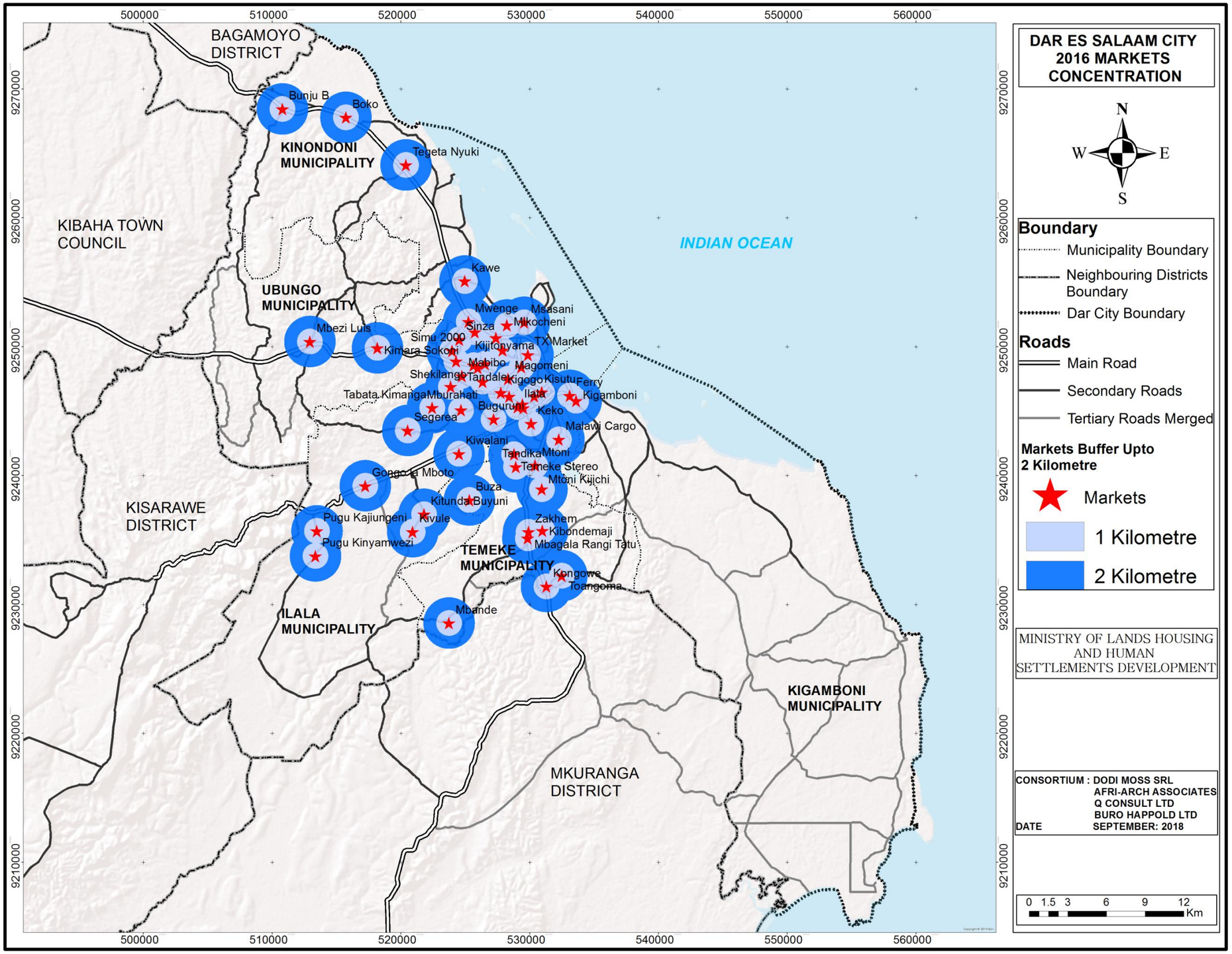
The Kariakoo market is the largest in the city, which provides both wholesale and retail trade services. Other wholesale markets include the Tandale Market that specialises in cereals, the Buguruni market that specialises in fruits and vegetables, particularly green banana.

Kariakoo Market is the largest in the city, providing wholesale and retail trading services. Other wholesale markets include Buguruni, Tandale, Mabibo, Tandika and the Urafiki market in Ubungo specializing in grain, fruits and vegetables. The National Income Generation Programme (NIGP) built two additional markets at Temeke Stereo and Makumbusho, to accommodate petty traders who had been operating from the streets. The Dar es Salaam City Council built a multi-story trading market called the Machinga Complex for similar purposes but this has failed to attract traders. There are two fish markets located at Magogoni in the city centre and Msasani. Other well-established markets are located at Kisutu, Ilala Kinondoni, Mwananyamala, Magomeni, Manzese and Tegeta. Several other smaller produce markets are scattered all over the city. The Dar es Salaam City Council plans to build a new produce wholesale market at Mbezi Luisi as a way of reducing the number of heavy-duty trucks entering the city centre to deliver supplies from upcountry.

The following key issues have been identified regarding market services in Dar es Salaam:

1) There is a shortage of markets and market-trading space in the city resulting in many traders conducting business on the streets and roads around the existing markets;
2) Most of the market trading space is occupied by mini vending stores that sell general merchandise instead of the food items for which the markets were intended;
3) The markets are not evenly distributed around the city
4) Most of the wholesale markets are located in the inner city, which contributes to traffic congestion due to heavy-duty trucks that deliver market produce from upcountry;
5) Sanitary conditions are poor in most of the markets due to poor drainage facilities and poor solid and liquid waste management services resulting in flooding of the market areas when it rains, pillage of solid waste, most of which is perishable and spillage of liquid waste; and
6) Except for the few recently built Magogoni and Msasani fish markets, and the Makumbusho and Temeke Stereo markets, most of the others are built using temporary materials and earthen floors which are difficult to clean

Plate 7.1: Machinga Complex in Dar es Salaam city.



Map 7.2: Markets Spatial Distribution in Dar es Salaam

7.4.2.8.Abattoir and Butchery Services

There are two main abattoirs located at Vingunguti and Ukonga serving Dar es Salaam city. Both abattoirs have poor facilities and the space available is grossly inadequate to cope with the number of cattle handled in a day. Abattoir buildings (See Figure 4.3) are old and dilapidated and sanitary conditions are poor. There are no proper slaughter facilities for chicken and pigs.

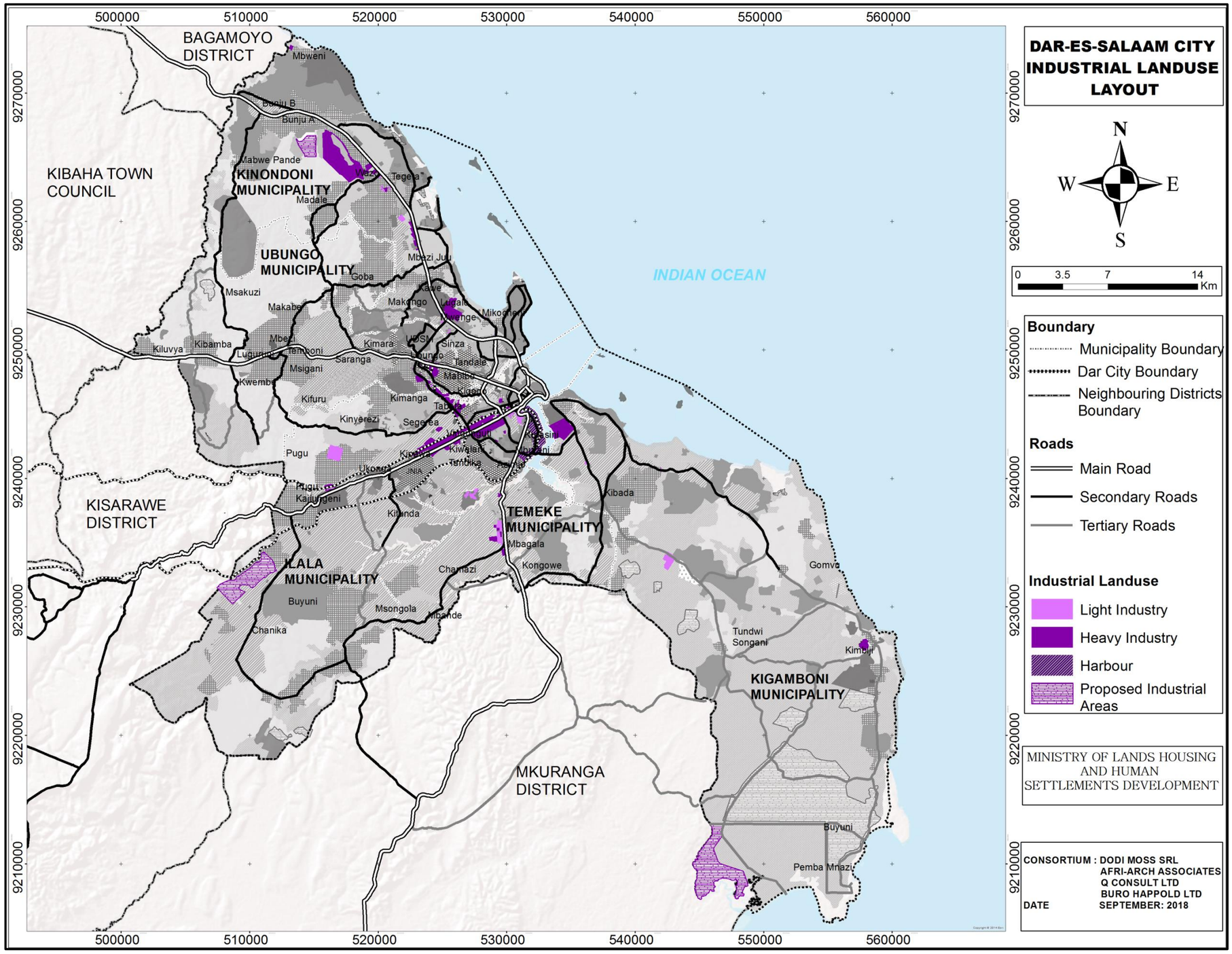
Plate 7.2: Vingunguti abattoir

7.4.3 Industrial activities

7.4.3.1.Major industries

The industrial development that has taken place in Dar es Salaam is mainly light industries manufacturing a variety of goods for both domestic as well as export markets. Majority of the industrial establishments (64 per cent) are located in Temeke Municipality, 29 per cent are in Kinondoni Municipality and 7 per cent in Ilala municipality. In terms of ownership, 64 per cent are privately owned, 19 per cent per cent public owned and 14 per cent are joint ventures. As shown in Map 7.1 the major industrial areas are mainly located along the major transport routes, including Nyerere, Morogoro, Nelson Mandela and Bagamoyo Roads. Industrial activities occupy 3168.6 hectares of land representing 1.92 percent of the land area of the city.

The type of industries located in Dar es Salaam city include: textiles, breweries, distilleries, beverages, bags, cigarettes, cement, paints, pharmaceuticals, plastic, metal products, steel, grain milling, chemicals, and timber and wood products. Others include confectionery, food products, petroleum products, edible oil, dairy products, domestic utensils, tea blenders, batteries, radiators, body building, printing and publishing, paper products, garments, electricity generation and glass. There are 29,060 industrial establishments operating in Dar es Salaam. Table 6.3 shows the Number of industrial manufacturing units established in Dar es Salaam by type of activity.



Map 7.3: Existing and Proposed Industrial Landuse

7.4.4 Institutional areas

Institutional areas include public offices, education and health facilities, military areas and other community facility areas. Public offices are mainly concentrated at the Magogoni area around the State House, the head offices of the six local government authorities of Dar es Salaam and the Dar es Salaam Regional Commissioners Office at Ilala. Education facilities include 14 universities, 35 colleges, two Vocational Training Centres, and several secondary, primary and pre-primary schools located in various parts of the city.

The major health facilities include the Muhimbili National Hospital, Ocean Road Cancer Centre, the Agha Khan Hospital in the city centre; Mlonganzila Hospital, Amana and Mnazi Mmoja hospitals in Ilala; Temeke hospital and Mwananyamala hospital. Others are the Regency Medical Centre at Upanga, Hubert Kairuki Memorial Hospital at Mikocheni, TMJ hospital at Msasani and the IMTU and Masana hospitals at Mbezi Beach, Lugalo Hospital at Lugalo and Mico Rabininsia Memorial Hospital at Tegeta. There are several health centres and dispensaries both public and private, which are located in various parts of the city

7.4.5 Urban Agriculture

Dar es Salaam, one of the fastest-growing cities in Sub-Saharan Africa, faces a number of problems associated with such growth, including food insecurity. Agriculture addresses some of these concerns by serving as an important source of locally available produce and employing a substantial number of people. Due to the scarcity of processing, storage, and distribution facilities in much of Tanzania, urban agriculture will continue to play a vital role in the social, economic, and nutritional life of the city of Dar es Salaam.

Urban agriculture, including both plant and animal husbandry, is an integral part of the local food system in Dar es Salaam, providing fresh vegetables, including Chinese cabbage, tomatoes, spinach, amaranth and a variety of other greens, sweet potato, cassava, maize, pulses, and fruits such as cashew, coconut, banana, pineapple, and papaya. In addition, eggs, poultry, milk, and meat are also supplied locally. Moreover, farming is an integral component of economic life in the city. In Ilala, about 13 per cent of the population is engaged in agriculture and more than 10,000 hectares are devoted to urban agriculture. In Temeke, about 60 per cent of the available arable land is under cultivation and approximately 20–30 per cent of the milk consumed is produced locally. In Kinondoni, approximately 60 per cent of the available arable land is under cultivation. Locally grown urban agriculture provides approximately 7 per cent of total food requirements, but 34 per cent of livestock needs.

A study of changing spatial patterns of urban agriculture throughout the Dar es Salaam metropolitan area have found that while the overall percentage of land devoted to urban agriculture remained approximately the same between 1992 and 2005, the spatial distribution of urban agriculture changed dramatically, as areas formerly devoted to agriculture were converted to residential or industrial uses, and new areas (particularly along rail lines and riparian corridors) were opened up. Urban agriculture has therefore increasingly been forced onto marginalized lands and hazardous areas. Agriculture has also encroached on open spaces and other public lands (such as cemeteries, playgrounds, and road and utility rights-of-way) because laws to protect these open areas are not strongly enforced.

7.4.6 Parks and Open spaces

Currently, the City has very few open green areas for recreation. Most of the spaces previously allocated for such purposes have long been invaded or officially converted to residential development, motor vehicle repair workshops, schools, storage facilities, showrooms, office buildings or religious facilities. The few social halls and community centres in which residents used to gather for recreation and other social activities have long been converted into local government offices and other activities. In the absence of such areas, most adult residents of the city recreate in pubs that are spread all over the city, mainly located within residential areas, and thus causing common nuisance such as loud music and antisocial behaviour of customers under the influence of alcohol.

Plate 7.3: National Stadium Dar es Salaam

The main public open spaces and recreational grounds in Dar es Salaam include the Mnazimoja Grounds, the Gymkhana grounds, Kidongo Chekundu, Jangwani grounds and the Uhuru stadium in Ilala municipality; Mwembe Yanga, Mbagala Zakheem and the National Stadium in Temeke municipality; and the Biafra grounds in Kinondoni municipality. There are two botanical gardens, one of which is located in the Karimjee Jeevanjee grounds in the city centre and the other at Magomeni. There are few public beaches including the Ocean Road, Coco Beach, Kawe Beach, Kigamboni beaches, Dege beach, Mbweni, Msasani Peninsula beaches. These open spaces and public recreation areas occupy 1,278.5 hectares of land or 0.8 per cent of all land in Dar es Salaam

Plate 7.4: A typical recreational pub.

9.1.2. 7.4.7. Transport facilities

• 7.4.7.1. Road transport

The economic infrastructure of Dar es Salaam Region is still underdeveloped. The Region's road network has 3118.61kilometres out of which TANROADS supervisors 585.78 kilometres while the remaining 2,505,837 kilometres. Of the roads under municipal councils, Kinondoni has 914.16 kilometres while Ilala has 804.37 kilometres and Temeke has 787.30 kilometres. The region has the privilege of having frontier with one region only, which is Coast in the North, West and South while to the East there is the Indian Ocean. Landlocked countries of Malawi, Zambia and even Democratic Republic of Congo (DRC) depend to some extent on the efficiency of Dar es Salaam's roads. Dar es salaam Region has a well-developed transport network system that connects it to upcountry regions of Morogoro Dodoma, Tabora, Kigoma Mwanza and Kagera through Morogoro road; Njombe, Mbeya, Songea and Tunduma through Iringa; Lindi and Mtwara through Kilwa road; and Tanga, Kilimanjaro, Arusha, Manyara, Nairobi and Mombasa in Kenya, through Bagamoyo Road. All Trunk roads: Morogoro Road, Kilwa Road, New Bagamoyo Road, Nyerere Road and Mandela/Sam Nujoma have a network of 114.75 kilometres. The roads that are under the supervision of the Municipal councils are called district or feeder roads and these have a network of 2,532.83 kilometres (See Table 7.2).

Table 7.2: Road Network by Types and by Council, Dar es Salaam Region, 2016

District	**Type (Kilometres)**				
	Trunk	**Regional**	**District**	**Feeder**	**Total**
Kinondoni	65.43	156.15	517.82	423.34	1162.74
Ilala	17.32	87.88	187.21	617.16	909.57
Temeke	32.00	227.00	759.20	28.10	1046.30
Regional Total	114.75	471.03	1464.23	1068.6	3118.61
Per cent	3.7	15.1	47.0	34.3	100.0

Source: Dar es Salaam Regional Commissioners office 2017

7.4.8.1.Road Network Classification

Table 4.2 shows that 655.25 kilometres (21.01 per cent of the road network) is tarmac, about 1,090.63 kilometres (34.97 per cent) are gravel roads and the remaining 1,372.73 kilometres (44.02 per cent) are earth roads. Tarmac and gravel roads make up 55.98 per cent of the network and since there is a close affinity between roadworthiness and tarmac/gravel surfaces it can generally be said that 55.98 per cent of the region's road network is passable throughout the year. Kinondoni district had the longest stretch of tarmac and gravel roads at 708.9 kilometres followed by Temeke District with about 293.09 kilometres. Ilala District had the longest stretch of earth roads (645.65 kilometres), which are impassable during the rainy season.

Table 7.3: Road Network Surface condition, Dar es Salaam Region, 2016

District	**Surface Condition (Kilometres)**			
	Tarmac	**Gravel**	**Earth**	**Total**
Tan roads	289.97	295.81	0	585.78
Kinondoni Municipal council	241.10	467.19	232.87	941.16
Ilala Municipal council	79.85	78.87	645.65	804.37
Temeke Municipal council	44.33	248.76	494.21	787.3
Regional Total	655.25	1,090.63	1372.73	3,118.61
Per cent	21.0	35.0	44.0	100.0

Source: Dar es Salaam Regional Commissioners office 2017

7.4.7.2.Railway Transport

Dar es Salaam Region is the starting point of all railway lines in the Country. Both Central and TAZARA lines start from Dar es Salaam Region to other upcountry destinations. Apart from the railway lines from Dar es Salaam to upcountry places, there are also intra-city lines, which serve Dar es Salaam residents. The intra city railway service from the City Centre to Ubungo via Buguruni and Tabata carried 1,343,763 passengers. The passenger train of the Central Railway Line, which operates from Dar es Salaam to Morogoro, Dodoma, Singida, Tabora, Kigoma, Mwanza and Mpanda, carried 90,100 incoming passengers and 167,688 outgoing passengers while the total quantity of cargo carried was 73,957 tonnes in 2013.

The TAZARA Railway Authority provides another intra-city railway service from the TAZARA Station to Pugu. These intra-city railway services aim at solving the main public transport problems in the city. The TAZARA line to Mbeya and Kapirimposhi starts in Dar es Salaam via Mlimba in Morogoro, Makambako in Njombe, Mbeya and ends up in Kapirimposhi in Zambia. In 2013, the line transported

271,598 passengers and 152,997 tons of goods. The TAZARA line however, is currently facing some constraints in regard to capital, equipment and other resources for it to run properly.

7.4.7.3.Air Transport facilities

The main airport in Dar es Salaam Region, Julius Nyerere International Airport (JNIA), is located about 12 kilometres southwest of the Dar es Salaam city centre. It is the largest in Tanzania and among the largest in East Africa. The airport has flights to destinations in Africa, Europe and the Middle East. It was formally known as the Dar es Salaam International Airport before being given its current name in October 2006 in honour of the nation's first president. Situated at an elevation of 196 feet above sea level, the JNIA has two passenger terminals. Along with a couple of asphalt-surfaced runways, the JNIA is at present undergoing massive expansion , which will provide the airport the third terminal with modern facilities and amenities. With the present infrastructure the airport has the capacity to handle 1,500,000 passengers annually.

7.4.7.4. The Dar es Salaam Port

The Dar es Salaam port is Tanzania's principal port with a rated capacity of 4.1 million (dwt) dry cargos and 6.0 million (dwt) bulk liquid cargos. The Port has a total quay length of about 2,600 metres with eleven deep-water berths. Dar es Salaam port handles about 95 percent of the Tanzania international trade. The port serves the landlocked countries of Malawi, Zambia, Democratic Republic of Congo, Burundi, Rwanda and Uganda. The port is strategically placed to serve as a convenient freight linkage not only to and from East and Central African countries but also to Middle and Far East, Europe, Australia and America. The port has a capacity to handle more than 10 million tons of cargo including 3.1 million tons of general cargo, 1.0 million tons of container cargo (9,619,876 TEUs); and 6.0 million tons of liquid bulk.

There are four terminals at the Dar es Salaam harbour namely the General Cargo Terminal, the Container Terminal, the Grain Terminal and the Oil Terminal. The General Cargo Terminal is a break-bulk section of the port with a quay of 1,478 metres comprising of 7 main quays, transit sheds with 64,463.5 of total floor sq. metres and open storage of 201,613 floor sq. metres.

The Container Terminal, which is located at berth Number 8-11, has a total quay length of 540 metres with back up facilities, which include the container depot located about 2 kilometres away at Kurasini (KICD) and the Ubungo container Depot.

The Grain Terminal is a fully automated grain handling facility with silos of a capacity of 30,000 metric tons. Grains can be discharged and bagged along the quay at an average of more than 2000 tons in 24 hours, or transferred to silos using dump trucks. The grain terminal has concrete silos, fumigation, aeration and temperature control facilities.

There are two oil terminals: the Single Point Mooring (SPM) and Kurasini Oil Jetty (KOJ). The SPM is an offshore tanker berth for handling exclusively crude and refined oil. It has a capacity to accommodate tankers of up to 150,000 deadweight tons with fast discharge speed (flow rate of 2,500 cubic metres per hour for crude oil). The SPM is connected to refineries in Dar es Salaam and Ndola, Zambia through floating hoses and submarine pipes. The KOJ is the tanker jetty for handling refined oil products with a pumping capacity of 750 tons per hour. It can handle tankers up to 45,000 deadweight.

Besides, the port provides both open and covered storage yards for general cargo, containers and motor vehicles with a capacity of holding 6,000 vehicles at a time.

7.4.7.5.Major Port Development Projects

The Tanzania Ports Authority (TPA) is implementing a number of major projects as outlined in the National Ports Master Plan (PMP) study undertaken in February 2009 that laid out a long term strategy for Tanzanian ports to create capacity for the expected demand. One of such projects is the Dar es Salaam Maritime Gateway Project (DMGP), which is intended to improve the effectiveness and efficiency of the port by converting the port as a world class port with optimized efficiency to accommodate the calling and reception of larger vessels. The port modernization projects includes strengthening and deepening of berths 1-7 and RORO terminal, dredging of the entrance channel, turning circle and harbour basin; strengthening and deepening berths 8-11, and construction of a new terminal jet, modernising operations of handling dry bulk cargo by applying state of art conveyance technology; and the development of a modern dry/ floating dock facility for maintenance and repair of marine crafts to optimise and enhance port operational efficiency.

7.5. Challenges and Opportunities

7.5.1 Residential Land Use

7.5.1.1.Challenges

i. Densification of existing residential and commercial areas such as the City Centre, Kariakoo, Oyster Bay, Mikocheni and Upanga, without upgrading of the existing infrastructure;
ii. Improper regulations and poor building standards and guidelines that result in creating an urban jungle, particularly in Kariakoo and the city centre,
iii. Inadequate provision for parking particularly in the city centre resulting in misuse of roads for parking
iv. Lack of pedestrian footpaths and cycling lanes in most of the roads;
v. Inadequate provision for open spaces and poor maintenance of existing open spaces;
vi. Poor enforcement of development control measures in the city;
vii. Poor accessibility and inadequate provision of social services in unplanned settlements;
viii. High rate of gentrification in informal settlements without guidance from the respective authorities,
ix. Poor maintenance of roads and drainage channels constructed in upgraded settlements resulting in the settlements reverting to their pre-upgrading situation. Planning intervention and Opportunity

i. Introduce new guidelines to ensure appropriate development of plots for all land use categories;

ii. Improve on the approach that has been used by the city for the past 40 years to upgrading, regularisation and formalisation of unplanned settlements and adopt a "participatory redevelopment" approach to realise the high value of land in unplanned settlements that occupy prime urban land.

7.5.2 Institutional and Commercial Land Use

7.5.3.1.Challenges

i. Primacy of the core CBD that contributes to traffic congestion;

ii. Proliferation of small scale informal trading in every available space; and,
iii. Inadequate hierarchy and poor distribution of commercial centres in the city.
Planning Interventions

7.5.3.2.Planning interventions

i. Development of multi-storey sub-centres in formal trading centres located close to high-density mixed use estates.
ii. Enhancing the emerging sub-centres along major roads by providing appropriate development conditions and officially recognizing them.
iv. Create urban sub-centres to decongest major commercial functions from the CBD,

7.5.3 Quarrying/Mining activities

7.5.5.1.Challenges

i. Inappropriate location and incompatibility with adjoining land uses, poor methods of extractions, environmental pollution and disaster risks; and,
ii. Haphazard sand and limestone mining in areas of the city that are designated for other land uses;

7.5.4 Industrial land use

7.5.6.1.5.1) Challenges

i. Inadequate allocated of land for industrial activities resulting in low level of employment in the manufacturing sector that provides employment to only 3 per cent of the workforce in the city.
ii. Poor location of industries in close proximity to residential and other sensitive land uses.

7.5.5 Urban agriculture

7.5.6.2.Challenges

i. Although urban agriculture plays an important role in providing food and generating income to residents, of the city, the practice is largely unregulated and unplanned;
ii. Insecure tenure arrangements and expropriation of farmlands for urban development purposes;
iii. Loss of agricultural land due to rapid urbanization and urban sprawl; and
iv. Public health concerns over contamination of urban agricultural products from vehicular lead emissions on roadside crops, and irrigation with water from polluted sources like the Msimbazi River.

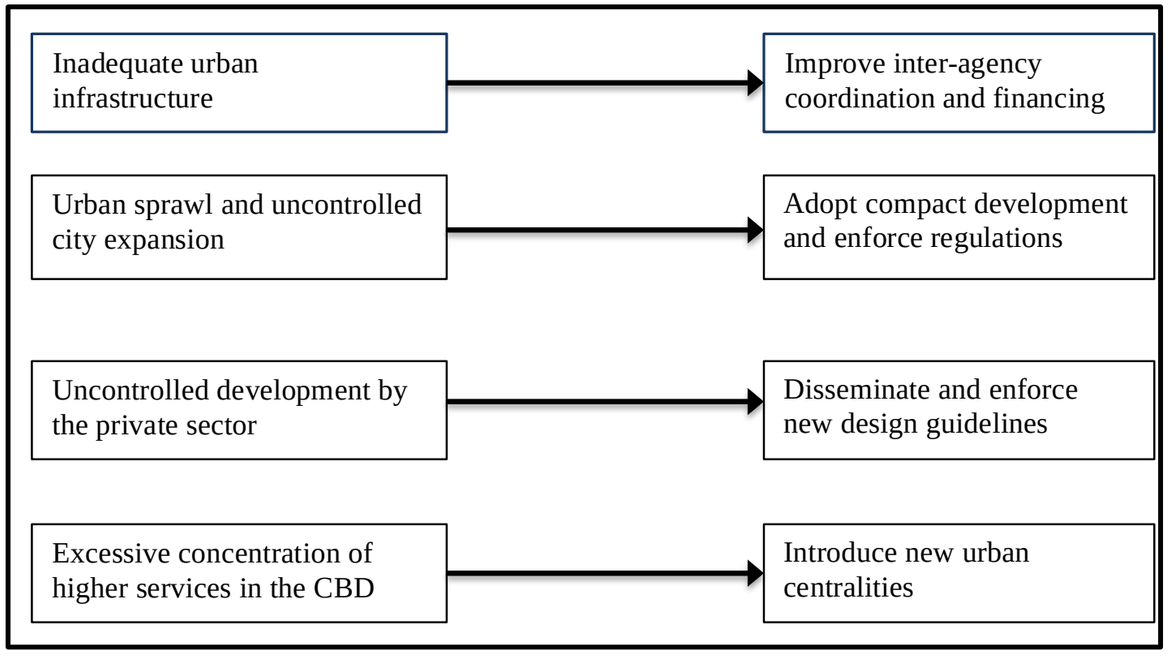


Figure 7.1: Summary of land use planning issues

8. HOUSING AND RESIDENTIAL DEVELOPMENT

8.1. Overview

Housing is a basic right for all human beings including the Dar es Salaam residents. Furthermore housing contributes to the wellbeing of households. According to the Population and Housing Census 2012, Dar es Salaam had a population of 4,364,541 that was growing at an average annual rate of 5.2 per cent. Projected at that rate, Dar es Salaam is estimated to have a population of 5,373,623 in 2016. According to the 2012 census statistics the average household size for Dar es Salaam was 4.4 persons, implying that there were 1,345,588 households to be housed. Based on street mapping data compiled by the "Ramani Huria" programme, Dar es Salaam city is estimated to have a stock of 952,334 housing units in 2016.[11] Therefore, the Dar es Salaam city faced a shortage of 393,254 housing units in 2016.

8.2. Housing typology

There are three variations of physical house types in the Dar es Salaam city: single family detached, multifamily and core housing types. Table 8.1 presents images of the types of houses and their variations.

8.2.1 Single-family detached house types

The freestanding single-family or detached units are the predominant type of housing in Dar es Salaam city. These units are constructed across low to middle income areas in varying styles depending on incomes and size preferences. Freestanding houses form the largest housing-type in informal settlements where the majority of residents are poor households. The single-family detached house type forms 98 per cent of the housing stock in Dar es Salaam. The design of these houses has been transformed and re-designed based on the traditional "*Swahili"* type housing. The typical Swahili house contains 4-6 rooms divided by a central corridor. The Swahili house type is very versatile and can serve as rental or owner-occupied accommodation. It can accommodate a single or multiple families in one unit. Modified versions of these houses are currently located in many low to middle-income areas such as Magomeni, Sinza, Kijitonyama, Mikocheni and Msasani. According to the Tanzania Housing Market Study (THMS, 2012) single-family detached units is the most preferred type of housing in Dar es Salaam. Modern, more expensive detached houses are also found in many residential areas mainly occupied by a single family. These are found in the newer residential areas such as Mbezi Beach, Mikocheni and the peri-urban areas.

8.2.2 Multi-family house types

Multi- family residential house types in Dar es Salaam comprise of row houses, blocks of flats and high-rise apartments or condominiums, which are currently on the increase. While multi-family house types were formally common among public housing projects, they now form a large part of the houses in the Central Business District, Kariakoo and Upanga areas. Recent developments have seen multi-family houses replacing single-family detached houses in the former sites and service areas like Sinza. While they are not a common preference among households, they do present a viable alternative house type particularly for rental purposes.

Semi-detached, row-houses and blocks of flats are the preferred house types for parastatal organisations that invest in housing development including the National Housing Corporation (NHC) and the Social Security Funds. The houses are mainly developed in new green-field areas but also through infilling in residential areas around the city for example those located at the intersection of Morogoro and Shekilango roads in Ubungo.

These house types constitute about 1 per cent of all housing stock in Dar es Salaam, mostly accommodating middle to higher income households. The Tanzania Housing Market Study (*THMS 2015)* report observed that until recently, terrace houses and blocks of flats, which are suitable for rental accommodation have not been favoured by most home-seekers. However these house types are increasingly becoming acceptable and it is expected that blocks of flats and apartments are likely to better satisfy the demand of single member households, couples and young families in the future.

8.2.3 Core housing types – Incremental Housing.

Core housing types are one or two-roomed houses built in such a way that they can be developed or expanded incrementally to not only accommodate the needs of a growing family but also match income or savings. This house type is common among low – income families in both formal and informal areas and preferred by Non-governmental Organizations (NGOs) offering both credit and technical housing support services to poorer households. Such houses can be found in project areas such as Chamazi and Mabwepande, and in some informal settlements.

[11] Source: Planet.osm - https://wiki.openstreetmap.org/wiki/Planet.osm

Table 8.1: House Types in Dar es Salaam12

	Type	Quality	Location
1 Formal Detached Dwelling			
		▪ Higher quality materials such as sand-cement blocks, CI sheets or tiles for roofing ▪ Modern designs • Average unit size: - 3-4 bedrooms	Newer developing residential areas planned and unplanned
2 "Swahili" House			
		• Generally of fair condition and built with permanent material. • Traditionally most common form of urban housing often combining owner occupation with rental rooms and shared facilities • Average unit size: 3-6 bedrooms	Located in both planned and unplanned areas.
3.		• Good quality housing favoured by NGOs providing housing support services built of low-cost building materials such as burnt bricks. • Average unit size: - 25 square metres expandable to 43 sq.m.	Chamazi, Mabwepande
4 Semi-detached Terrace housing			
		• High quality housing comprising of sand-cement blocks, modern amenities/facilities. • **Average unit size: -75 – 125 square metres**	Newer Greenfield areas in peri-urban areas such as Kibada, Kigamboni, and Mbagala
5 Low-Mid-Rise Apartments (Public Sector)			
		▪ 3 to 4 storey concrete and concrete block construction. Original construction may be of good quality, but may lack maintenance ▪ Facilities and amenities available. Average unit size: - varies	CBD, and intermediate locations of Dar es Salaam city such as Ubungo, Temeke, Kurasini (10-15 kilometres from CBD)

[12] Source: Modified from the Tanzania Housing Market Stuyreport (2015)

6. Low-Mid-Rise Apartments (Private Sector)			
		▪ Private sector 3-4 storey concrete and concrete block construction of good quality with modern amenities such as lifts, security guards, gated. • Average unit size: -	CBD, transformation of older housing areas such as Upanga, Kariakoo, Sinza, Oyster bay
7 High-rise Apartments			
		▪ Private sector development, often for higher income. • High quality, high cost construction with elevators, security facilities, Wi-Fi. • Average unit size: - varies	CBD

8.3. Building materials and conditions

Household surveys conducted in 2016 revealed that 85 per cent of houses in Dar es Salaam are built of permanent materials including sand-cement bricks for walling and corrugated iron sheets and tiles for roofing. According to the Tanzania Housing Market Study (THMS 2015) and the draft Urban Development and Management Policy, the challenge lies in the poor quality of construction as 95 per cent of all housing is self-constructed using local artisans, some of whom do not have requisite skills. Such housing is mainly located in informal settlements. In the advent of climate change impacts such as intense rainfall, houses of poor construction standards get easily damaged especially when built in flood prone areas. Table 8.1 and figures 8.1 to 8.3 show the proportion of houses built using various types of building materials in Dar es Salaam.

Table 8.2: Housing Materials used in Dar es Salaam Region

Roof	**CI sheets**	**Tiles**	**Concrete**	**Others (Asbestos, Grass, Mud, plastic)**
	96.1 percent	1.2 percent	1.5 percent	1.1 percent
Walls	Cement bricks	Baked/sun dried bricks	Stones	Others (Timber, iron sheets, mud,)
	95 percent	1.3 percent	1.1 percent	3.7 percent
Floor	Cement	Ceramic Tiles	Wood	Others (Mud)
	88.2 percent	6.4 percent	0.1 percent	5.3 percent

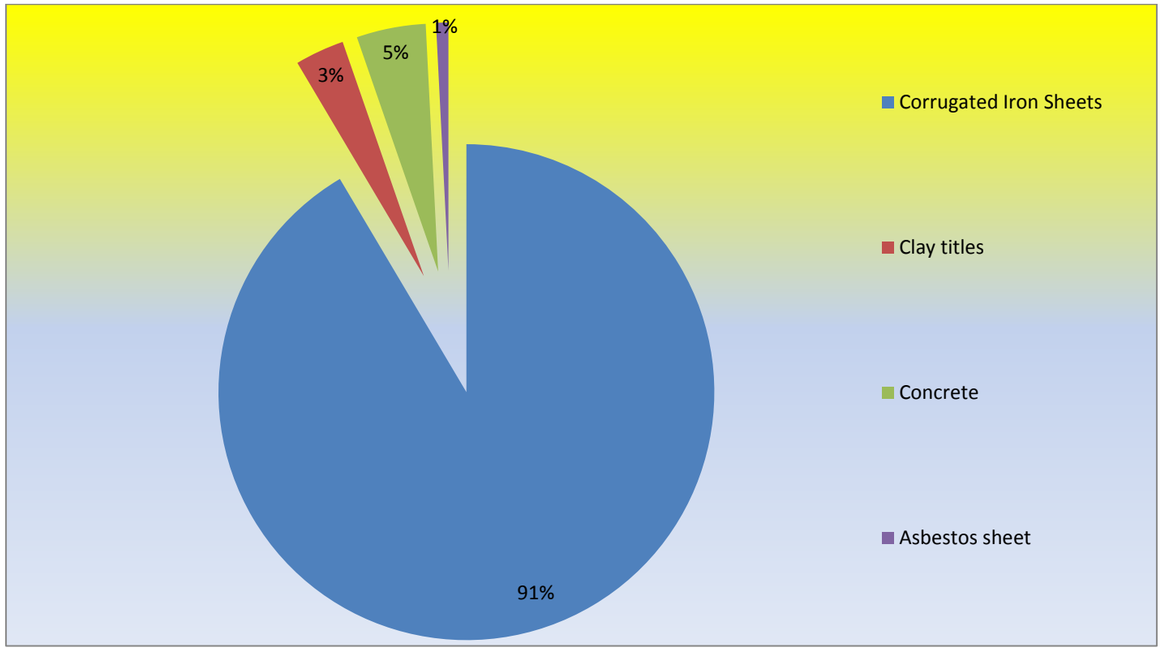


Figure 8.1: Roof material for all house types
Source: Household survey, 2016

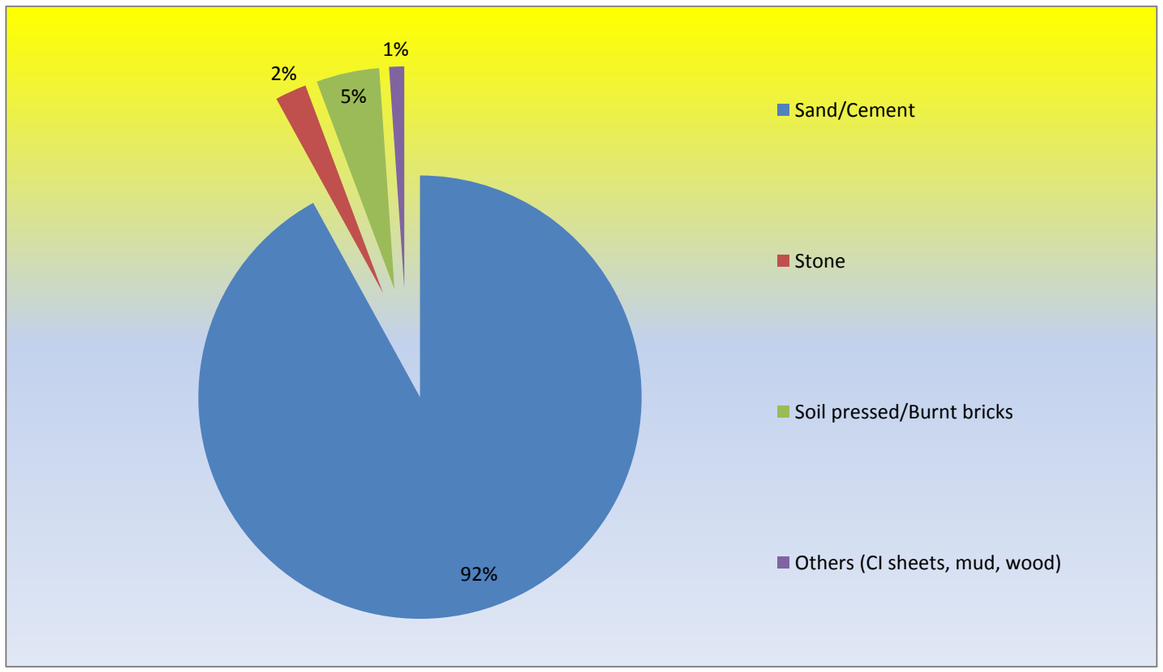


Figure 8.2: Wall material for all house types
Source: Household survey 2016

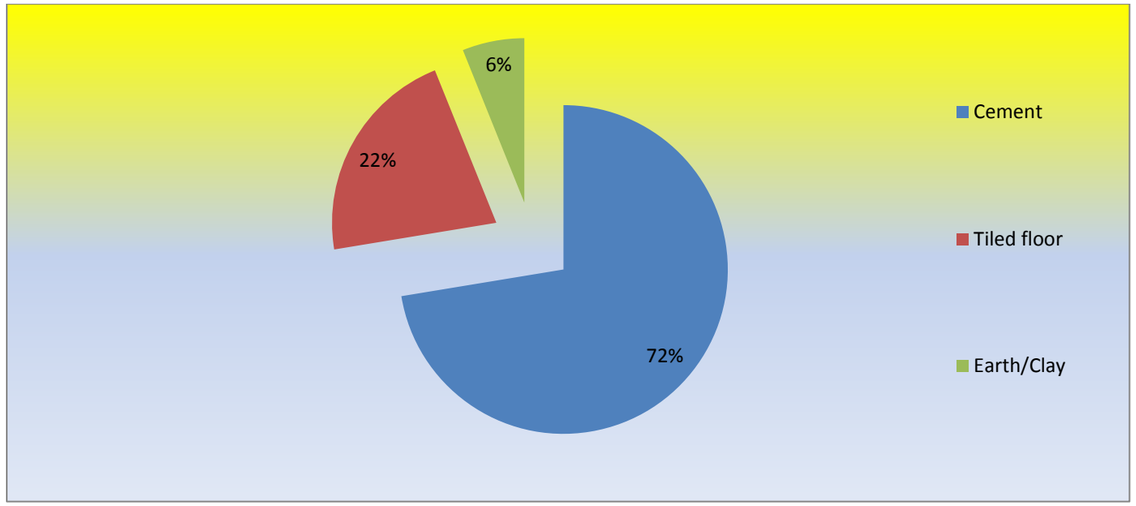


Figure 8.3: Floor material for all house types
Source: Household, field survey 2016

8.4. House Ownership / Tenure characteristics

Tanzania inadvertently encourages houses ownership by sub-dividing and allocating plots to individuals as well as providing building conditions that favour detached single-family houses. In Tanzania the housing norms press for homeownership on a detached plot and almost every individual or family aspires to own a home. Although home-ownership has been the dominant policy message for housing in Tanzania, many urban dwellers are tenants. Data from the 2012 Tanzania Population and Housing Census which is shown in Table 8.4 revealed that 36.9 percent of households in Dar es Salaam were owner occupiers while 56.5 per cent of the households lived in rented accommodation, which include those houses that are rented by individuals and private sector developers (52.2 percent) and those in the public and employer-based housing schemes (4.3 percent). Of the rest, 5.5 percent lived in rent free houses and 1 percent in rent-free employer provided houses. Tenants rent accommodation in multi-family units, public housing estates, and employer-based housing schemes and in recent high-rise apartment developments. Renting allows Dar es Salaam residents to be mobile, enabling them to change residential locations in cases where decisions are tied to the availability of jobs. The Tanzania Housing Market Study report 2015 revealed that 84 per cent of tenants in Dar es Salaam were renting rooms or part of a house, while 26 per cent were renting whole houses.

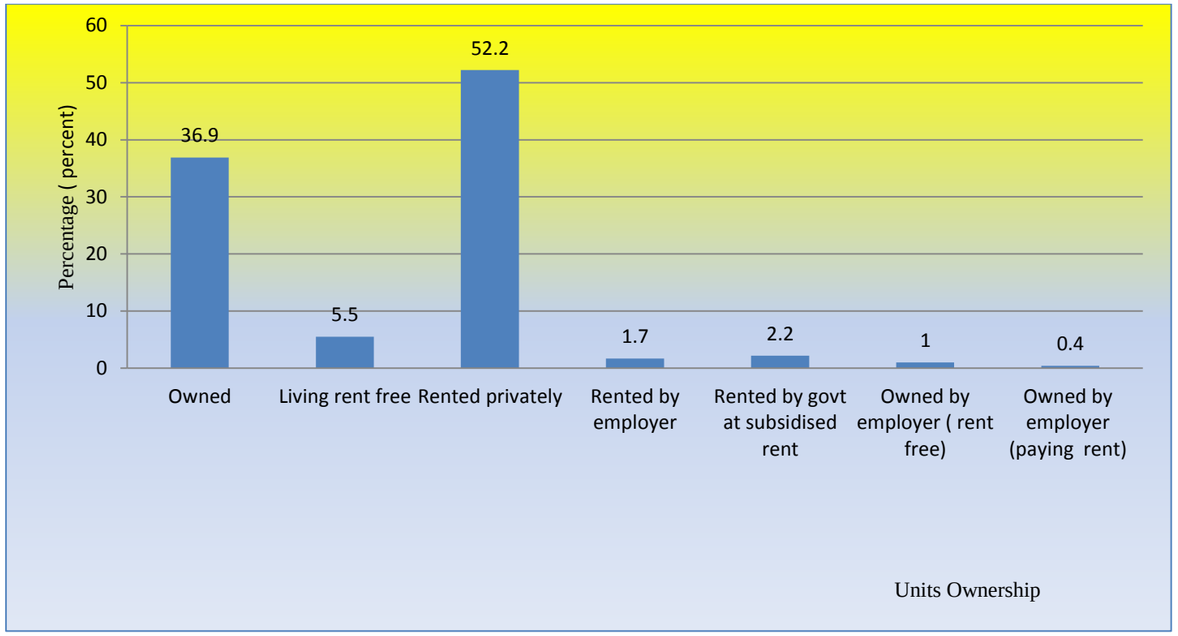
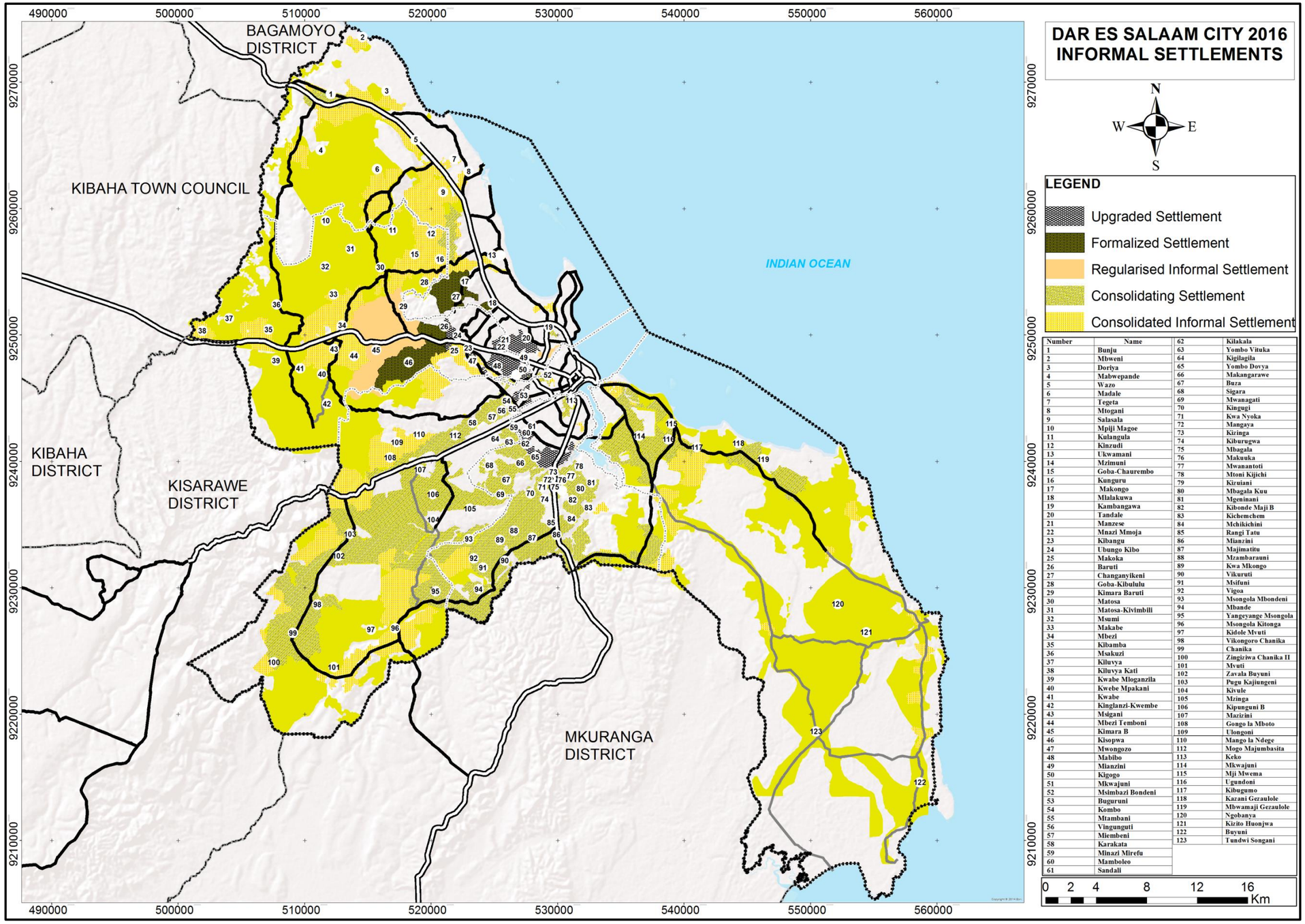


Figure 8.4: Ownership Status of Dwelling Units in Dar es Salaam
Source: URT, (2014)

8.5. Formal and Informal housing

At country level, the National Habitat III Report for Tanzania indicates that 62.5 per cent of the urban population lived in informal housing areas in 2015, In Dar es Salaam the UNCHS-Habitat, (2010) estimated that over 75 per cent of the population of Dar es Salaam lived in informal settlements in various locations of the city.13 The rest are accommodated in formal settlements, which have both public and private owned housing. Most of the persons accommodated in informal settlements in Dar es Salaam are tenants. Unrealistic standards are one of the main reasons that drive residents to build houses in informal settlements. The Urban Planning and Space Standards Regulations 2011, for example, prescribed a minimum plot size of 300 square metres for residential property in planned urban areas, although the Site and Services project in Sinza and Kijitonyama had a minimum plot size of 288 square metres. In the informal settlements the smallest plot size recorded was 12 square metres at Ubungo Darajani (Magigi et al, 2005) but on average plot sizes in unplanned settlements are about 100 square metres. According to the Tanzania Housing Market study report, 2015 plots that are sold in the informal settlements of Arusha can be as small as 10 square metres.

[13] Source: UN-HABITAT. Informal Housing and Finance in Dar es Salaam, Tanzania. https://unhabitat.org/books/informal-settlements-and-finance-in-dar-es-salaam-tanzania/



Number	Name		
		62	Kilakala
1	Bunju	63	Yombo Vituka
2	Mbweni	64	Kigilagila
3	Doriya	65	Yombo Dovya
4	Mabwepande	66	Makangarawe
5	Wazo	67	Buza
6	Madale	68	Sigara
7	Tegeta	69	Mwanagati
8	Mtogani	70	Kinguji
9	Salasala	71	Kwa Nyoka
10	Mpiji Magoe	72	Mangaya
11	Kulangula	73	Kizinga
12	Kinzudi	74	Kiburugwa
13	Ukwamani	75	Mbagala
14	Mzimuni	76	Makuuka
15	Goba-Chaurembo	77	Mwanantoti
16	Kunguru	78	Mtoni Kijichi
17	Makongo	79	Kizuiani
18	Mlalakuwa	80	Mbagala Kuu
19	Kambangawa	81	Mgeninani
20	Tandale	82	Kibonde Maji B
21	Manzese	83	Kichemchem
22	Mnazi Mmoja	84	Mchikichini
23	Kibangu	85	Rangi Tatu
24	Ubungo Kibo	86	Mianzini
25	Makoka	87	Majimatitu
26	Baruti	88	Mzambarauni
27	Changanyikeni	89	Kwa Mkongo
28	Goba-Kibululu	90	Vikuruti
29	Kimara Baruti	91	Msifuni
30	Matosa	92	Vigoa
31	Matosa-Kivimbili	93	Msongola Mbondeni
32	Msumi	94	Mbande
33	Makabe	95	Yangeyange Msongola
34	Mbezi	96	Msongola Kitonga
35	Kibamba	97	Kidole Mvuti
36	Msakuzi	98	Vikongoro Chanika
37	Kiluvya	99	Chanika
38	Kiluvya Kati	100	Zingiziwa Chanika II
39	Kwabe Mloganzila	101	Mvuti
40	Kwebe Mpakani	102	Zavala Buyuni
41	Kwabe	103	Pugu Kajiungeni
42	Kinglanzi-Kwembe	104	Kivule
43	Msigani	105	Mzinga
44	Mbezi Temboni	106	Kipunguni B
45	Kimara B	107	Mazizini
46	Kisopwa	108	Gongo la Mboto
47	Mwongozo	109	Ulongoni
48	Mabibo	110	Mango la Ndege
49	Mianzini	112	Mogo Majumbasita
50	Kigogo	113	Keko
51	Mkwajuni	114	Mkwajuni
52	Mslmbazi Bondeni	115	Mji Mwema
53	Buguruni	116	Ugundoni
54	Kombo	117	Kibugumo
55	Mtambani	118	Kazani Gezaulole
56	Vingunguti	119	Mbwamaji Gezaulole
57	Miembeni	120	Ngobanya
58	Karakata	121	Kizito Huonjwa
59	Minazi Mirefu	122	Buyuni
60	Mamboleo	123	Tundwi Songani
61	Sandali		

Map 8.1: Informal settlements in Dar es Salaam

8.6. Occupancy characteristics

The nuclear family comprising parents and biological children constitute 75.2 per cent of households in Dar es Salaam (URT, 2012). Extended family members including grandchildren accounted for 24.8percent. A standard room is often 10 square metres and can accommodate an average of three persons per room. The average occupancy in Dar es Salaam is four persons per room (URT, 2012). Occupancy characteristics are an important indicator if matched with dwelling space especially for rental housing developers. According to the 2016 Household Surveys, 25.2 per cent of households in Dar es Salaam occupy a single room.

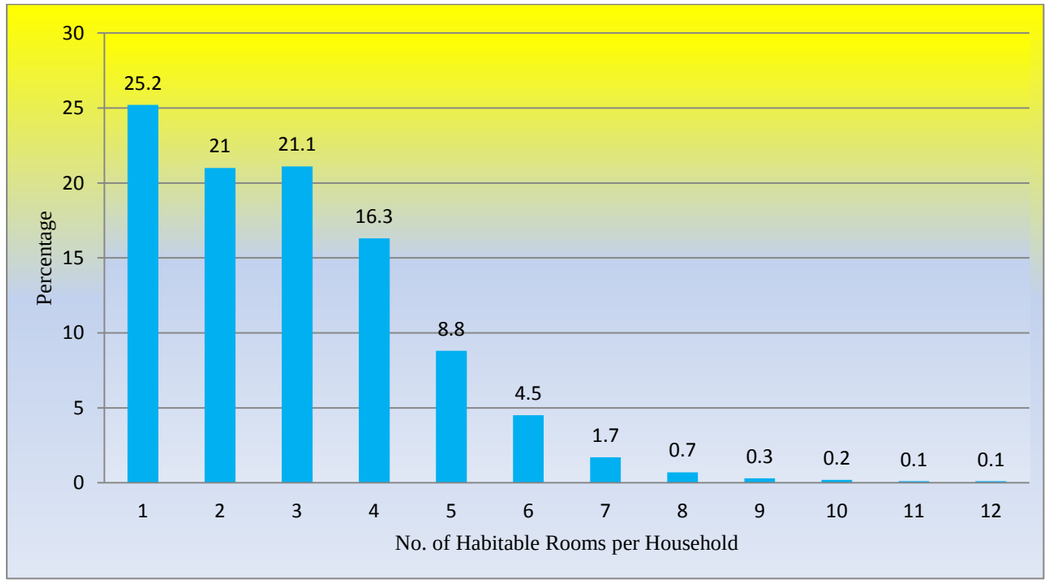


Figure 8.5: Households' rooms occupancy
Source: Household survey 2016

8.7. Characteristics of the heads of household

According to the 2012 National population and Housing Census, 64.2 per cent of total households were male headed while 34.8 per cent were female-headed households. Generally at the national level, the census (URT, 2012) reveals that a larger percentage of heads of household are in the 30 - 34 age group (14.0 per cent), followed by those in the 35-39 age-group (13.3 per cent) and the 25-29 age group who constitute 12.2 per cent of the heads of household These figures suggest that most household are headed persons in the working age group. Household heads in the 29-39 age groups also have a propensity to generate new households hence there will be a demand for a wider variety of housing units to cater for growing households. The age is a critical variable that is associated with household formation and aspirations for home ownership.

8.8. Housing Demand

As of 2016, the housing stock in the city of Dar es Salam was estimated to be 952,334 housing units while the population of Dar es Salaam is estimated to have reached 5,382,352 persons in 2016 and the household size is 4.0. Based on these assumptions, the requirements were for 1,345,588 in 2016 meaning that there was a shortage of 269,992 housing units. An estimated 2,383,403 new housing units will be required to accommodate the projected population of 13,342,947 by 2036. The number of housing units required for the intermediate five-year intervals is shown in Table 8.3. If rental housing continues to be the preferred option for the residents in Dar es Salaam then about 50 per cent of the units should comprise rental units/rooms of various sizes and designs to accommodate different life-styles. The following table shows the estimated social demand for housing.

Table 8.3: Projected housing requirements for Dar es Salaam, 2016-2036

Year	*Population*	*Housing Units*	*Number of Households*	*Housing Units Required*	*Additional Units Needed*
2016	*5,382,352*	*952,334*	*1,345,588*	*1,345,588*	*269,992*
2021	*6,905,019*	*N/A*	*1,726,255*	*1,726,255*	*773,921*
2026	*8,722,420*	*N/A*	*2,180,605*	*2,180,605*	*1,228,271*
2031	*10,860,286*	*N/A*	*2, 715,072*	*2, 715,072*	*1,762,738*
2036	*13,342,947*	*N/A*	*3,335,737*	*3,335,737*	*2,383,403*

Source: Based on the 2012 Population and Housing Census General Report, 2014

8.9. Housing Supply

Individual house builders will continue to be the main provider of housing in Dar es Salaam. A majority of the households will continue to build detached houses incrementally as funds become available but rental housing serves significant population especially low-income earners. However, judging from the growth of the housing micro-finance sector, availability of credit and reintroduction of mortgage facilities, housing construction may in the future, take lesser years to construct than before. The number of banks offering mortgage products in Tanzania rose from 3 in 2010 to 18 in 2013 and 28 in 2016. The increase is attributed to increased awareness on mortgage loans among borrowers as a result of various public awareness campaigns by banks, as well as increased competition among lenders. Five top lenders, accounting for 66 per cent of the mortgage lending currently dominate the mortgage market. Equity Bank commands 20 percent of the mortgage market share, followed by Diamond Trust Bank (16 percent), STANBIC (11 percent), Bank M (10 percent) and Azania Bank (9 percent).

Table 8.4: List of Banks Participating in the Tanzania Mortgage lending Market

S/N	*Name of Bank*	*Per cent Share of the Market*
1.	*Equity Bank*	*20*
2.	*Diamond Trust Bank*	*16*
3.	*STANBIC Bank*	*11*
4.	*Bank M*	*10*
5.	*Azania Bank*	*9*
6.	*CBA*	*6*
7.	*CRDB bank*	*6*
8.	*NIC Bank*	*3*
9.	*Other Financial institutions*	*19*
Total		*100*

Source: Tanzania Mortgage Refinance Company (TMRC), 2016

Private and public sector developers will also make a small impact on housing supply. These will include detached, semi-detached, block of flats and apartment buildings. Several large-scale housing developers are set to deliver housing Dar es Salaam. Key players in this will include the *Watumishi*

Housing Corporation (WHC), National Housing Corporation (NHC), Tanzania Building Agency (TBA), Pension Funds and private sector real estate investors

8.10. Key challenges and Opportunities

8.10.1. Key challenges

1) Inadequate provision of serviced land for housing construction in appropriate locations that could also match the livelihoods of residents of the city;
2) High costs of accessing land for housing developed through in-fill and re-development schemes which could lower the costs of provision of infrastructure and delivery of services;
3) Absence of programmes for the provision of low-cost affordable housing options and difficulties in accessing land for potential home owners, especially those in the low income category;
4) Lack of variety of house-types that provide opportunities for the improvement of the social and economic well-being of Dar es Salaam residents;
5) Inadequate provision of good quality rental housing options and the lack of an institutional mechanism for the provision of social housing to cater for the urban poor;
6) Preferences for large plot sizes that favour real estate development and other high income earners which are unaffordable to the poor; and,
7) Continued haphazard development of informal housing in vacant land that is often fragile and hazardous and encroachment of open spaces.

8.10.2. Opportunities

The introduction of housing mortgage facilities and the re-entry of private sector real estate developers represent the key opportunities for delivery of good quality housing in the future. Participation of private sector companies in the provision of planned and surveyed land will speed up the land delivery process and is likely to contribute to the lowering of the costs of planned and surveyed land for housing in the long term. Besides application of new technologies in the land delivery processing likely to speed up the process of land allocation, registration and processing of title deeds and also speedup the building permitting process.

8.10.3. Planning implications

i. Housing is a basic right for all human beings and thus it has to be affordable, culturally appropriate and safe. The land for housing especially rental houses also needs to be located in proximity to livelihood sources, employment centres and social and physical infrastructure services rather than in under-serviced peri-urban locations.

9.0.SOCIAL SERVICES AND COMMUNITY FACILITIES

9.1.Education facilities

9.1.3. Pre-Primary Schools

Dar es Salaam City has 483 pre-primary education schools of which 300 are government owned and 183 are owned by private operators and religious organizations. Put together they enrol 15,534 children, of which 50.6per cent are girls and the remaining 49.4per cent are boys.

9.1.4. Primary Schools

There are 519 primary schools of which 352 (68percent) are public and 167 (32percent) private facilities. The primary school enrolment is 463,460 of who 237,354 are girls, accounting for 51.2per cent of the pupils.

Distance to the nearest primary school

Data from the household survey indicates that the average distance to the nearest primary school is 1.23 kilometres in Dar es Salaam. Town planning standards recommend primary schools facilities to be within 0.5 kilometres of the residents' homes. Household survey data reveal however, that only 39.1per cent of the total population lives within 0.5 kilometres from the nearest primary schools as indicated in the figure 6.1.

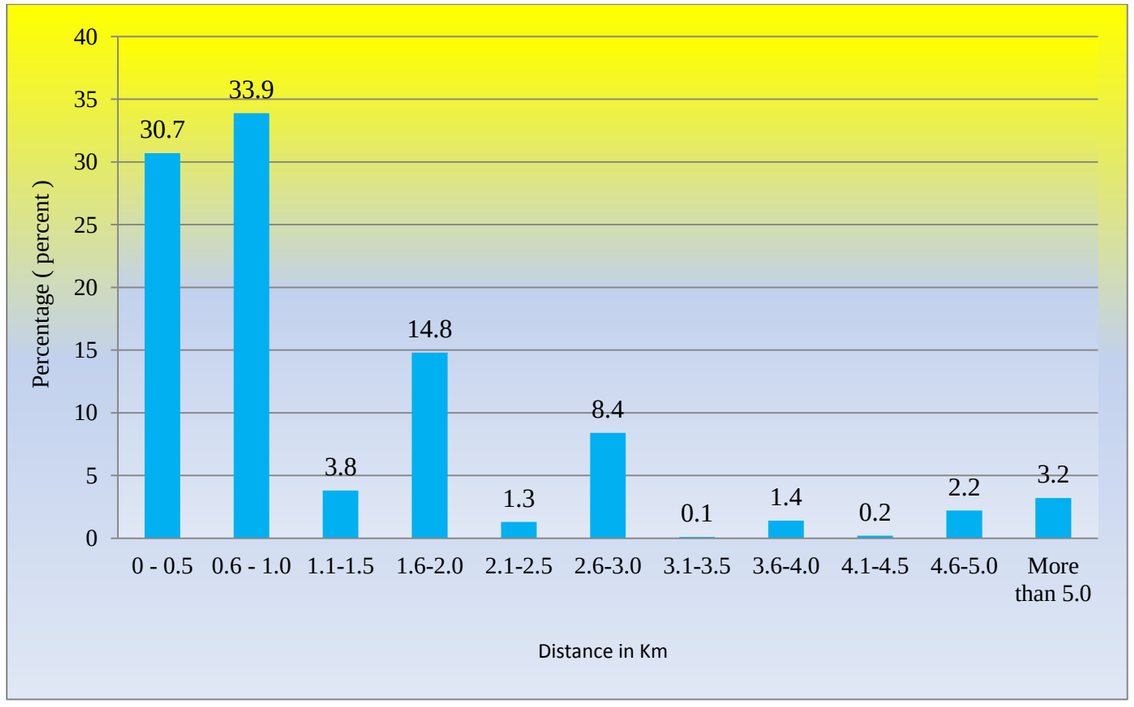


Figure 9.1: Distance to the nearest primary school

9.1.5. Secondary Schools

There has been a recent increase in the number of secondary schools in the City following the decision of the government to build at least one secondary school in each ward. The City has 316 secondary schools of which 181 are private owned. These schools enrol a total of 132,275 children among them 69,908 are girls accounting for 52.9per cent and boys 62, 367 that is 47.1 per cent of the total enrolment. Private secondary schools enrol 58,368 pupils, accounting for a 44.1per cent of the total secondary school enrolment in the City.

Distance to the nearest Secondary school

The average distance to the nearest secondary schools in the city is 1.62 kilometres. Town planning standards allow a maximum walking distance of up to 1.0 kilometre to a nearby secondary school, only 59.5per cent of the city's population lives within the 1.0 kilometres threshold buffer. The rest live beyond 0.5kilometres from the nearest secondary school. (*Dar es Salaam social economic profile, 2014*)

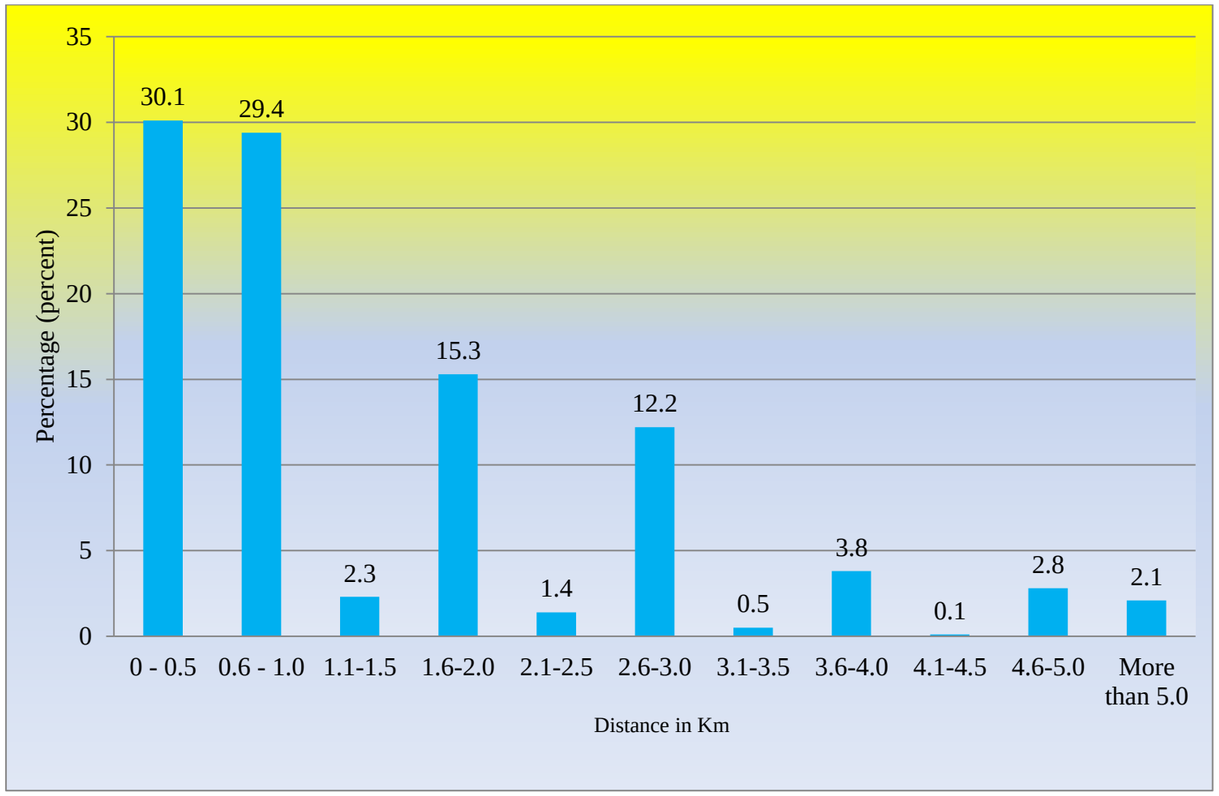
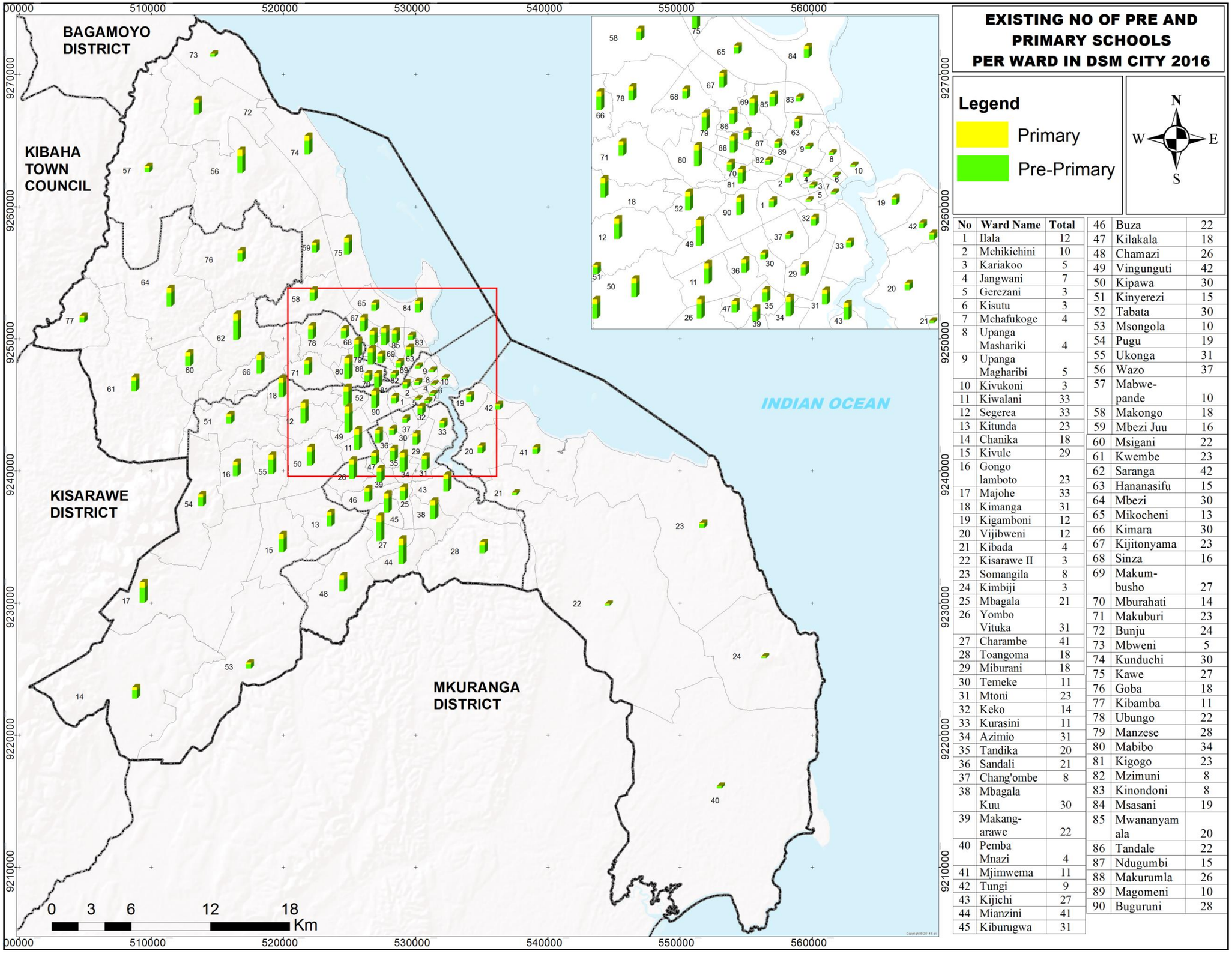
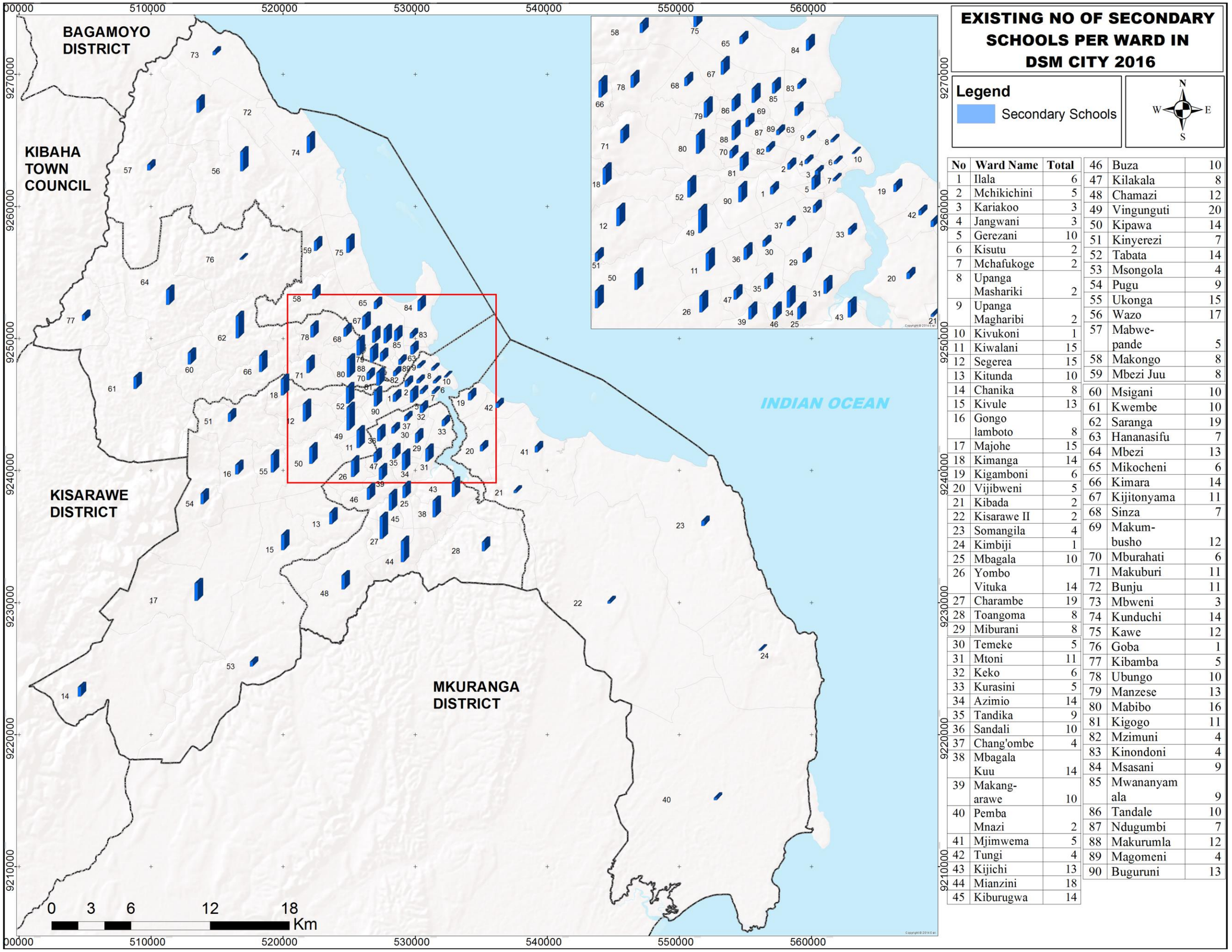


Figure 9.2: Distance to the nearest Secondary school



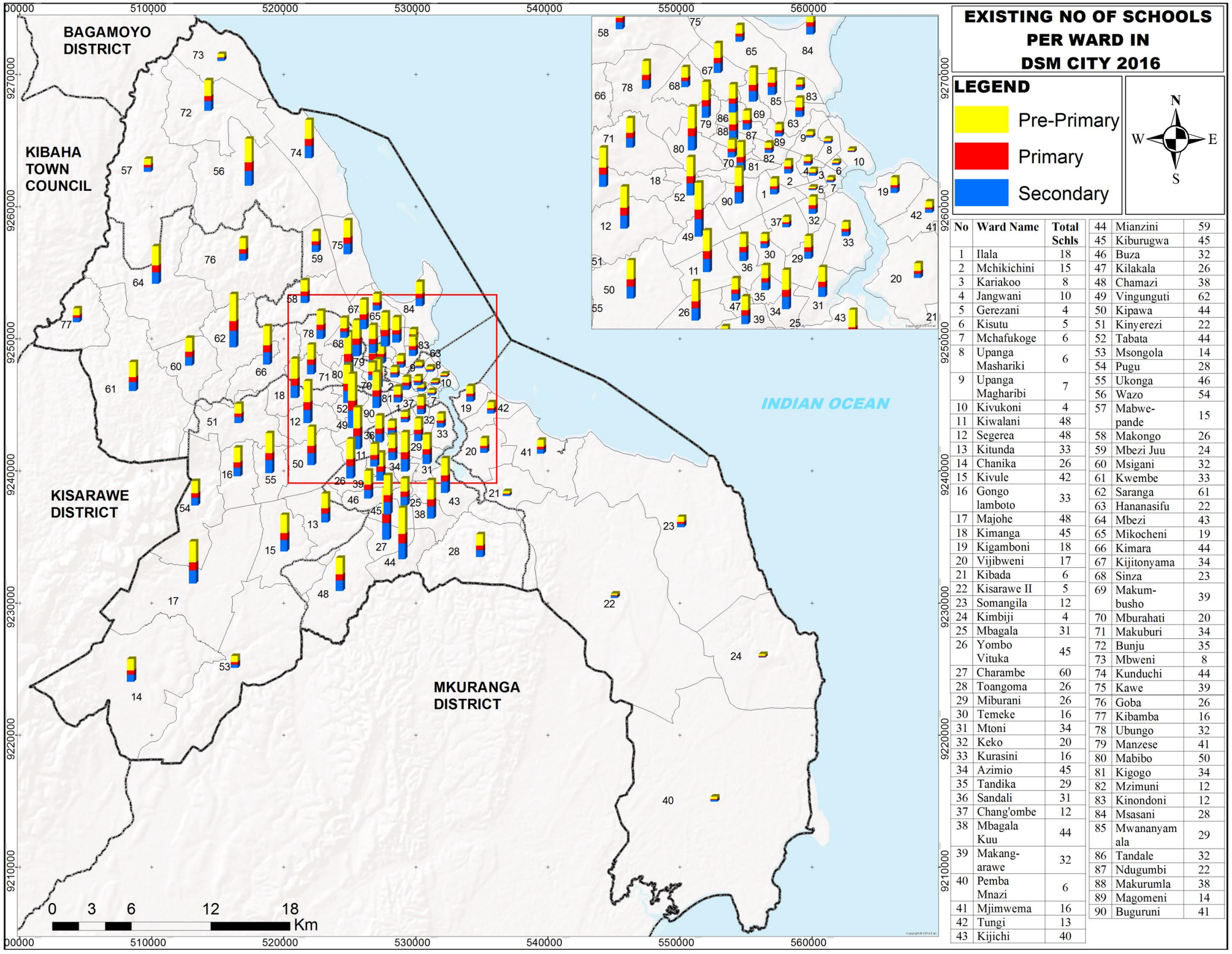
No	Ward Name	Total
1	Ilala	12
2	Mchikichini	10
3	Kariakoo	5
4	Jangwani	7
5	Gerezani	3
6	Kisutu	3
7	Mchafukoge	4
8	Upanga Mashariki	4
9	Upanga Magharibi	5
10	Kivukoni	3
11	Kiwalani	33
12	Segerea	33
13	Kitunda	23
14	Chanika	18
15	Kivule	29
16	Gongo lamboto	23
17	Majohe	33
18	Kimanga	31
19	Kigamboni	12
20	Vijibweni	12
21	Kibada	4
22	Kisarawe II	3
23	Somangila	8
24	Kimbiji	3
25	Mbagala	21
26	Yombo Vituka	31
27	Charambe	41
28	Toangoma	18
29	Miburani	18
30	Temeke	11
31	Mtoni	23
32	Keko	14
33	Kurasini	11
34	Azimio	31
35	Tandika	20
36	Sandali	21
37	Chang'ombe	8
38	Mbagala Kuu	30
39	Makang-arawe	22
40	Pemba Mnazi	4
41	Mjimwema	11
42	Tungi	9
43	Kijichi	27
44	Mianzini	41
45	Kiburugwa	31
46	Buza	22
47	Kilakala	18
48	Chamazi	26
49	Vingunguti	42
50	Kipawa	30
51	Kinyerezi	15
52	Tabata	30
53	Msongola	10
54	Pugu	19
55	Ukonga	31
56	Wazo	37
57	Mabwe-pande	10
58	Makongo	18
59	Mbezi Juu	16
60	Msigani	22
61	Kwembe	23
62	Saranga	42
63	Hananasifu	15
64	Mbezi	30
65	Mikocheni	13
66	Kimara	30
67	Kijitonyama	23
68	Sinza	16
69	Makum-busho	27
70	Mburahati	14
71	Makuburi	23
72	Bunju	24
73	Mbweni	5
74	Kunduchi	30
75	Kawe	27
76	Goba	18
77	Kibamba	11
78	Ubungo	22
79	Manzese	28
80	Mabibo	34
81	Kigogo	23
82	Mzimuni	8
83	Kinondoni	8
84	Msasani	19
85	Mwananyamala	20
86	Tandale	22
87	Ndugumbi	15
88	Makurumla	26
89	Magomeni	10
90	Buguruni	28

Map 9.1: Existing Pre and Primary Schools in Dar es Salaam City, 2016



No	Ward Name	Total
1	Ilala	6
2	Mchikichini	5
3	Kariakoo	3
4	Jangwani	3
5	Gerezani	10
6	Kisutu	2
7	Mchafukoge	2
8	Upanga Mashariki	2
9	Upanga Magharibi	2
10	Kivukoni	1
11	Kiwalani	15
12	Segerea	15
13	Kitunda	10
14	Chanika	8
15	Kivule	13
16	Gongo lamboto	8
17	Majohe	15
18	Kimanga	14
19	Kigamboni	6
20	Vijibweni	5
21	Kibada	2
22	Kisarawe II	2
23	Somangila	4
24	Kimbiji	1
25	Mbagala	10
26	Yombo Vituka	14
27	Charambe	19
28	Toangoma	8
29	Miburani	8
30	Temeke	5
31	Mtoni	11
32	Keko	6
33	Kurasini	5
34	Azimio	14
35	Tandika	9
36	Sandali	10
37	Chang'ombe	4
38	Mbagala Kuu	14
39	Makang-arawe	10
40	Pemba Mnazi	2
41	Mjimwema	5
42	Tungi	4
43	Kijichi	13
44	Mianzini	18
45	Kiburugwa	14
46	Buza	10
47	Kilakala	8
48	Chamazi	12
49	Vingunguti	20
50	Kipawa	14
51	Kinyerezi	7
52	Tabata	14
53	Msongola	4
54	Pugu	9
55	Ukonga	15
56	Wazo	17
57	Mabwe-pande	5
58	Makongo	8
59	Mbezi Juu	8
60	Msigani	10
61	Kwembe	10
62	Saranga	19
63	Hananasifu	7
64	Mbezi	13
65	Mikocheni	6
66	Kimara	14
67	Kijitonyama	11
68	Sinza	7
69	Makum-busho	12
70	Mburahati	6
71	Makuburi	11
72	Bunju	11
73	Mbweni	3
74	Kunduchi	14
75	Kawe	12
76	Goba	1
77	Kibamba	5
78	Ubungo	10
79	Manzese	13
80	Mabibo	16
81	Kigogo	11
82	Mzimuni	4
83	Kinondoni	4
84	Msasani	9
85	Mwananyamala	9
86	Tandale	10
87	Ndugumbi	7
88	Makurumla	12
89	Magomeni	4
90	Buguruni	13

Map 9.2: Existing No. of Secondary Schools in Dar es Salaam City, 2016



No	Ward Name	Total Schls
1	Ilala	18
2	Mchikichini	15
3	Kariakoo	8
4	Jangwani	10
5	Gerezani	4
6	Kisutu	5
7	Mchafukoge	6
8	Upanga Mashariki	6
9	Upanga Magharibi	7
10	Kivukoni	4
11	Kiwalani	48
12	Segerea	48
13	Kitunda	33
14	Chanika	26
15	Kivule	42
16	Gongo lamboto	33
17	Majohe	48
18	Kimanga	45
19	Kigamboni	18
20	Vijibweni	17
21	Kibada	6
22	Kisarawe II	5
23	Somangila	12
24	Kimbiji	4
25	Mbagala	31
26	Yombo Vituka	45
27	Charambe	60
28	Toangoma	26
29	Miburani	26
30	Temeke	16
31	Mtoni	34
32	Keko	20
33	Kurasini	16
34	Azimio	45
35	Tandika	29
36	Sandali	31
37	Chang'ombe	12
38	Mbagala Kuu	44
39	Makang-arawe	32
40	Pemba Mnazi	6
41	Mjimwema	16
42	Tungi	13
43	Kijichi	40
44	Mianzini	59
45	Kiburugwa	45
46	Buza	32
47	Kilakala	26
48	Chamazi	38
49	Vingunguti	62
50	Kipawa	44
51	Kinyerezi	22
52	Tabata	44
53	Msongola	14
54	Pugu	28
55	Ukonga	46
56	Wazo	54
57	Mabwe-pande	15
58	Makongo	26
59	Mbezi Juu	24
60	Msigani	32
61	Kwembe	33
62	Saranga	61
63	Hananasifu	22
64	Mbezi	43
65	Mikocheni	19
66	Kimara	44
67	Kijitonyama	34
68	Sinza	23
69	Makum-busho	39
70	Mburahati	20
71	Makuburi	34
72	Bunju	35
73	Mbweni	8
74	Kunduchi	44
75	Kawe	39
76	Goba	26
77	Kibamba	16
78	Ubungo	32
79	Manzese	41
80	Mabibo	50
81	Kigogo	34
82	Mzimuni	12
83	Kinondoni	12
84	Msasani	28
85	Mwananyamala	29
86	Tandale	32
87	Ndugumbi	22
88	Makurumla	38
89	Magomeni	14
90	Buguruni	41

Map 9.3: Primary and Secondary Schools Buffer in Dar es Salaam City, 2016

The school facilities are not evenly distributed in the city. Wards which are located in the city centre and the immediate surrounding areas have a higher concentration of schools than those in the peripheral areas. Therefore, the schools in the central area and immediate surroundings can be considered to have smaller catchment areas than the schools located in the peripheral wards. However, pupils and students are not obliged to register in the nearest schools. This means that the actual catchment area for some of the schools extends beyond the localities and wards to include the entire municipality, the city and beyond.

However, results from the household questionnaire survey indicate that 71 percent of the population of Dar es Salaam live within a catchment radius of 1.0 kilometre from the nearest primary school. 90.7 percent of the population live within the catchment radius of 2.0 kilometres from the nearest primary school which is equivalent to 30 minutes of walking distance.

With respect to secondary schools, 59.7 percent of the population live within 1.0 kilometre catchment radius from the nearest facility. The household interview results revealed that 77.2 percent of the population of Dar es Salaam live within 2.0 kilometres radius from the nearest secondary school which corresponds to 30 minutes walking distance.

9.1.6. Vocational Training Facilities

Today's economy demands a skilled, trained, and educated workforce and completing post-secondary degree or certificate programs has become a prerequisite for an increasing number of occupations. Drawing from SIDO, nearly two-thirds of all jobs in Tanzania will require some type of postsecondary education. Vocational and career-oriented schools offer a specialized education for students who have specific career goal. Unlike community colleges and more general education avenues, students are able to focus solely on their career choice and receive training in the field.

In Dar es Salaam there are different types of vocational training centres. There are 2 VETA owned Vocational Training Centres and 182 Vocational Training Centres owned by religious NGOs, Government, individuals as well as private companies. Table 9.1 shows the Vocational Education and Training Centre recognised by VETA in Dar es Salaam;

Table 9.1: Vocational Education and Training Centre recognized by VETA in Dar es Salaam

S/N	College name	Owner
1.	Dar es salaam RVTSC	VETA
2.	Air wing VTC	Central Government
3.	Data Star Training College	Private Company
4.	Makoka VTC	Faith-Based Organization (FBO)
5.	Msimbazi Centre,	Faith-Based Organization (FBO)
6.	YMCA VTC,	Faith-Based Organization (FBO)
7.	The institute of procurement and supply	Private Company
8.	Institute of Sales Promotion,	Private Individual
9.	Manzese Parish VTC	Faith Based Organization (FBO)
10.	Makongo VTC,	Central Government
11.	Water Resources Development& Management Institute (RWEGARULILA)	Central Government
12.	Mgulani JKT VTC	Central Government
13.	Montfort VTC,	Private Company
14.	Yombo VTC,	Central Government
15.	Getting Old is to Grow (Going)VTC,	Civil Society Organization
16.	ST. Gaspar VTC,	Faith-Based Organization (FBO)
17.	Don Bosco VTC,	Faith-Based Organization (FBO)
18.	Mikocheni Post Primary VTC,	Local Government
19.	Kigambooni Community Development Institute	Civil Society Organization
20.	Temeke VTC	Central Government
21.	KalutaVTC,	Private Company
22.	Dogodogo Multipurpose Training Center,	Civil Society Organization
23.	M-net Professional College,	Private Individual
24.	Clever College	Private Company
25.	VETA Kipawa ICT Centre	VETA
26.	Data Point College	Private Company
27.	Agape College	Faith-Based Organization (FBO)
28.	Eagle Wings Training College,	Private Company
29.	Green International College,	Private Company
30.	Future World Vocational Institute	Private Individual
31.	Harvard Learning Centre,	Private Individual
32.	Gilman's Institute of Hotel& Tourism Management	Private Individual
33.	Mas &Business Computer Centre,	Private Individual
34.	Loyola Computing Centre,	Faith Based Organization (FBO)
35.	Macmillan Training College,	Private Individual
36.	Splendid Training College,	Private Individual
37.	Msimbazi Parish Tailoring School,	Faith Based Organization (FBO)
38.	The Royal Gold land College,	Private Individual
39.	Western Training College,	Private Individual
40.	Adat Centre,	Private Individual

41.	Carmelite Sisters VTC,	Faith Based Organization (FBO)
42.	Cegodeta Centre,	Private Individual
43.	Child in the Sun,	Faith Based Organization (FBO)
44.	Dege School of Hair Dressing and Decoration	Private Individual
45.	Golden Touch Hair &Beauty School,	Private Individual
46.	Huduma VTC	Central Government (TPDF)
47.	Innovative Computer Training Centre	Private Individual
48.	Kiwohede Bunju VTC	Civil Society Organization
49.	Istanbul Youths Centre	Faith-Based Organization (FBO
50.	Kilimanjaro Institute of Technology	Private Individual
51.	Lugalo JWTZ VTC	Central Government(TPDF)
52.	Mary Goreth Parish (Magomeni) HCTC	Faith-Based Organization (FBO)
53.	Mama Muchwa VTC	Private Individual
54.	Mugerezi Spatial Technology VTC	Private Individual
55.	Paradigms Training Centre	Private Individual
56.	Maznat School of Cosmetology	Private Individual
57.	Salome Learning Centre	Private Individual

Source: SIDO, 2014

9.1.7. Tertiary Education Facilities

There are 19 teacher-training colleges all of which are privately owned and operated. The distribution of schools and teacher training colleges in the three municipalities in 2012 is shown in Table 2.9.

There are 184 vocational education and training institutions in the city. These are very important institutions, which absorb school leavers in search of skills development. Some of these institutions are located within residential areas (both formal and informal), with limited land areas while others are located in industrial areas, which are not ideal places for studying.

58.	Strategic Computing Centre	Private Individual
59.	Sinon College	Private Individual
60.	ST. Peters Vocational Training Centre	Faith-Based Organization (FBO)
61.	ST. Michael VTC	Faith-Based Organization (FBO)
62.	Tanzania Education College	Private Individual
63.	Tanzania Police Dog and Horse Academy	Central Government
64.	Techno base VTC	Private Individual
65.	Tegeta Vocational Training Centre	Civil Society Organization
66.	Upendo Education Centre	Private Individual
67.	Zoom Polytechnic	Private Individual
68.	Kigamboni Dong Shin School of Technology	Faith-Based Organization (FBO)
69.	Matumaini VTC	Faith-Based Organization (FBO)
70.	Youth Development Fund (YUDEF) VTC	Civil Society Organization
71.	Police Vocational Training Centre	Central Government
72.	ST. Immaculate VTC	Faith Based Organization (FBO)
73.	UMATI VTC	Civil Society Organization

9.1.8. Higher learning institution

The city has 21 institutions of higher learning education which include the University of Dar es Salaam (UDSM), the Ardhi University (ARU), the Muhimbili University of Health and Allied Sciences (MUHAS) and the Dar es Salaam University College of Education (DUCE), the Agha Khan University, International Medical Technologies University (IMTU), and Tumaini University College. Others are the Hubert Kairuki Memorial University, St John's University of Tanzania (SJUT), St Augustine University, St Joseph University, Mzumbe University, Tumaini University, the Institute of Financial Management (IFM), the College of Business Education (CBE) and the Dar es Salaam Institute of Technology (DIT) and the Dar es Salaam School of Accountancy (DSA), and other mid-range colleges including the School of Accountancy, the Institutes of Transport, Journalism, and Social Welfare.

9.2. Hospitals and Health facilities

9.2.1. Overview

Dar e Salaam city is served by 449 health facilities of various grades as shown in Table 6.3. There are 392 dispensaries located in the wards, 29 health centres in the five municipalities and 28 hospitals. The private sector accounts for most of the health facilities in the city. There are 28 government and parastatal owned hospitals in the five municipalities, six in Kinondoni namely; TMJ, Rabininsia Memorial Hospital, Mikocheni Hospital, Kinondoni Hospital, Masana Hospital and IMTU hospital, six in Ilala namely; Regency Hospital, Hindu Mandal, Muhimbili, Amana, Mnazi Mmoja and Agha Khan, and one in Temeke namely; Temeke Hospital.

Public health facilities are overcrowded and often lack drugs and equipment. There is a higher concentration of health facilities in the city centre compared to the outlying areas of the city. Newly established settlements generally lack public health facilities and residents have to travel long distances to access the facilities.

9.2.2. Distance to Health Facilities

The household survey found that 32.1per cent of the households in Dar es Salaam walk up to 1 kilometre to access nearest health facility. The average distance from the households to the nearest health facilities in the city was 1.55 kilometres; this is way above the standards of 0.5kilometres recommended by the town planning standards and regulations.

Only 30.7per cent of the city population enjoys the threshold standard of 0.5 kilometres and below distance to the nearest health centre, with a majority of 69.3per cent perceived to be poorly serviced with health facilities to their neighbourhoods.

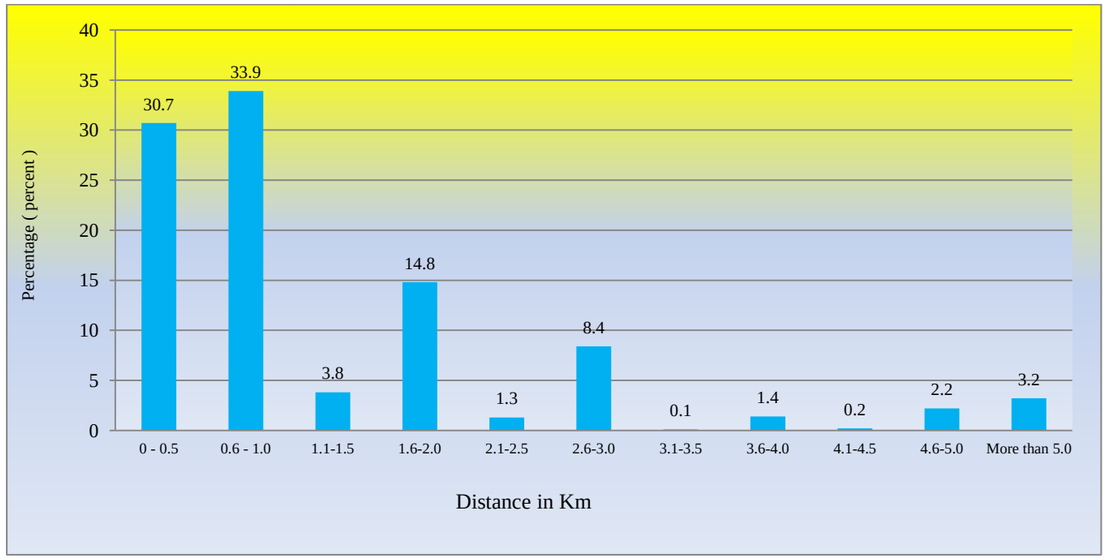


Figure 9.3: Distance to Health Facility

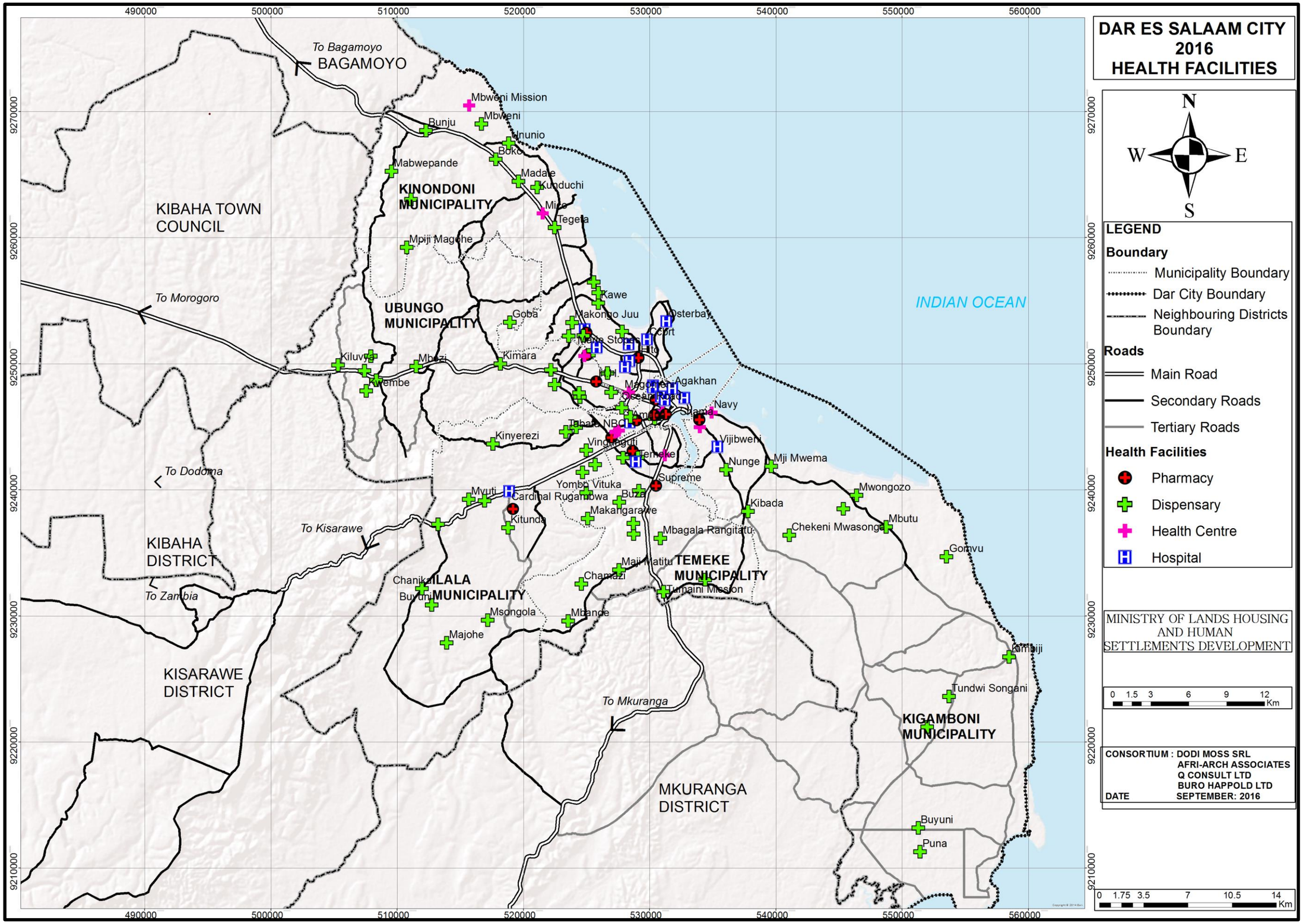
Table 9.2: Inventory of health units in the Dar es Salaam City in 2016

SN	Type of Unit	Government	Private	Total
1	Hospital	5	23	**28**
2	Health centers	5	24	**29**
3	Dispensaries	87	305	**392**
4	**Total**	**97**	**352**	**449**

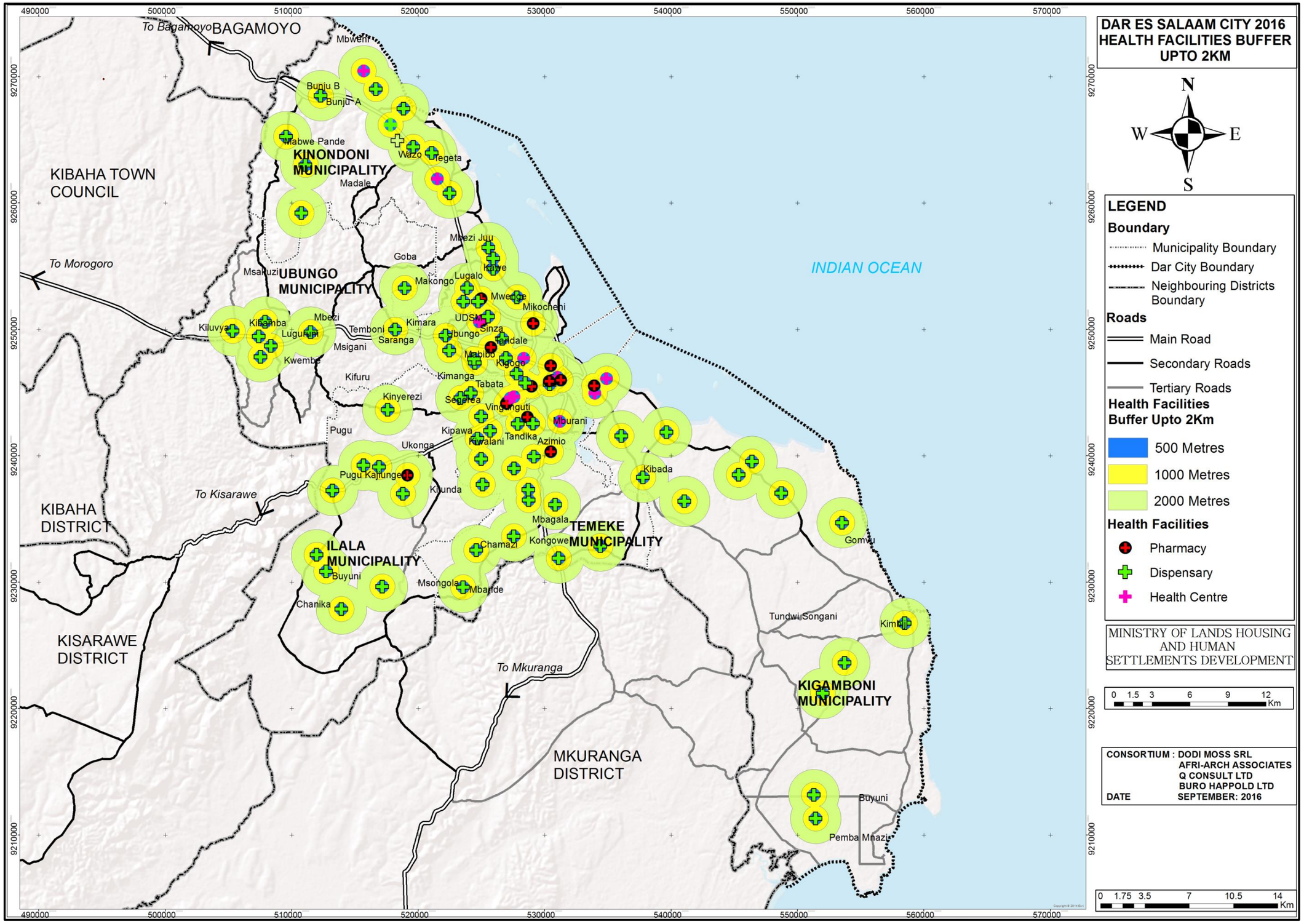
Source: Dar es Salaam strategic plan 2010/11- 2012/13

Health facilities face severe shortage of medical staff. The population ratio per doctor is 1: 18,637 and that per trained nurse is 1: 5,333. The World Health Organization recommends a ratio of 1:1,000. Most of the public health facilities are often also overcrowded. See Figure 6.4.

Plate 9.1: Overcrowding at a public dispensary (Photo of 2013), Physical inventory 2013



Map 9.4: Dar es Salaam city Health Facilities Distribution



Map 9.5: Health Facilities Buffer to 2 Kilometres

9.3. Fire and Rescue Services

Dar es Salaam city is exposed to a high risk of fire because there are only two base points including the main fire station in the city centre and one substation along the Nyerere road. These are too few for a city that has a radius of about 30 kilometres, roads that are congested with traffic for most of the day, many informal settlements having no access roads and absence of fire hydrants in most parts of the city. In the city centre, fire lanes have been blocked by petty business stores, refuse or used as parking and there are places where the lanes are blocked by buildings. In the past ten years for example, Dar es Salaam city has witnessed several major fire outbreaks at Ubungo power station, Gongo la Mboto and Mbagala bomb explosions, Mchikichini market fire accidents, Tegeta Assemblies of God Church, the Dar es Salaam Blanket and Chemi Cotex Factories, the Water Front House and the PPF Tower.

In recent years new private fire and rescue services have been introduced in the city but they do not have strategic locations to serve the population of the city and provide services on a commercial basis.

10. PUBLIC UTILITIES

10.1. Water supply

10.1.1. Water sources and capacities

The city's water supply comes predominantly from two surface water rivers: the Upper and Lower Ruvu rivers, which cumulatively provide the city with 180 million to 260 million litres of water each per day. The Energy and Water Utilities Regulatory Authority (EWURA) Annual Report 2010 indicates that about 66percent of water that is used in the city is supplied from the Lower Ruvu and 31percent is from the Upper Ruvu; 2 percent from the Mtoni River and only 2 percent is sourced from boreholes.

Water Services

The Dar es Salaam Water and Sewerage Corporation of Dar es Salaam (DAWASCO) is responsible for providing water and sewerage services to the city of Dar es Salaam and part of the Coastal Region (Kibaha and Bagamoyo).

DAWASCO has three water treatment plants which are, Lower Ruvu, Upper Ruvu and Mtoni treatment plants. Underground water sources consist of a number of boreholes mostly located in Temeke Municipality. The water produced from these sources serves almost 75 percent of the Dar es Salaam city and part of Coastal Region.

10.1.2. Households Water Sources

About of 54.1 percept of the households in Dar es Salaam obtain water from piped water sources while the remaining 45.9 percept obtain water from other sources of supply such as deep wells (boreholes), shallow wells, water vendors and rivers as shown in Figure 10.1.

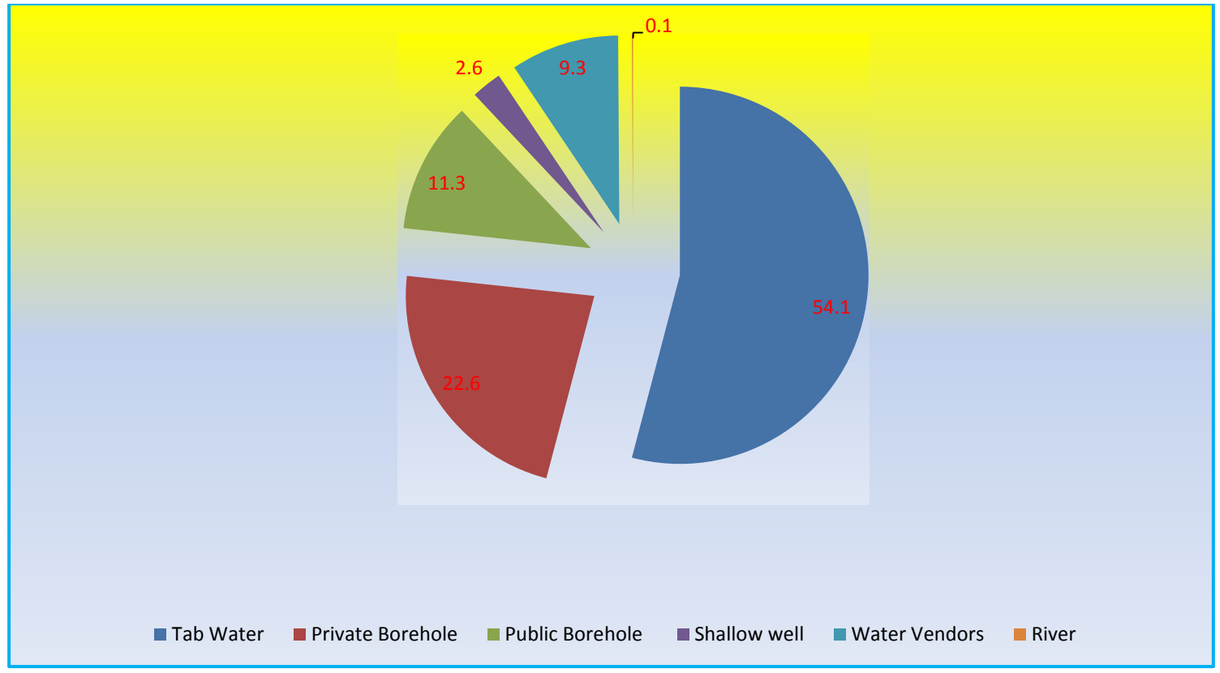
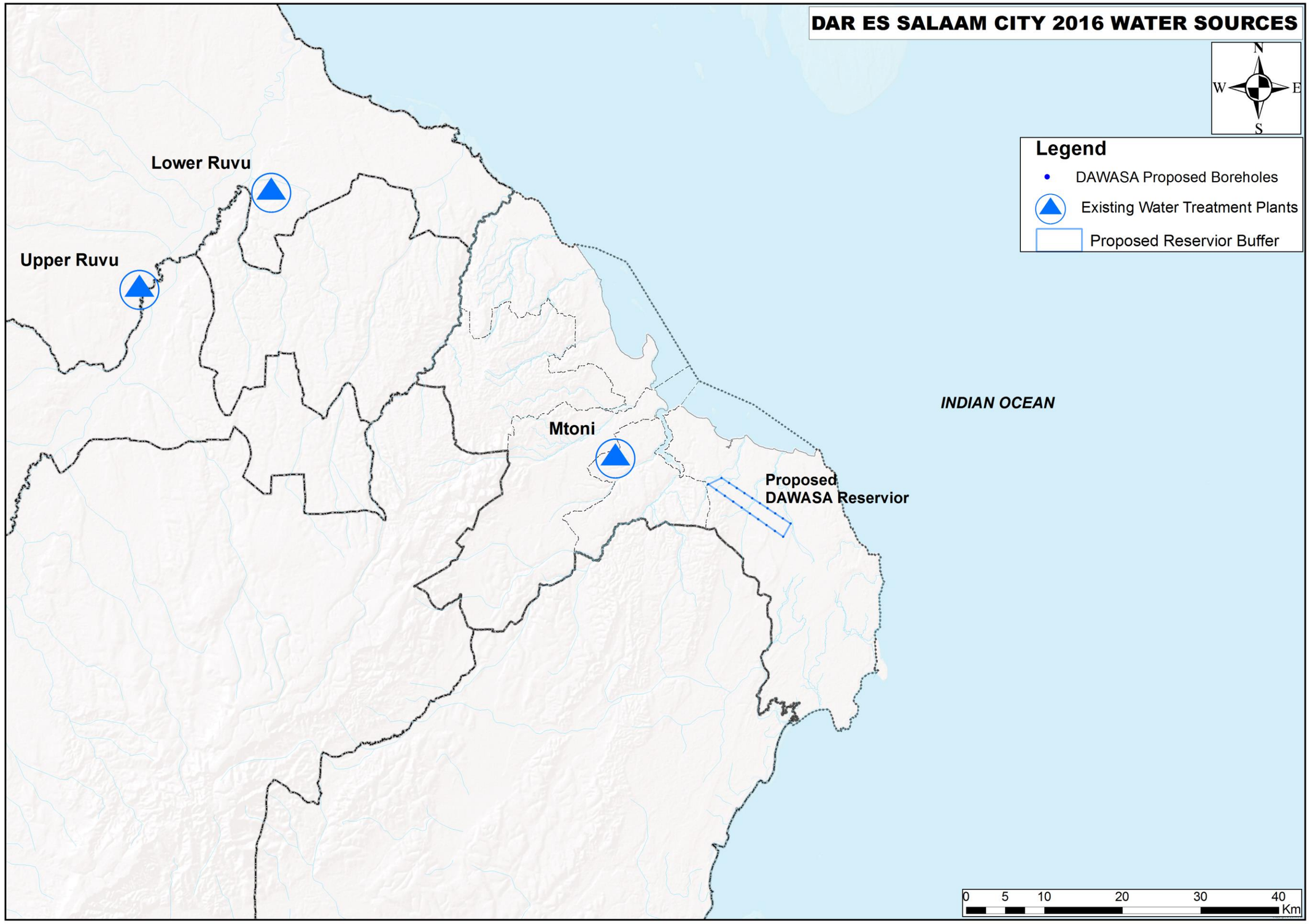


Figure 10.1: Households Water Sources

10.1.3. Borehole abstractions

Freshwater wells and boreholes are used across the city mostly in the informal settlements, whereas in the planned areas, piped water is used as a major source of water. These vary in depth between 40-60metres near the Msimbazi, Sinza, Ubungo and Mlalakua Rivers and tend to be deeper and approximately 80metres deep near the Kizinga and Mzinga Rivers. Key representative parameters collected by the CIUP assessments of unplanned settlements for Phase II improvement projects (CIUP Phase II 2009) illustrate the typical use of boreholes within unplanned settlements as shown in Table 7.1.



Map 10.1: Dar es Salaam City 2016 Water Sources

Table 10.1: Usage of existing boreholes within the unplanned settlement areas.

Parameters considered by CIUP Phase II	Approximate ranges based on investigation of CIUP II sub-wards
Percentage of community obtaining water from boreholes prior to CIUP II intervention	80-90percent (CIUP Phase II, 2009, 17,31)
TZS charged per bucket from borehole	17-33 TZS
Estimate people per household	3.53-3.89 people/HH
Estimated daily consumption per household (buckets)	5.7-10 buckets
Monthly cost per household TZS)	535 – 666 - 1,260

Source: CIUP Phase II 2009

10.1.1. Water supply and demand

Existing supply network capacity

The water demand of DAWASA service area in 2014 was 407,605 m^3/d, expected to reach 955,133 m^3/d at the target year, 2032.

The current and ultimate water production capacity for the existing WTP's is presented in Table 10.2.

Table 10.2: Water Production Capacity

Source	**Capacity (m^3/d)**		
	Current Situation	**Immediate Upgrade**	**Ultimate Capacity**
LR WTP	180,000	270,000	360,000
UR WTP	90,000	90,000	210,000
Mtoni WTP	6,000	6,000	6,000
Total	**276,000**	**366,000**	**576,000**

The table shows that the current water demand exceeds the available water production of 276,000 m^3/d. The LR WTP capacity shall be increased from 180,000 m^3/d to 270,000 m^3/d according to the Outline Design and Tender Documents for Extension of Lower Ruvu Water Treatment Plant Project. The project will be implemented as an immediate plan, improving water supply through increasing the total water production to 366,000 m^3/d.

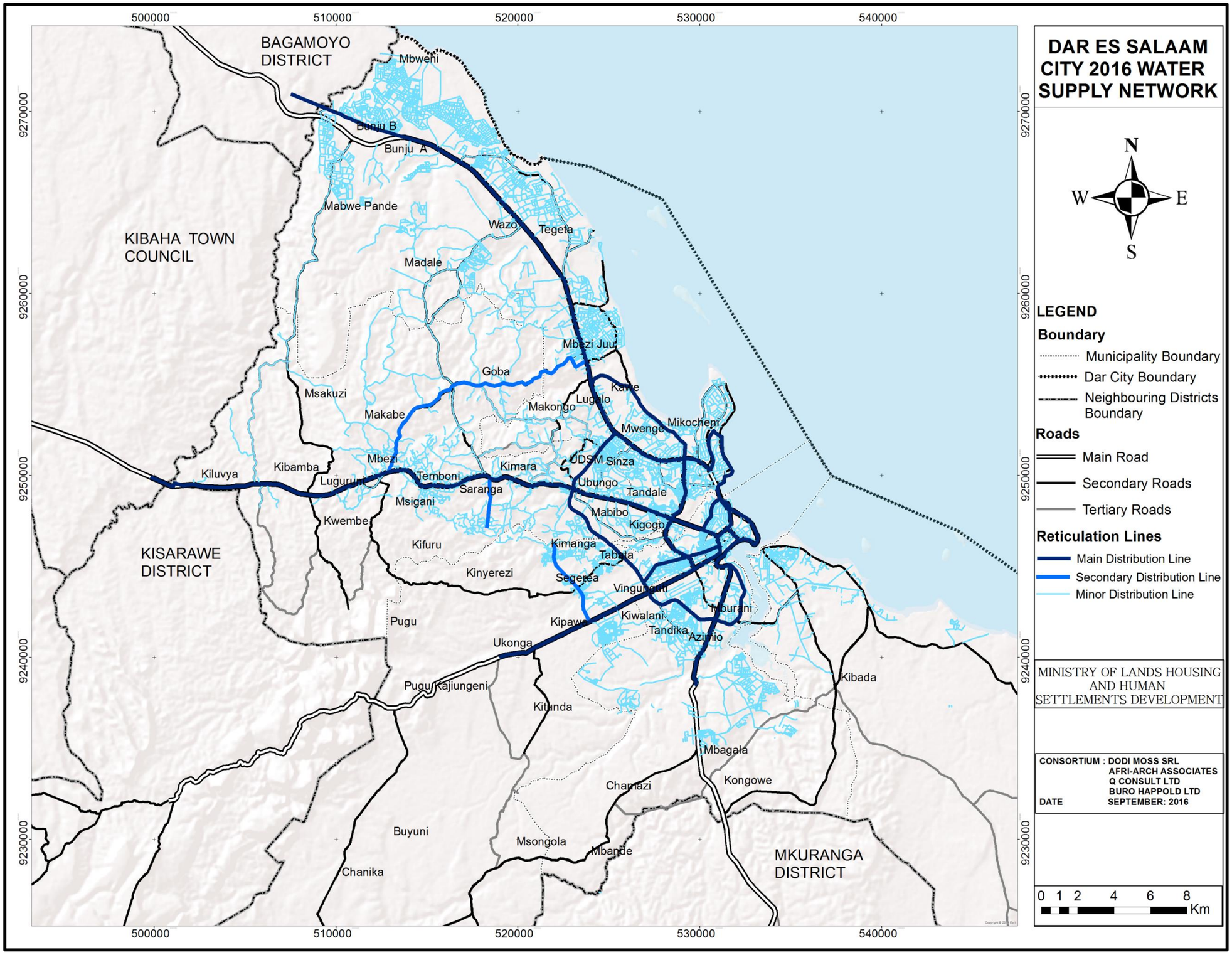
Increasing water production of the available WTP's to their ultimate capacity (576,000 m^3/d) by the target year will not cover the water demand.

Thus, the new Kimbiji and Mpera well fields are developed to produce a total of about 390,000 m^3/d; such that 260,000 m^3/d are produced from the Kimbiji well field via 20 wells each producing 13,000 m^3/d at the target year, and 130,000 m^3/d are expected to be produced from the Mpera well field via 10 wells of the same production capacity.

Based on the above, the total water production should reach 966,000 m^3/d by 2032. The hydraulic design calculations shall be based on a current total production of 366,000 m^3/d.

Comparing the total water production capacity to the projected water demand until the target year it is possible to figure out the phasing of the proposed water production facilities with respect to time. Figure 10.2 presents such comparison up to 2032 in 3 stages. Phasing of the newly proposed water production facilities is presented in Figure 10.2 and Table 10.3.

Figure 10.2 shows that Stage I Works should be implemented immediately in order to improve the service and cover water demand up to year 2021. Stage II Works should be implemented by year 2020 to cover demand up to year 2029. Stage III Works should be implemented by year 2028 to cover demand up to the target year 2032.



Map 10.2: Water Supply in Dar es Salaam City, 2016

Table 10.3: Phasing of the Water Production Facilities

Source	Current Situation	Proposed Works		
		Stage I	Stage II	Stage III
Existing Facilities				
LR WTP	270,000	0	90,000	0
UR WTP	90,000	60,000	0	60,000
Mtoni WTP	6,000	0	0	0
New Facilities				
Kimbiji Well field	0	156,000	52,000	52,000
Mpera Well field	0	96,000	34,000	0
Total Proposed Works		**312,000**	**176,000**	**112,000**
Total Production	**366,000**	**678,000**	**854,000**	**966,000**

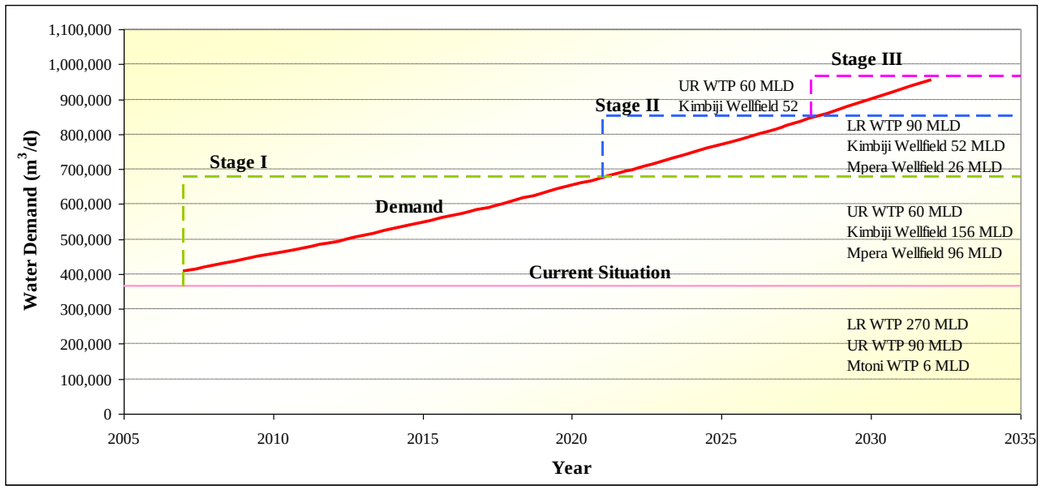


Figure 10.2:Water Balance and Phasing

10.1.2. Other Supply Methods

Where there is no piped water supply such as Mbagala Charambe, Msongola, and some areas of Mtoni Kijichi, many communities have shared private boreholes or municipal wells. Water tankers are also used to fill local tanks (Figure 7.4) and there are also street market water vendors.

Figure 10.3: Water tanker

10.1.3. Water Consumption and Demand

Water consumption and demand for the city ranges from 61 to 140 litres per person per day. In unplanned settlements, the CIUP reports estimate that water consumption is likely to vary depending on the method of supply. Water consumption figures assumed per capita are: 30 l/p/d where public kiosks are available; 50 l/p/d where single standpipes exist and 90 l/p/d in areas where multiple taps exist (CIUP - II, 2009). This demand is rapidly increasing as shown in Figure 7.3 and is expected to be around 900 million litres of water per day by 2030.

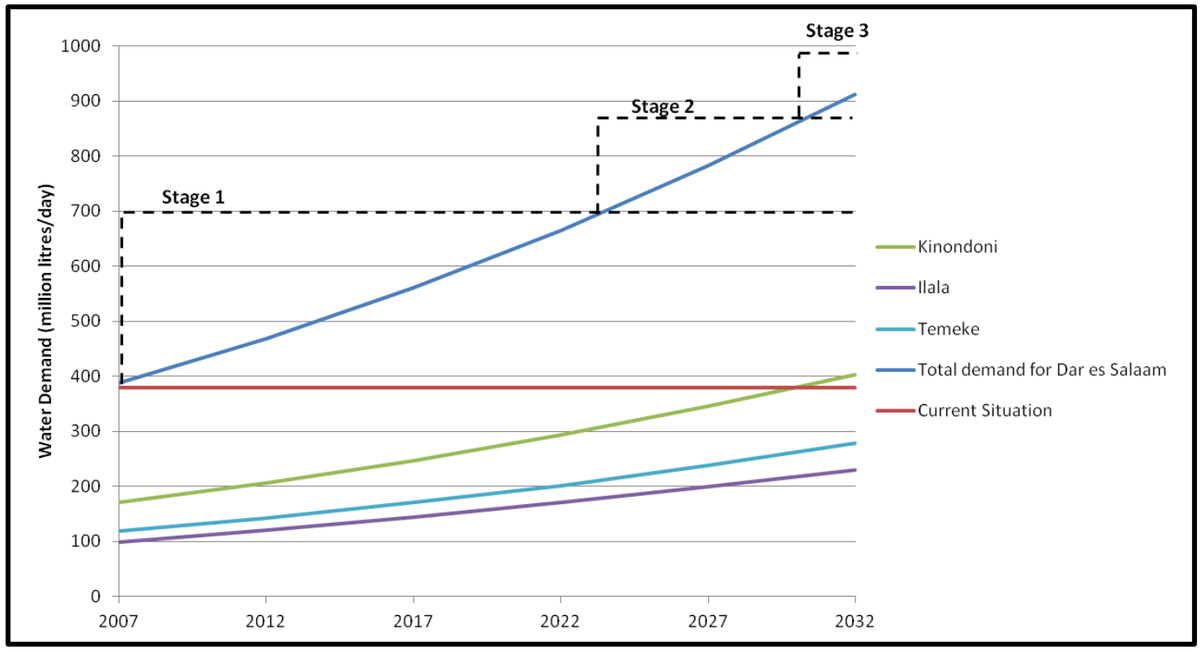
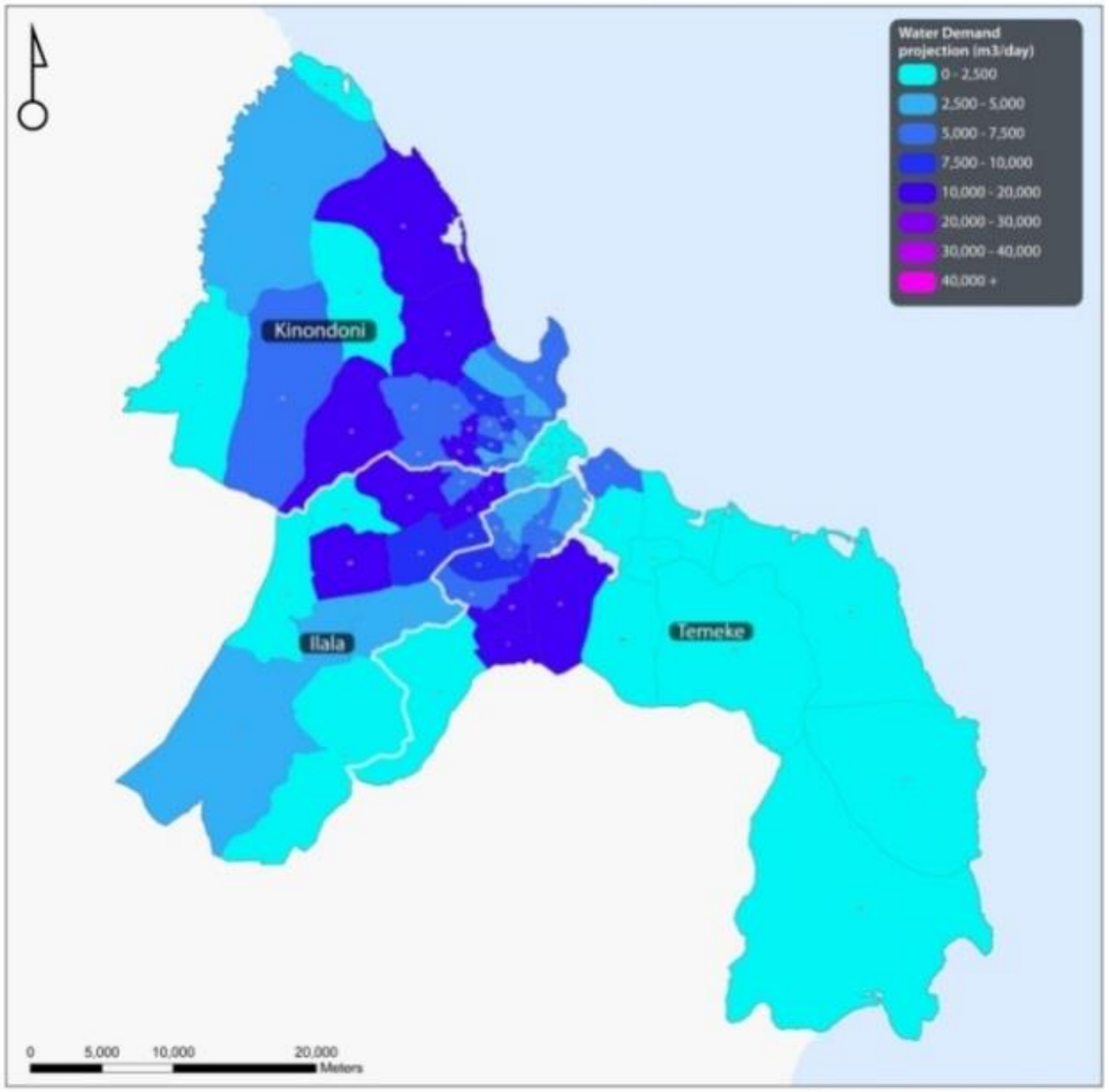
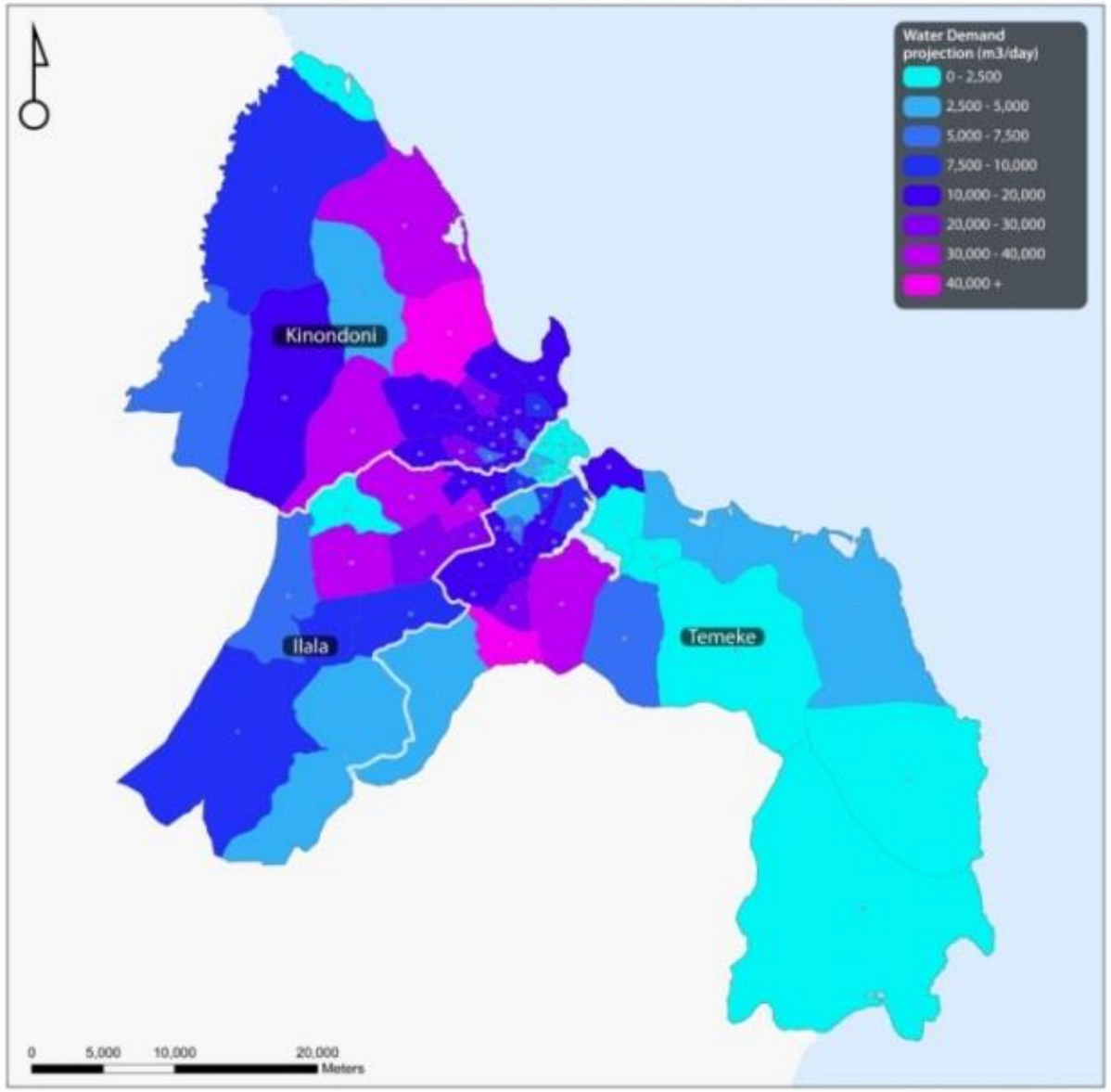


Figure 10.4: Water demand predictions up to the year 2036
Source: CIUP Phase II, 2009

DAWASA has estimated water demand up to 2032. These are illustrated by ward in Map 10.1.





Map 10.3: DAWASA water demand estimations for 2008 and 2036.
Source: DAWASA

10.1.4. Water treatment

Currently, there are three water treatment plants and the potential for upgrade has been assessed by JICA as shown in Table 7.2:

LR Scheme:

Treated water is pumped from the LR WTP to the University Reservoir at an elevation of 70 m via main transmission pipelines along the Morogoro Road. The university reservoir feeds areas of elevations less than 55 m within DSM city. Four additional reservoirs take their storage from the transmission pipelines to supply wards along the Bagamoyo Road.

UR Scheme:

Treated water is pumped from the UR WTP via transmission pipelines of varying diameters to Kibamba Reservoir at an elevation 186m, acting as a reservoir as well as a pressure breaker, being the highest elevation reservoir in the scheme. Water flows by gravity from Kibamba Reservoir to Kimara Reservoir at an elevation 136 m; Kibamba Reservoir feeds areas of elevations ranging from 90 m to 175 m, while Kimara Reservoir feeds areas of elevations ranging from 30 m to 115 m within Dar es Salaam city. Five additional reservoirs take their storage from the transmission pipelines to supply wards along the Morogoro Road

Potable water is mainly stored in reservoirs located at Makongo, Ubungo and Kimara but their capacities are highly limited.

Table 10.4: Existing and water treatment plant capacity and potential for upgrade

Location – sub-ward	Current Capacity (m3/day)	Potential Upgrade (m3/day)
Lower Ruvu	180,000	360,000
Upper Ruvu	90,000	210,000
Mtoni	60,000	-

Source: JICA, 2012.

10.1.5. Catchment Area Boundaries

Dar es Salaam City falls within the Coast sub-catchment of the 66,820kilometers^2 Wami-Ruvu catchment (JICA, 2011). The Wami-Ruvu catchment includes a total of 7 sub-catchments, respectively the: Coast, Lower Ruvu, Ngerengere, Upper Ruvu, Wami, Mkondoa and Kinyasungwe. These sub catchments constitute very important sources of water which flow to the rivers that supply water to Dar es Salaam city. Therefore it is important for these sub catchments to be conserved for the city to continue to sustainable water supply.

10.1.6. Access to potable water

Piped water is supplied to about 50-6 0percent of the population in Dar es Salaam. Available data indicates a 30percent increase in the total number of DAWASCO connections over a year up to 95,924 of which 79.4percent are metered (EWURA, 2010, p. 61). The minimum level of service proposed in the CIUP project is one public kiosk per 250 people at a maximum walking distance of 250 metres. Whereas in planned areas the act provides that every plot should be provided with piped water system. The public kiosks typically comprise a standpipe with a concrete slab and a soak pit. However, all water supply interventions in the city are to be undertaken under a special DAWASA programme.

10.1.7. Groundwater

The main hydro-geological structure within the Coastal sub catchment is the Kimbiji aquifer, within the tertiary deposits (JICA, WRM, MoW 2011, 3-7). This aquifer is mainly recharged within the Pugu Hills area. These studies also suggest that groundwater levels vary seasonally by approximately 97metres between rainy and dry seasons, thus implying that in the dry season there is a likelihood of water shortage in the city.

Groundwater is abstracted in some areas through boreholes and wells. Interviews with the Wami-Ruvu Basin Authority also indicated that the ground water table ranges from 1 to 6m below ground level and quality is sometimes brackish or saline due to saline water intrusions or inherent salt formations within limestone.

10.1.8. Surface Water Courses

There are two principal rivers. Within the Wami-Ruvu Basin is the Wami River, with an estimated mean annual discharge of 3,280 million cubic metres /year and the Ruvu River, with an estimated discharge of 1,370 million cubic metres /year (MoW and URT 2008). Nineteen (19) smaller rivers flow through the city and coastal sub-catchment area have been identified in the Regional River Catchment Plan (D01-6007) alongside tributary rivers. These and their approximate drainage boundaries are shown in Map 7.2. Discharges and river natural drainage conditions for 7 of the key rivers within the city study area are summarized in Table 10.5. Most of these rivers are seasonal. The flood discharge is based on the 1 in 50 year rainfall event

Table 10.5: Rivers and their drainage conditions

River	Basin Area (kilometers^2)	Length (kilometers)	Discharge		Features
			Dry Season (m3/sec)	Flood (m3/sec)	
Kijitonyama	4	6	0.1	37	Flat Grade
Sinza	25	8	0.2	69	Flat Grade
Msimbazi	240	60	0.5	387	Flat Grade, Meandering, Big Storage
Ubungo	35	6	0.2	75	Flat Grade
Gerezani Creek	3	2	0.5	20	Origin Small Stream
Kizinga	370	80+	0.5	596	Flat Grade, Meandering, Big Storage

Mzinga	670	100+	0.5	1080	Flat Grade, Meandering, Big Storage

10.1.9. Potable Water System

The potable water system consists of all the engineered intake works, treatment plants, storage tanks and supply networks designed and installed to provide the existing level of service in the city. It also includes the decentralized abstraction boreholes and wells and the organisation mechanisms such as water tankers and kiosks, which currently, are the most common method of potable water supply in unplanned settlements. As of 2015/16 about 72 per cent of the population of Dar es Salaam had access to piped or protected water as their main source. The target is for 100 percent of the population to have access to clean and protected water by 2025/2026

The key risks affecting the potable water system in Dar es Salaam are insufficient water to meet demands; and the risk of water quality being inadequate for use.

DAWASA owns the potable water infrastructure and is responsible for implementing improvement plans whereas DAWASCO is the company responsible for operating the network. Potable water supply is regulated by the Energy and Water Utilities regulatory Authority (EWURA).

10.1.10. Water Quality

Abstracted water quality varies depending on the area. (NEMC, 2016) Some areas such as those adjacent to the Msimbazi, Sinza and Ubungo rivers are known to have blackish ground water. In the estuary near the Mlalakua River water is saltier reaching 3,000 micro Siemens/cu.m. In some cases this is due to salt-water intrusion and or embedded salt within limestone formations. Pollution control and insufficient treatment is also known to exacerbate water quality even within the potable water supply network.

10.2. Sanitation and Wastewater Management

The Dar es Salaam Water and Sewerage Corporation (DAWASCO) is responsible of providing water supply and sanitation services to the city of Dar es Salaam and parts of Coastal Region in Kibaha and Bagamoyo Districts.

10.2.1. Waste Water Collection Method

A majority of households in the city, 37 percent use pour flush toilets with only 29 percent of the households using standard flush toilets for the disposal of human wastes. However, 34 percent of the city population are using pit latrines with 18 percent of them using Ventilated Improved Pit (VIP) latrines while 16 percent use normal pit latrines as shown in *Figure 10.5.*

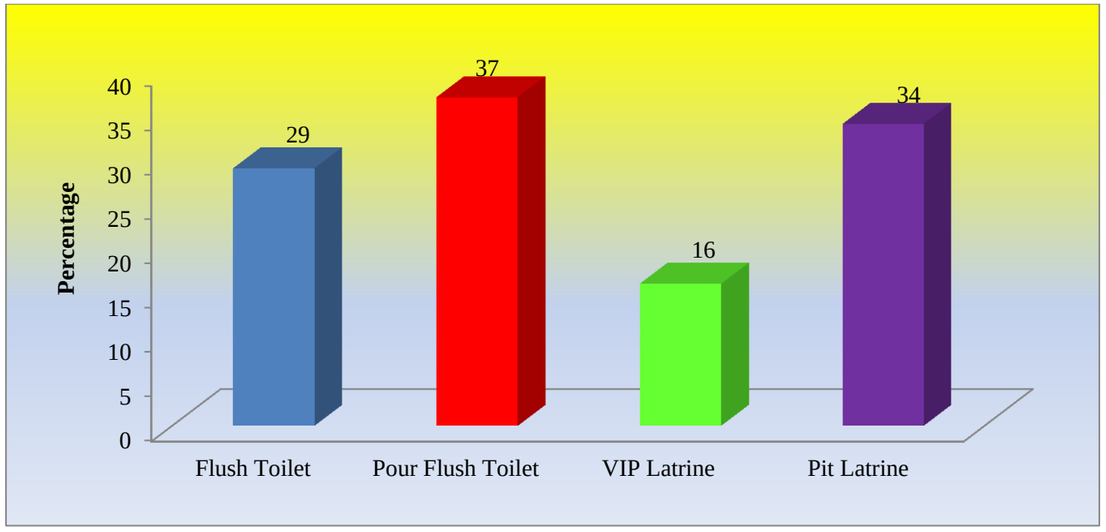


Figure 10.5: Waste Water Collection Method

10.2.2. Waste Water Transmission

The reticulated sewerage network comprises 189.27 kilometres with 18,643 connections. 20.4 percent of the population in the city is connected to the sewerage system operated by the Dar es Salaam Water and Sewerage Corporation (DAWASCO), which is considered as way too low in view of the rapid growth of its population. The reticulated sewerage network currently serves the city centre, Kariakoo, Upanga, Mikocheni, Regent Estate, Kijitonyama, and Buguruni, Pugu road, TAZARA Station, Ubungo, Lugalo, Airwing and Mgulani areas. This system is old and overstretched as it was built between the years 1950 - 1970 and thus keeps breaking down frequently due to depreciation.

10.2.3. Waste Water Treatment

There are eight waste water stabilisation ponds with a capacity of treating 4,500 cubic metres per day. These are located at Lugalo, Mikocheni, Msasani, the Airport, the University of Dar es Salaam, Buguruni, Mabibo and Kurasini. In addition, there is one mechanical treatment plant located at the Gymkhana grounds in the city centre.

10.2.4. Waste Water Disposal

Waste water which is treated at the waste stabilisation ponds is directed into rivers and streams for disposal and finally into the ocean. Waste water from the Gymkhana treatment plant is discharged directly into the ocean through a piped outfall. 2.2 percent of the households dispose of wastewater in pits and up to 19.6 percent use other random disposal methods. The random disposal methods include emptying their toilets into storm water drains, streams and rivers during rain seasons and river streams close to their houses as shown in Figure 10.6.

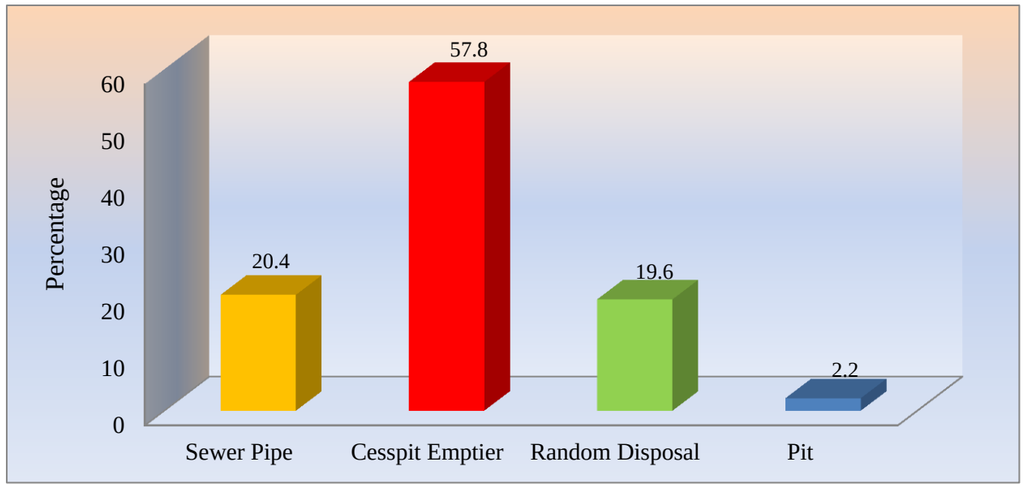
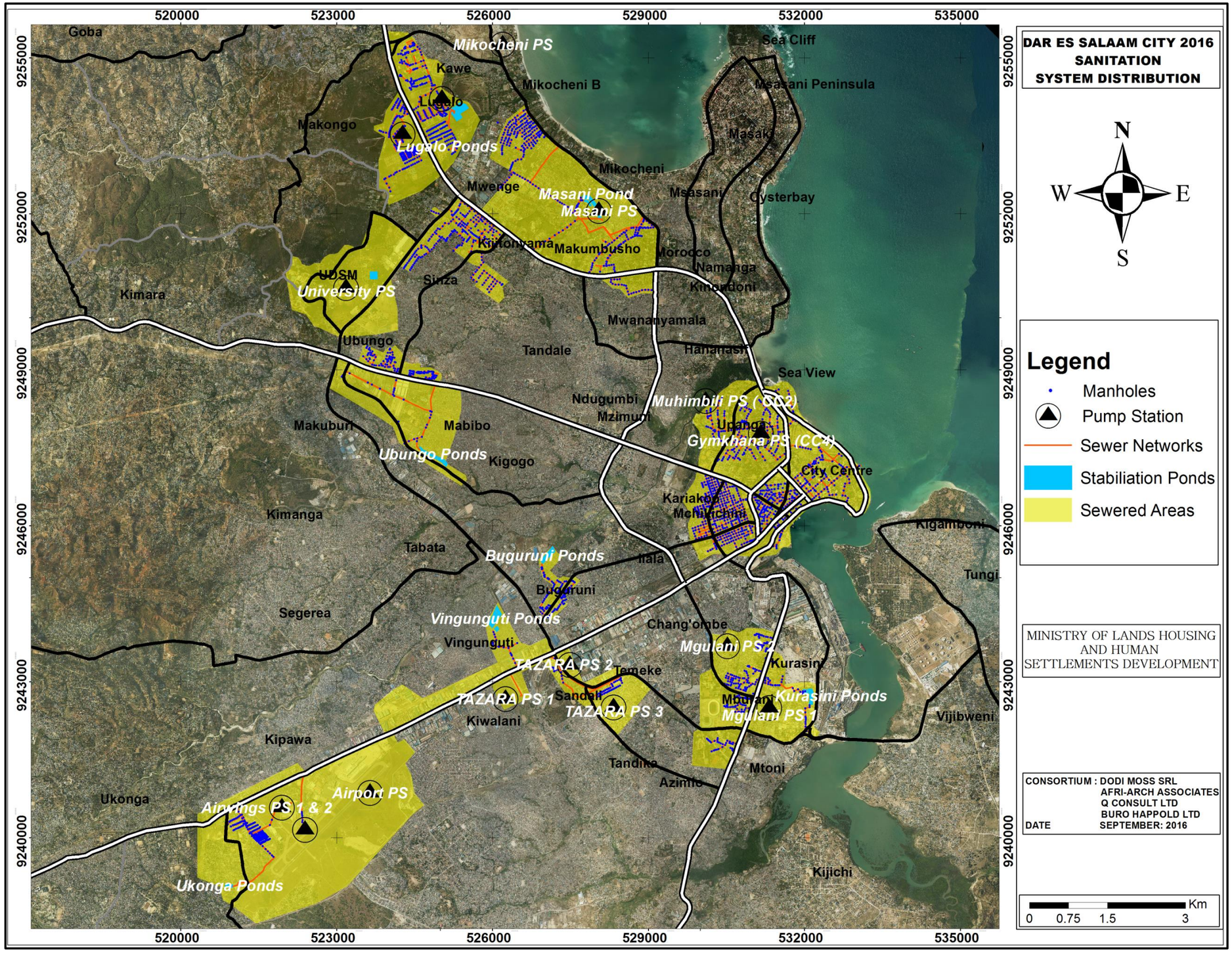


Figure 10.66: Wastewater Disposal Methods

10.2.5. Emerging Issues

Key risks associated with the sanitation and sewerage system include the threat of contamination of water leading to poor water quality rendering it inappropriate for use, and a threat to public health due to lack of good sanitation facilities. A more detailed assessment of the issues and risks is presented in chapter twelve concerning development issues and planning considerations.



Map 10.4: Sanitation Distribution in Dar es Salaam, 2016

7.3.1. Solid waste generation

Waste generation

The city has a population of more than 5.3 million people with 70 percent of the population living in unplanned settlements which are estimated to generate 5,300 tons of solid waste per day. Currently, waste management is a growing problem due to increasing urbanization, rural-urban migration, rising standards of living and rapid development associated with population growth that has resulted in increased solid and liquid waste generation by industrial, domestic and other activities.

Solid waste generation has been steadily increasing in Dar es Salaam city from less than 2,000 tons per day in 1998 to more than 5,300 tons per day in 2016. The current solid waste generation rate is estimated to be about 1 kg/day per household, which is higher than typical values for developing countries, which range from 0.4 to 0.6 kg/day per household.

Table 10.6: Solid waste composition in Dar es Salaam

S/N	Waste Components	Percentage by wet weight (percent)
1	Kitchen waste	39
2	Grass/wood	10
3	Papers	8
4	Ceramic and stones	6
5	Metals	5
6	Plastics	16
7	Glass	2
8	Leather and rubber	6
9	Textiles	5
10	Others	3
	Total	**100**

Source: DCC, 2016

The Pugu landfill (Figure 7.4) is the only citywide waste disposal facility currently in operation. It is very close to full capacity and suffers from frequent fires, odour, litter, leachate run off and, gas generation. A large population who seek an income from picking items of value from discarded waste live on or very close to the dump site (DCC, 2016)

Plate 10.1: Pugu landfill

10.2.6. Solid Waste Collection

Solid waste collection in Dar es Salaam is carried out by MCPs, private companies, CBOs, and the informal sector. Collection is carried out daily/weekly; the current collection coverage is approximately 50 percent. The waste collected is un-segregated (but at city markets, biodegradable waste is collected separately). Little recycling and processing of biodegradable waste (composting) is carried out (though it has the potential to reduce waste amount by 50 percent)

Waste management practices at household level is subdivided into the following percentages;, burying 26.4, open burning 3.2, throw in open fields 4.0, collection by municipal councils 50.4, throw anywhere in the compound 11.2, and others 4.8.

10.2.7. Solid Waste Transportation

In practice solid waste is stored temporarily at source where it is generated. It is then collected from source and transferred to another type of container for transport to a disposal facility .The capacity of solid waste collection in Dar es Salaam in 2016 was around 1,533 tons of solid waste per day which was only 37 percent of total solid waste generated in the city. The facilities used in the transportation process of the solid waste include; tipper trucks, compactor trucks, skip loaders, skip containers and tractors. Some of these facilities are owned by municipal councils and some by private contractors.

10.2.8. Solid Waste Disposal

Solid waste is disposed of in open dumps with adverse impacts on public health and the environment (controlled tipping). Final disposal activities are currently being done at Pugu Kinyamwezi 30km from the city centre. The purpose of the new landfill development at the same site is to attain a high quality livelihood through sustainable development and appropriate management of solid waste.

Where action to improve waste services has been taken, some success in improving solid waste management has been recorded. These gains have been overshadowed by the high rate of the city expansion and the resulting increase in waste generation. The rapid population growth and subsequent sporadic emergence of unplanned settlements have compounded the city's waste disposal problems. Detailed information on solid waste management is presented in Technical Supplement 1B.

10.2.9. Households' solid waste disposal mechanisms

About 74.4percent of solid waste generated from the households is collected by the private sector from the residential areas. However, these wastes are never sorted at household level therefore they reach the dumpsites in composite of both biodegradable and non-biodegradable wastes. Other mechanisms of solid waste disposals such as burying, burning, random disposal and self-disposal methods were used by an average of 25.6percent of the total population.

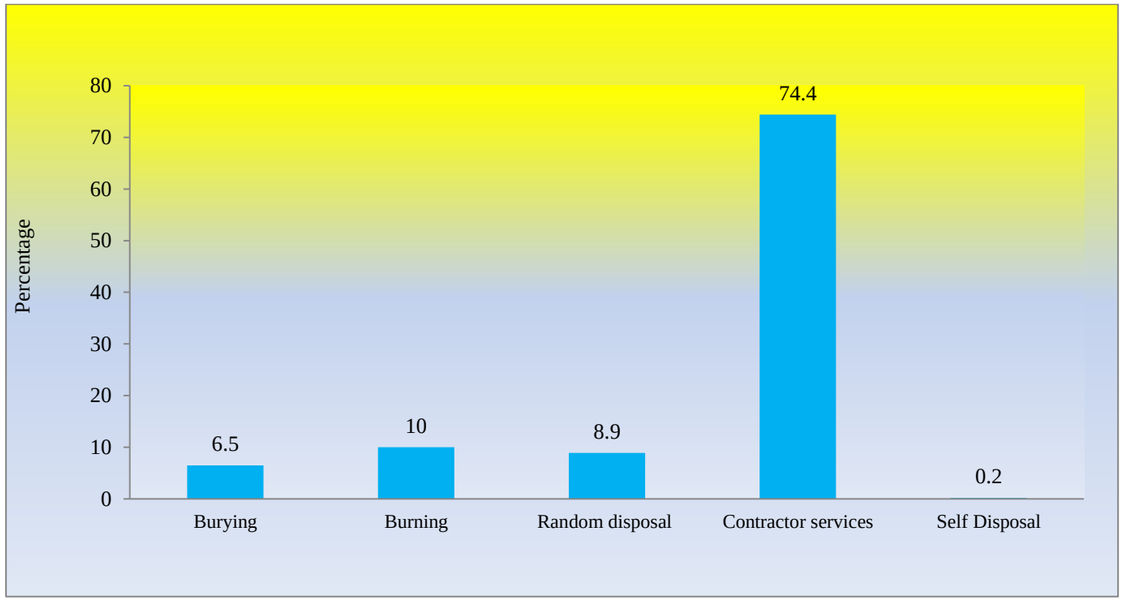
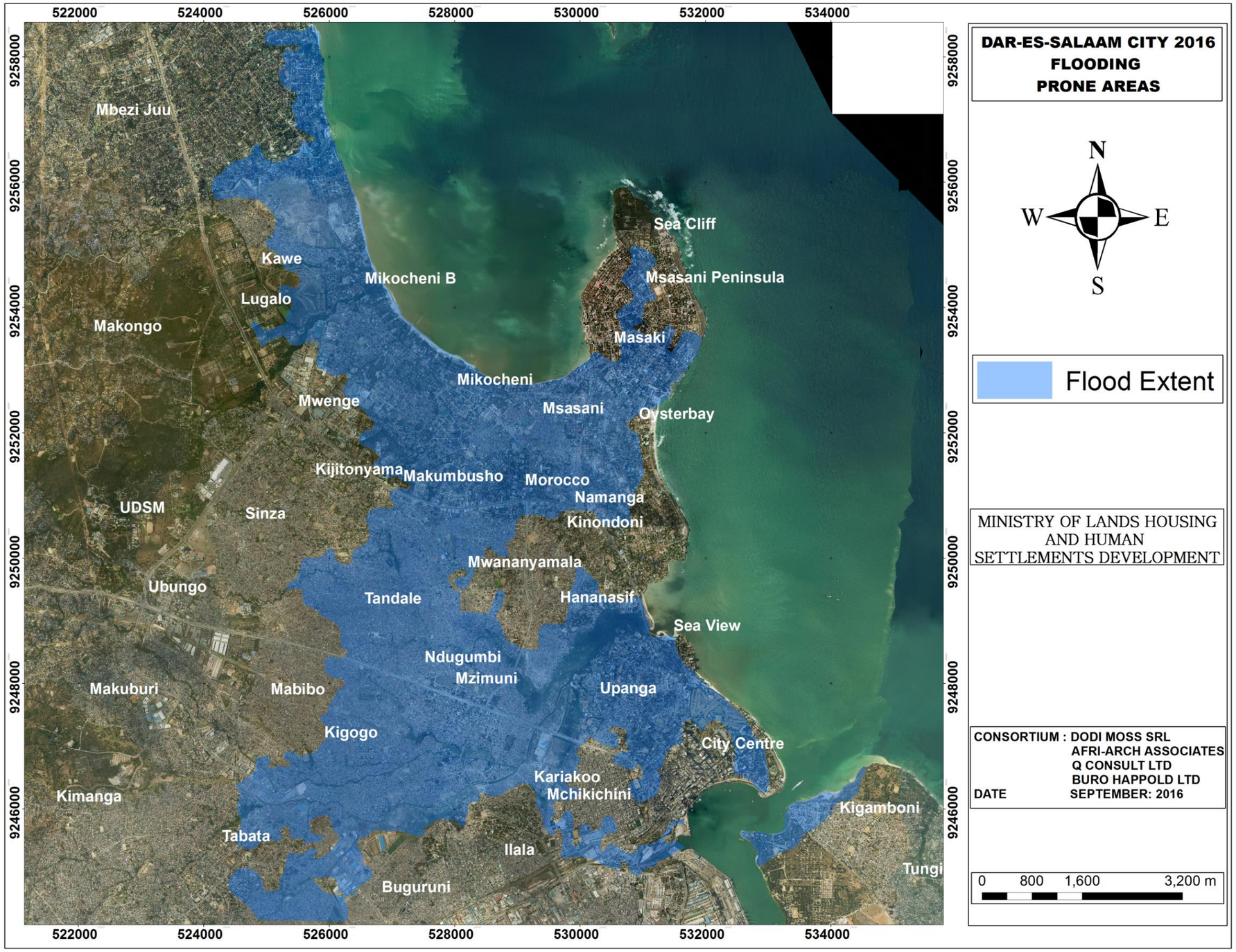


Figure 10.7: Households' solid waste disposal mechanisms

10.3. Surface water drainage

The city's urban settlements have rapidly increased especially in unplanned areas such as Mbagala, Vingunguti, Kimara, Mbezi, Bunju and Gongo la Mboto. In most unplanned areas houses are built without regulated water or surface water drainage systems. Also, the city lacks adequate infrastructure or, where drainage infrastructure is in place, it is informally being used for dumping waste, severely impairing its performance. Currently, a significant part of the existing drainage network is old, undersized or partially blocked. This has exposed the settlements and other parts of the city to periodic severe flooding during heavy rain seasons.



Map 10.5: Flooding Prone Areas in Dar es Salaam, 2016

10.4. Power and Energy

10.4.1. Overview

Power infrastructure is in underdeveloped state across the city. The primary reasons for this lies with insufficient generation capacity coupled with poor transmission and distribution infrastructure. Ultimately this underdeveloped state can be attributed to flaws and incapacities of the sector, but are also subject to regional socio-economic conditions that have led to rapid urbanisation of the city, creating great pressures on its power infrastructure.

The national average connection rate for individuals is below 20percent, whilst the proportion of households that are connected within the city is close to 60 percent, (TANESCO, 2016). The situation is substantially better in the city.

The 2003 Energy Power Policy states a clear vision for the sector and sets several targets. The 2012-2036 Master Plan aligns itself to the goal of the policy. The operational structure of the current national power system can be viewed as a Single Purchaser Model (Eberhard and Gratwick, 2008). This form is illustrated in Figure 7.8 and consists of TANESCO owning and operating the transmission and distribution networks, and some of the generation network whilst at the same time Individual Power Producers (IPPs) are engaged within the generation network, selling electricity via long term Power Purchase Agreements (PPAs) to TANESCO.

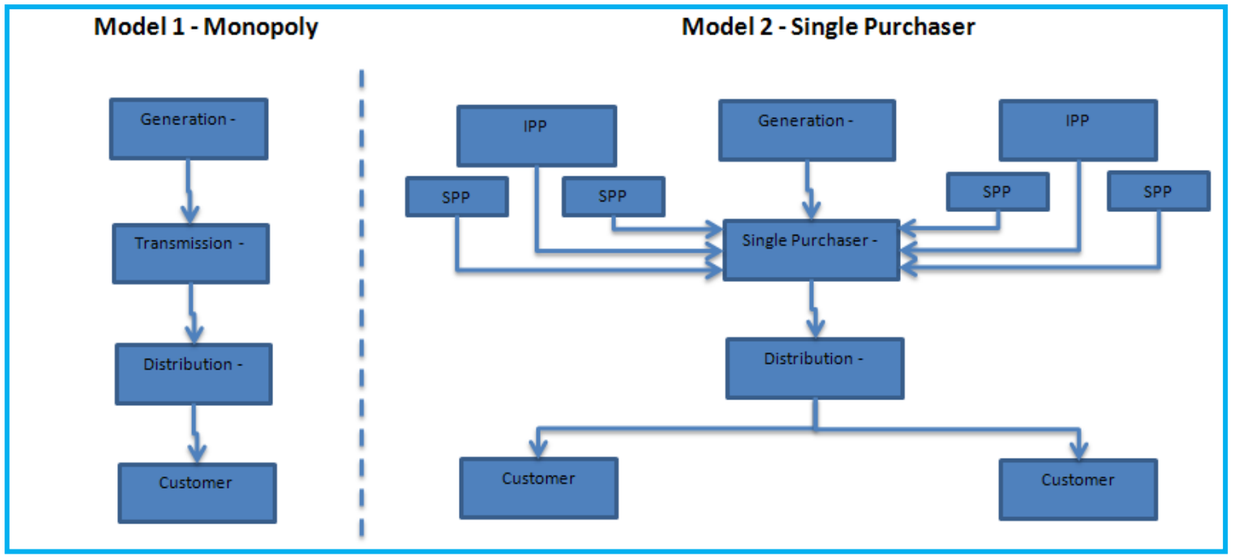


Figure 10.8: Standard structure model
Source: Eberhard and Gratwick (2008)

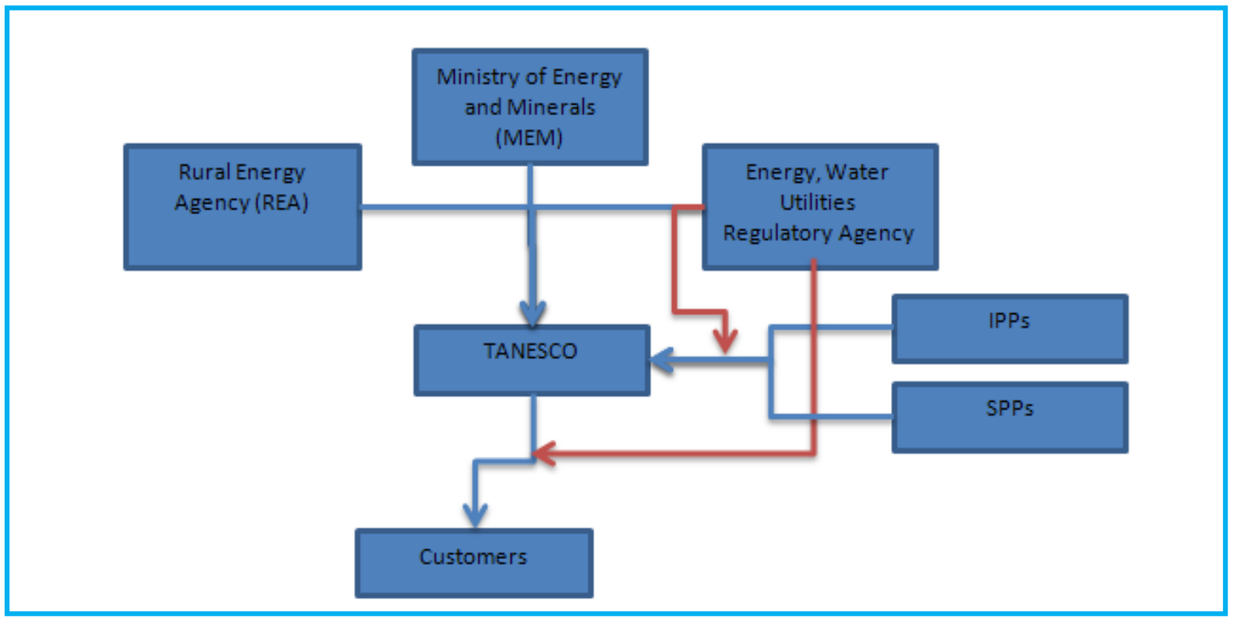


Figure 10.9: Illustrates the institutional framework that is currently in place within the power sector for Tanzania.
Source: The 2003 Energy Power Policy

The institutional framework for electricity supply comprises the following key players:

1) TANESCO: A state owned utility company responsible for the generation, transmission and distribution of electricity;
2) IPPs: Independent Power Producers who generate electricity and sell it to TANESCO through long term Power Purchasing Agreements (PPAs);
3) SPPs: Small Power Producers who generate electricity mainly using renewable energy sources with capacity of between 100kW to 10MW and selling it to TANESCO through Standardized Power Purchase Agreements (SPPAs); and
4) Customers: The users of electricity, who are connected to the power supply system and pay for services through tariffs arranged and set by TANESCO.

The structure resembles that of an ideal Single Purchaser model described in the previous section with the exception that a regulatory body– The Energy and Water Utilities Regulatory Authority (EWURA) - has been established. However, EWURA was only established 11 years after the first two IPP arrangements had been completed. The consequences were that both arrangements were completed without the oversight of a regulator, resulting in unsustainable PPAs being agreed upon. This has led to protracted legal disputes and uncompetitive practices originating from the bidding and deal making processes of the IPP arrangements.

10.4.2. Power Generation

The total national installed generation capacity stands close to 1306.543 MW. There are nineteen operating electricity generation plants in Tanzania of which seven are hydropower stations and twelve are thermal power stations. The existing hydro power plants have a generation capacity of 540.843 MW and the existing thermal plants have an installed capacity of 796.70 MW and the available capacity is 765.70 MW. The names and installed capacities of the existing power generation plants are shown in *Table 10.7*

Table 10.7: Location and Capacity of Existing Electricity Generation Plants

Name of Plant	Source of Energy	Installed Capacity
Hale	Hydropower	21
Nyumba ya Mungu		8
New Pangani Falls		68
Kidatu		204
Mtera		80
Uwemba		0.843
Kihansi		180
Songas 1	Gas	42.00
Songas 2		120.00
Songas 3		40.00
Tegeta IPTL	HFO	103.00
TPC	Biomass	17.00
TANWAT		2.70
Ubungo 1	Gas	102.00
Tegeta GT		45.00
Ubungo 2		105.00
Zuzu D	IDO	7
Nyakato	HFO	63.00
Kinyerezi-I	Gas	150.00

Source: Power System Master Plan 2016 Update

As of 2012, TANESCO accounted for 74 percent of the installed generation capacity compared to 24percent share of IPP's as presented in figure 7.12. SPPs held the smallest share of 2 percent, but this is not surprising as they have only been in play since the passing of the Electricity Act of 2008.

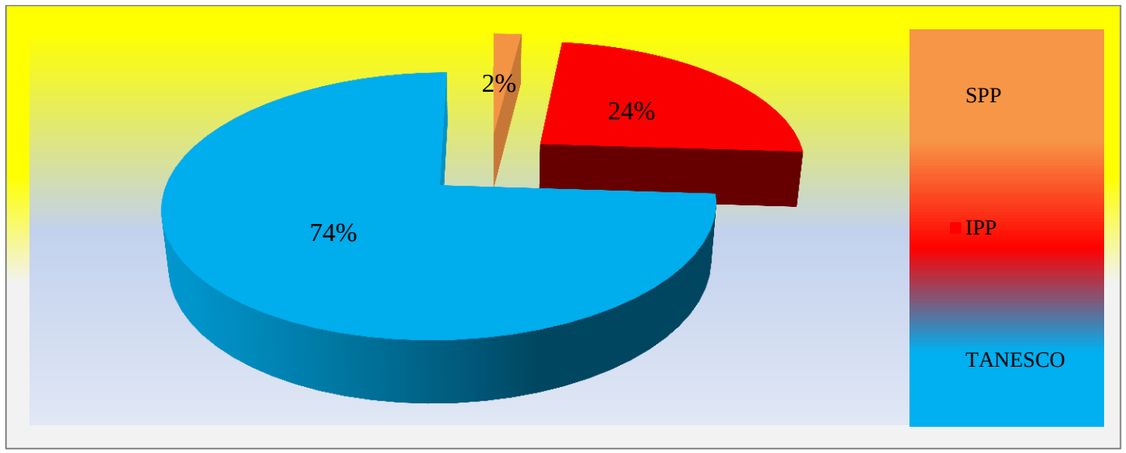


Figure 10.10: TANESCO vs. IPP and SPP installed generation capacity MW
Source: TANESCO, 2012.

Four of the thermal power generation plants are located in Dar es Salaam and they have an installed capacity of 250MW as shown in *Table 10.8*

Electricity Generation in Dar es Salaam

Table 10.8: Electricity Generation in Dar es Salaam

Name of the Plant	**Location**	**Source**	**Installed Capacity (MW)**
Ubungo I	Dar es Salaam City	Gas – Songosongo	100
Tegeta	Dar es Salaam City	Gas – Songosongo	45
Ubungo II	Dar es Salaam City	Gas – Songosongo	100
PAP	Dar es Salaam City	Diesel - Imported	5
Total			**250**

Source: Power System Master Plan 2016 Update

10.4.3. Power Transmission/ Distribution

Tanzania's transmission and distribution network operates at 220 and 132kV for bulk power transmission and at 66, 33 and 11kV for local distribution. The transmission system is comprised of 647km of 400kV, 2,745 km of 220kV, 1,626 km of 132kV and 580 km of 66kV. The isolated centres away from the grid are served by generating units with an aggregate nominal capacity of 81.5 MW. TANESCO imports power from Uganda via 132kV and from Zambia through 66kV lines.

According to the Power System Master Plan 2016 Update report, an assessment of the existing power system under peak load conditions revealed that the following portions of the line -, the Iringa – Dodoma – Singida 220kV line, the Chalinze – Hale – Arusha 132kV line and Ubungo – Kunduchi – Ras Kilomoni 132kV line and 132kV submarine cable from Ras Kilomoni (Mainland) to Ras Fumba (Zanzibar) had exceeded their thermal limits, therefore they could not transfer all the respective demanded power. This has resulted in the introduction of the 647km of 400kV Iringa – Shinyanga backbone project (in final stage of commissioning), 441 km of 400kV Dar es Salaam – Chalinze – Segera – Arusha and 64km of 220kV Segera – Tanga (are committed). While the reinforcement of 38 km of 132kV submarine cable from Ras Kilomoni to Zanzibar has been commissioned.

10.4.4. Power Consumption

The power demand in Dar es Salaam by 2016 is estimated to be 3,539 GWh. Power consumption per capita is 635 kWh per person per month. 75.2 percent of the 1,417,251 households in Dar es Salaam are connected to electricity (NBS & REA: Energy access situation report 2016, Tanzania Mainland)

Available data indicates that the amount of electricity generated has consistently exceeded the electricity power consumption from 1985 to 2009 as shown in *Figure 10.12.*

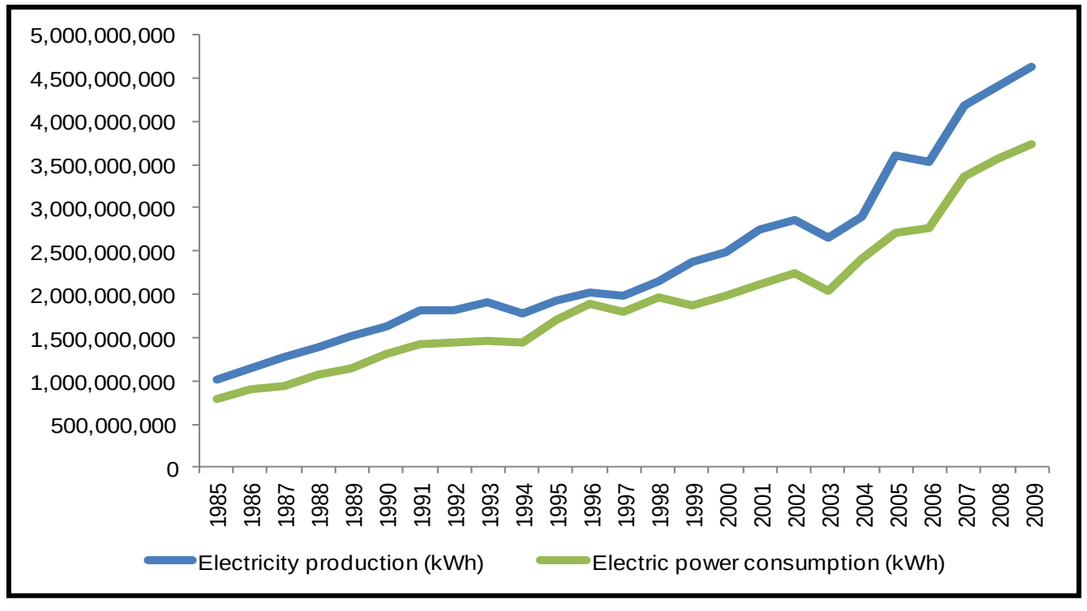


Figure 10.12: TANESCO electricity production against consumption

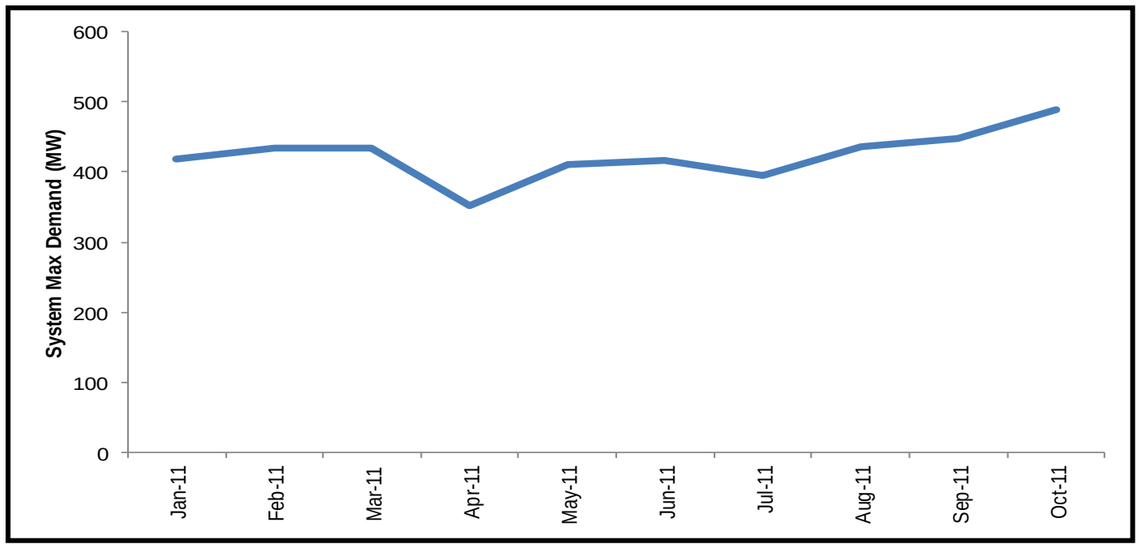


Figure 10.11: TANESCO monthly maximum demand of electricity

Information obtained from TANESCO about the monthly maximum demand of electricity within the city, which is shown in Figure 10.11 indicates that demand reaches a peak of 561MW, while the local generation capacity within the city amounts to only 250MW, implying that the local generation capacity is insufficient by 311MW to meet the local demand. The electricity to serve the outstanding demand requirements is supplied from other generation plants around the country, which can lead to high losses due to the long distance of transmission of the electricity.

The reliance on diesel for generation of electricity is relatively low, it must be noted that since 100percent of this fuel is imported, this adds another dimension of volatility and uncertainty to the security of generation of electricity. The city level imbalance between demand and supply is the fundamental challenge leading to rationing and blackouts. Inadequate local generation also means that power is sought from sources farther away from its destination resulting in more energy losses across the system.

Due to inadequate city level generation and frequent system shortages, households and businesses are burdened with extra costs of buying and operating diesel generators, natural gas tanks and charcoal. The inadequate levels of generation also have significant implications for businesses and industries within the city, as inconsistency in supply leads to loss of output and reduced competitiveness of the city.

11. TRANSPORT AND COMMUNICATION

11.1. Overview

Dar es Salaam is the national commercial hub of Tanzania, home to the country's core industry and business and accounts for over half of the national tax revenue. The city has the highest concentration of government institutions, universities and other services. With a current population of 4.4 million, it is the biggest coastal city in East Africa. Its attractiveness lies in the fact that it provides a platform for opportunity unlike any other city in the country. The city's comparative advantages should however not be taken for granted, given that a forecast increase in population to 11.9m over the next 20 years will bring fundamental changes to all levels of urban life. The measure of success of Dar es Salaam over the next decades will be its ability to provide equal opportunities to both residents and newcomers. Removal of barriers to mobility will be an essential component of this success.

Studies for the 1979 Master plan showed Dar es Salaam as a fast-growing city, organized around the Central Business District and the port, with large areas of unplanned settlements stretching out along the four main roads reaching out into the rest of the country. The City is now overwhelmed by traffic congestion, poor pedestrian facilities and over-stretched public transport.

11.2. Transportation in the Regional Context

Dar es Salaam region is currently served with roads, rail, marine and air transport and is connected to all parts of Tanzania. To the Eastern parts, Dar es Salaam is connected to Unguja, Pemba and Mafia Islands by marine and aviation transport services. Dar es Salaam is connected to the Coastal, Central, Western, Southern, Northern and Lake Zone regions by roads, railways and aviation transportation systems. All regional headquarters are connected to Dar es Salaam by trunk and regional roads. The Central railway line connects Dar es Salaam to the central regions, western regions and the lake zone region. The Northern railway line connects Dar es Salaam to northern highland regions, whereas the TAZARA railway line connects Dar es Salaam to the southern highland regions.

11.3. Road network and Connectivity

Dar es Salaam city is the centre of transport services of the surrounding regions and is the gateway of national and international road transportation networks in the country. As indicated in Map 11.1, Dar es Salaam region is well connected to all parts of Tanzania by trunk, regional and district roads. District and regional roads connect Dar es Salaam to the district headquarters of coastal regions such as Bagamoyo, Chalinze, Kibaha, Kisarawe, and Mkuranga. Trunk roads connect Dar es Salaam to all headquarters of regions in Tanzania mainland.

Dar es Salaam has four main roads connecting the Coast Region to the City as shown in Map 11.1. Bagamoyo Road runs along the northern coast from the city to Bagamoyo Township in the Coast Region. Morogoro Road in the west serves as the principal access to the city from most of the other parts of the country. Kilwa Road connects the city with the southern parts of the country. Nyerere Road, in the southwest, connects the city with the southwestern parts of the country (Kisarawe). A traffic study by JICA, year 2017 shows that the traffic entering and leaving the city, Morogoro Road accounts for 45 per cent while Bagamoyo, Nyerere and Kilwa Roads account for 36.5 per cent, 25.3 per cent and 16.3percent, respectively.

11.4. Transport Demand in Dar es Salaam City

11.4.1. Overview

The basic purpose of transportation planning is to link transportation supply with travel demand, which represents 'the need'. A thorough understanding of existing travel patterns is necessary for identifying and analysing existing traffic related problems. Detailed data on current travel patterns and traffic volumes were conducted in order to forecast the travel demand for Dar es Salaam city. The prediction of future travel demand for the next 10 years is essentially done for development of long-range city transportation planning, together with determination of strategies for addressing the future transport needs. These strategies may include land use policies, pricing programmes, and expansion of transport infrastructures and transit service.

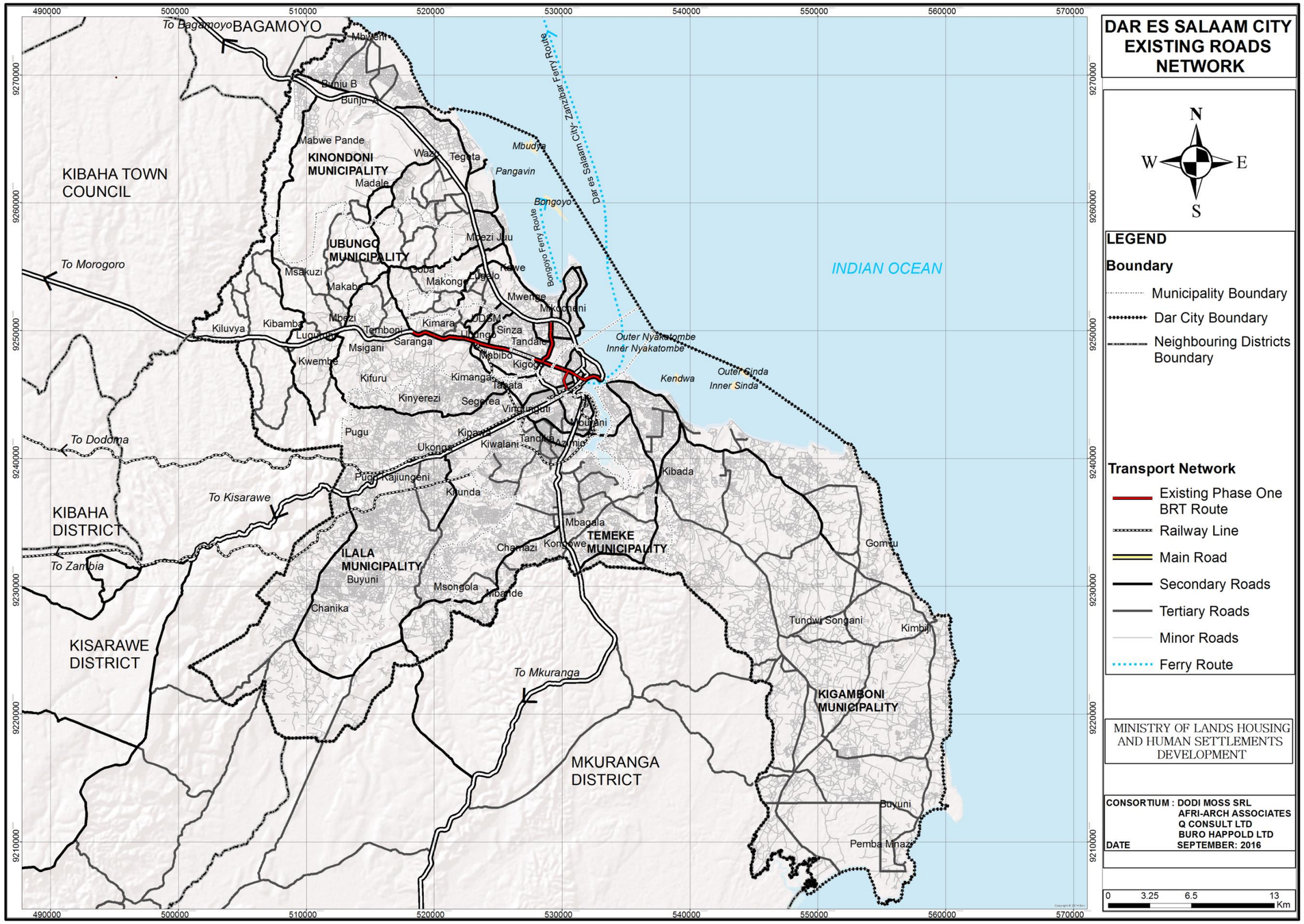
Transport demand surveys were therefore conducted in June 2016. The study was performed using the following methods:

i. Conducting household survey to determine the travel patterns in different Traffic Analysis Zones (TAZ);
ii. Traffic volume and composition determined by manual traffic counting on different road sections and junctions
iii. Roadside interviews for main entry and exit roads and purpose survey in fast growing centres, commercial centres and industrial areas.

The site visits have provided an understanding of the transportation infrastructure locations and conditions. In addition this survey has provided valuable information to establish the necessary platform to understand the needs, identify the issues and project potential future requirements for this areas.

Generally, the transport demand in Dar es Salaam is greater than the supply of transport infrastructure and services.

Figure 11.1 - The location of the Kisarawe ICD
Source: Royal Haskoning, inter-consult, Ardhi University, 2009



Map 11.1: Dar es Salaam Roads Network and Connectivity

11.4.2. Travel Patterns in TAZ

The study for the movement of people to different destinations was performed through household surveys of the sampled households. 1670 households were interviewed and the individual households generated a total of 15,030 trips. The trips were defined as going from origin and turning back as one trip. From the sample size, the households generate about 10.5 trips per day. For purposes of achieving the best travel survey analysis, eleven major Traffic Analysis Zones (TAZs) were established indicating Divisions in Dar es Salaam city. One hundred and fifty (151) households were interviewed in each TAZ. The TAZs include Temeke and Mbagala in Temeke municipality; Kigamboni in Kigamboni municipality; Ukonga, City centre and Kinyerezi in Ilala Municipality; Kawe, Kinondoni and Kunduchi in Kinondoni Municipality; and Ubungo and Kibamba in Ubungo Municipality.

As presented in Table 11.1, a great percentage of trips generated in Dar es Salaam originate in the city centre (16.66 per cent) followed by Kinondoni (13.24 per cent) and Mbagala (11.74 per cent), and the smallest number of trips generated was in Kibamba (5.16 per cent). On the other hand, more trips are attracted to the city centre (17.8 per cent), Ubungo (12.0 per cent) and Mbagala (11.19 per cent). Only a small proportion of the trips (3.98 per cent) are attracted to the Ukonga TAZ .

Table 11-1: Trips Production and Attraction in Traffic Analysis Zones in Percentages

Trip Destination / Trip Origin	City centre	Ukonga	Kinyerezi	Temeke	Mbagala	Kigamboni	Kawe	Kinondoni	Kunduchi	Ubungo	Kibamba	Total Percentage of Trip Production
City centre	5.1	0.9	1.1	1.7	1.8	0.9	1.2	1.46	0.7	1.3	0.5	16.66
Ukonga	1.3	1.6	0.5	0.1	0.9	0.1	0.1	0.2	0.1	0.2	0.1	5.2
Kinyerezi	1.1	0.9	3.5	0.01	0.03	0.05	0.11	0.02	0.1	0.2	0.1	6.12
Temeke	1.6	0.16	0.54	4.6	1.2	0.06	0.05	0.3	0.1	0.1	0.1	8.81
Mbagala	1.7	0.05	0.03	1.3	4.5	2.1	0.6	0.6	0.03	0.8	0.03	11.74
Kigamboni	1.1	0.03	0.05	0.5	0.6	3.04	0.16	0.3	0.02	0.7	0.01	6.51
Kawe	1.2	0.04	0.06	0.09	0.12	0.06	2.5	1.5	1.3	1.2	0.4	8.47
Kinondoni	1.7	0.1	0.04	1.2	0.9	0.8	1.4	3.7	1.2	1.3	0.9	13.24
Kunduchi	0.9	0.06	0.03	0.04	0.02	0.01	0.9	0.5	2.5	1.2	0.7	6.86
Ubungo	1.4	0.13	0.2	0.6	1.1	0.3	1.3	2.2	0.4	2.8	0.8	11.23
Kibamba	0.7	0.01	0.01	0.03	0.02	0.01	0.03	0.03	0.02	2.2	2.1	5.16
Total Percentage of Trip Attraction	17.8	3.98	6.06	10.17	11.19	7.43	8.35	10.81	6.47	12.0	5.74	100

Source: Household Survey in Dar es Salaam October 2016

11.4.3. Trip Purposes to Major Destinations

Trips generated in Dar es Salaam city were basically for work, school, and shopping and social related activities like visiting relatives. Household survey data in TAZ portrayed the number of trips generated by individual households in performing daily activities to different destinations.

i. Work trips include trips made by individual household members to and from employment areas, business areas, and other waged production related activities;
ii. School trips are all trips made by individual household members to and from nursery, primary and secondary schools, universities, colleges, vocation trainings and tutorial centres;
iii. Shopping trips are trips made by individual household members to and fro the shopping centres, retails, local markets, banks and other transaction related activities;
iv. Recreation trips include all trips made by individual household members to and fro leisure, picnics, sport grounds, religious related trips, and visiting relatives; and,
v. Service related trips entail all trips made by individual households for health services, magistrate and immigrations, police and visiting government offices.

Table 11-2: Trip Purpose to Different Destinations in TAZ

Trip Destination / Trip Purpose	City centre	Ukonga	Kinyerezi	Temeke	Mbagala	Kigamboni	Kawe	Kinondoni	Kunduchi	Ubungo	Kibamba	Outside Dar-es Salaam	Total (per cent)
Work	13.57	1.33	2.86	7.16	4.1	4.45	5.3	6.56	4.2	5.5	1.77	1.16	57.96
School	0.83	0.26	0.16	1.16	1.21	1.34	1.26	1.16	0.3	0.2	0.2	0.31	8.39
Relatives	3.1	2.01	0.83	0.61	0.15	1.4	2.1	0.41	1.2	1.1	0.2	1.08	14.19
Shopping	8.15	0.98	0.26	1.19	0.25	2.12	0.15	0.1	0.5	0.3	0.1	0.15	14.25
Others services	2.12	0.05	0.15	0.21	0.1	1.38	0.1	0.2	0.1	0.5	0.2	0.1	5.21
Total (per cent)	27.77	4.63	4.26	10.33	5.81	10.69	8.91	8.43	6.3	7.6	2.47	2.8	100

Source: Household Survey in Dar es Salaam October 2016

As indicated in Table 11.2, about 57.96percent of trips generated in Dar es Salaam city are for work purposes and 13.57percent are work trips that end in the city centre. Shopping and relative trips are among the major trip purposes in Dar es Salaam, however, a large part of shopping trips ends in the city centre, and Kawe and Ukonga areas. Trip generated for school and other service activities are more or less evenly distributed around the city.

11.4.4. Modes of Transport

The modes of transport used in the city include the private car, public transport, motorcycle, Bajaj, bicycle, walking and others. As indicated in Table 11.4, public transport is the dominant mode of transport that contributes about 42.93percent of the total number of trips generated by individual households. Private cars, motorcycle and Bajaj modes of transport are also greatly used that contribute about 11.05percent, 16.75percent and 13.27percent respectively. Rail is more effective public transport but this transport service does not cover the entire city. Walking is mostly used for short distance trips. Private cars are mostly used in the city centre, Kinondoni and Ubungo, whereas, Bajaj and motorcycles are mostly used in Kawe, Kibamba, Mbagala and Ukonga.

Table 11-3: Modes of Transport

Trip Destination / Mode of Transport	City centre	Ukonga	Kinyerezi	Temeke	Mbagala	Kigamboni	Kawe	Kinondoni	Kunduchi	Ubungo	Kibamba	Total percentage
Public bus	9.15	4.69	3.4	6.33	5.68	5.39	2.02	2.01	1.01	2.23	1.02	42.93
Private car	4.06	1.26	0.58	0.49	0.46	0.53	0.3	1.3	0.5	1.07	0.5	11.05
Motorcycle	0.48	3.78	1.02	0.82	2.96	0.78	1.5	0.6	1.2	2.91	0.7	16.75
Bajaj	0.48	3.89	1.12	0.15	1.99	0.05	1.01	1.1	1.03	1.55	0.9	13.27
Public railway	0.49	0.58	0.59	0.15	0.1	0.15	0.5	0.5	0.5	0.29	0.5	4.35
Walking	1.93	1.41	1.31	0.68	0.39	2.67	0.4	0.5	0.1	0.78	0.3	10.47
Bicycle	0.05	0.09	0.05	0.04	0.05	0.15	0.1	0.2	0.2	0.15	0.1	1.18
Total percentage	16.64	15.7	8.07	8.66	12.63	9.72	5.83	5.21	4.54	8.98	4.02	100

Source: Household Survey in October 2016

Table 11.3 indicates that private cars and public buses are mostly used in the city centre and areas adjacent to the city centre while, Bajaj, motorcycles are mostly used in peri-urban areas. Walking and bicycles are slightly used modes of transport in Dar es Salaam.

11.5. Road Transport Infrastructure Condition

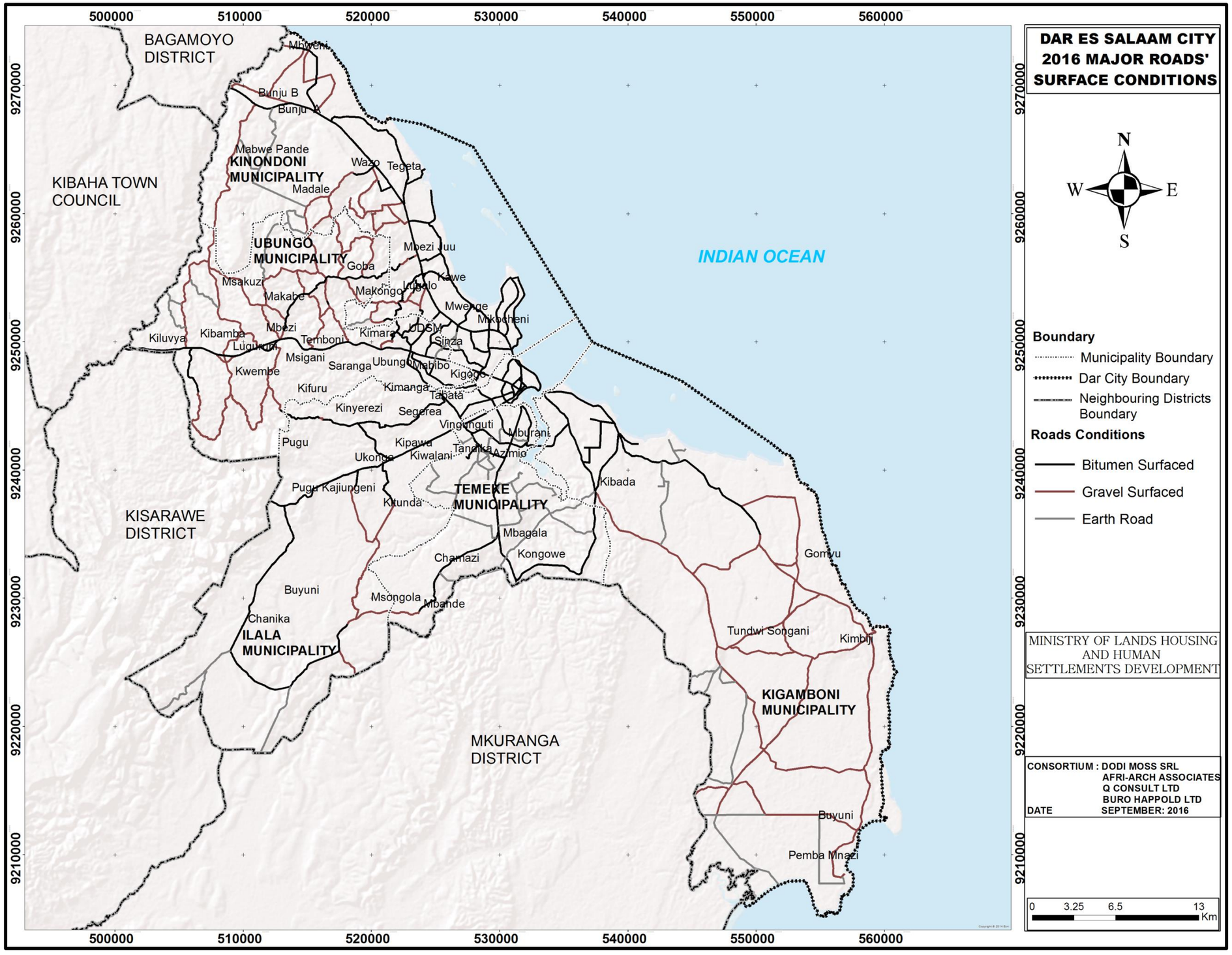
Road transport is the most widely used form of transport in Dar es Salaam city carrying over 95percent of the passengers and 75 per cent of the freight traffic in the country. The road network comprises 6,472 kilometres of which 386 kilometres are trunk roads, 1,005 kilometres are regional roads and the remaining 5,081 kilometres are district, urban and feeder roads.

The road presented in The Road Inventory Report (TANROADS, 2015) indicates that condition of roads in Dar es Salaam varies and is closely related to the status of the roads as shown below:

i. 100 per cent of trunk roads are tarmac and passable throughout the year.
ii. 57 per cent of regional roads are tarmac, 27 per cent gravel roads and 16 per cent earth roads

iii. Most of the gravel and earth roads do get damaged during the rainy seasons, and sometimes are not passable. Maintenance is mostly required and performed in these roads.

iv. Only 28 per cent of other roads are tarmac while most of the rest of the roads are gravel and earth roads, with limited pass ability during the rainy seasons.



Map 11.2: Dar es Salaam City Major Roads' Conditions

11.6. Road traffic volumes

The main trunk and regional roads in Dar es Salaam are the four radials – Bagamoyo, Morogoro, Nyerere and Kilwa, and the three ring roads – Nelson Mandela/Sam Nujoma, Kawawa and Bibi Titi and the newly constructed roads of Goba and Kigamboni Kongowe. All are paved and multi-lane, and given their strategic importance are under the ownership of TANROADS. The city centre has a mature network, which is paved and generally well maintained, while the quality and coverage of local roads varies throughout the city from paved to unpaved.

Traffic volumes on the main network tend to be high, sometimes with severe congestion at critical junctions: TAZARA and Ubungo, both on the Nelson Mandela Road, are singled out by the Japan International Cooperation Agency (JICA, 2008) study as particularly critical. Consequently, the average speed on the network, estimated at 25.6 kilometres/hour in 2007, was expected to decrease to 10 kilometres/hour by 2030 in a do-nothing scenario.

This section explores the Average Daily Traffic (ADT) passing through the road sections in Dar es Salaam city. The survey intended to determine the Level of Services (LOS) and the capacity of the roadways to accommodate the traffic generated in the city. Traffic counting took place in 18 sections of major trunk roads and 40 sections of regional, district and other roads. ADT depicts the traffic volume on the road section, which indicates the importance of the road section in the city mobility.

Table 11-4: Level of Service for Urban Roads

Road category	Geometric characteristics	ADT Ranges	LOS Classification
Main /Trunk /Arterial roads	Four lane-two way	10,000-15,000	A
Main /Trunk /Arterial roads	Two lane-two way	7500-10,000	B
Regional/District/Collector roads	Two lane-two way	5,000-7500	C
Feeder roads	Two lanes-two way	1,000-5000	D
Access roads	Two lanes-two way	Below 1,000	F

Source: Highway Capacity Manual, 2013

The ADT presented in Table 11.5 indicates over saturated traffic volumes for trunk and main roads. There are few road sections like Mbagala Kongowe and Bandari DSA along Kilwa road with a reasonable traffic volume. On the other hand, there is a moderate traffic volume for regional and other roads. However, few road sections like the Morocco-Kawe section along the Mwai Kibaki road and the Fire-Palm Beach section along the United Nation road do encounter saturated traffic volumes.

11.7. Traffic Composition

The main roads in Dar es Salaam contain mixed vehicles such as cars, trucks, minibuses and passenger buses. The road that is most dominated by heavy trucks is the Mandela road serving cargo traffic from the harbour. Passenger buses that cater for upcountry and inter-regional transport services dominate the volume of vehicular traffic on Morogoro road.

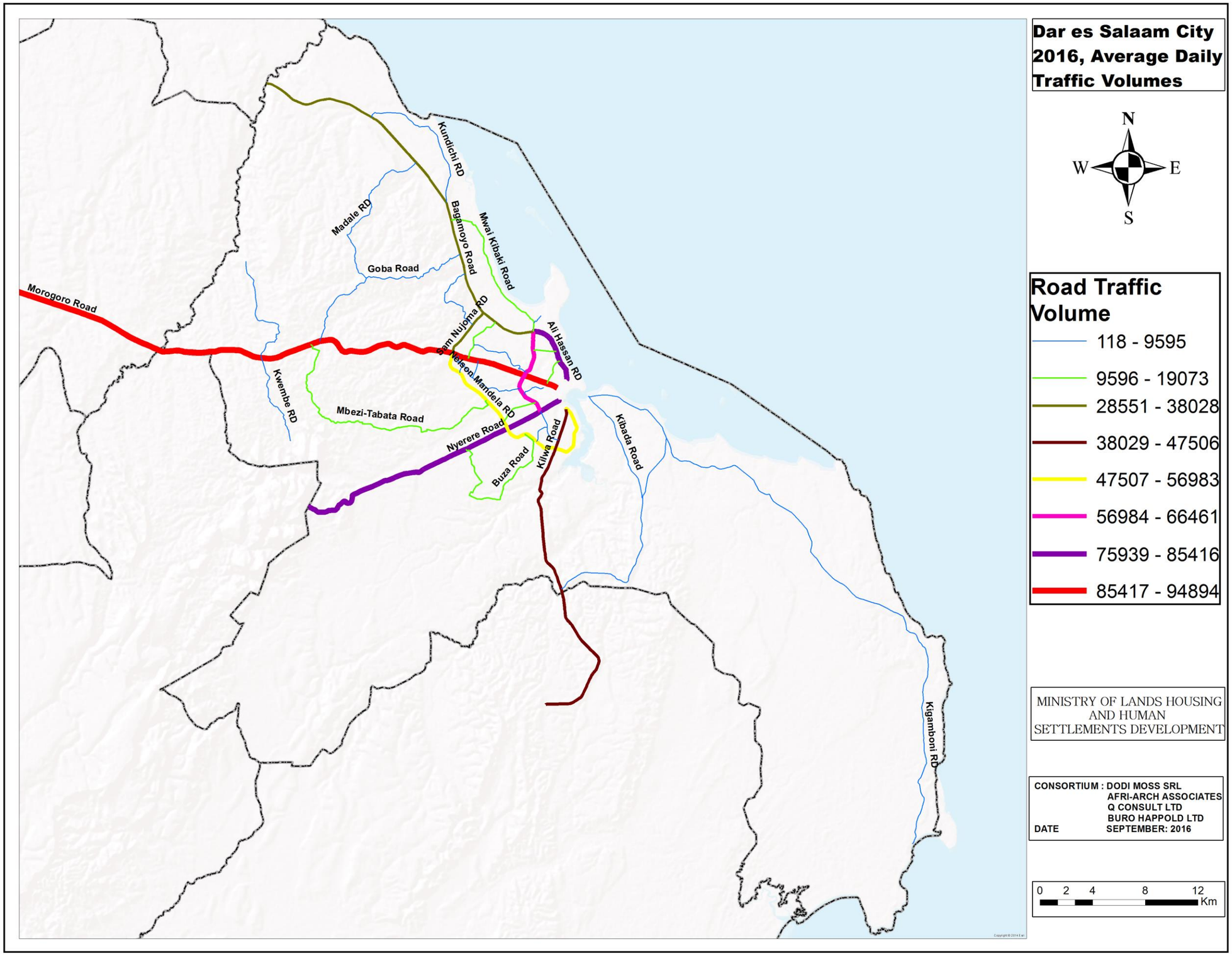
Table 11-5: Dar es Salaam City Traffic Composition 2016

Name of the Road	Name of the Link	Counting Station	Cars	Pickups &Vans	Light Lorries	Medium Lorries	Heavy Lorries	Very Heavy Lorries	Buses < 25 passengers	Buses > passengers	Other vehicles	Total
Trunk/Major Roads												
Morogoro	Akiba-Magomeni	Jangwani	12,170	2,766	1,022	400	210	350	16,750	199	13	33,880
Morogoro	Magomeni –Ubungo	Mwembe chai	13,176	3,760	1,000	363	223	215	12,753	99	3	31,592
Morogoro	Ubungo-Mbezi	Temboni	5,526	2,938	923	1,209	1,646	387	2,244	1,404	2	16,279
Morogoro	Mbezi –Kibaha	Kiluvya Bridge	4,421	1,920	327	908	1,139	481	521	3,406	20	13,143
Kilwa	Gerezani-Uhasibu JCT	Kilwa road police	12512	4,038	1,099	809	196	291	122	3,240	130	22,437
Kilwa	Mtongani-Mbagala Rangi Tatu	Mission	10997	1,612	1,196	912	165	761	400	2,240	89	18,372
Kilwa	Mbagala-Kongowe JCT	Mzinga	1839	817	479	562	302	81	1,252	1,030	4	6,366
Nyerere	Akiba-TAZARA	Maliasili daraja	18,386	8,666	1,775	1,153	1,005	116	8,111	266	15	39,493
Nyerere	TAZARA-DIA	Vingunguti	11512	5,037	962	605	326	43	437	4,247	22	23,191
Pugu	DIA-Pugu	Gongo la Mboto	6966	1,534	523	334	32	19	315	3,660	26	13,409
Ali Hassan Mwinyi	Akiba-Morocco	Salender Bridge	28,849	12,911	711	231	4	0	615	1,740	12	45,073
Ali Hassan	Morocco-Mwenge	Science	22,811	10,919	1,222	671	16	1	140	2,140	12	37,932

Mwinyi												
New Bagamoyo	Mwenge-Mbuyuni	Tankibovu	6890	3,835	746	773	510	117	636	3,335	19	16,861
New Bagamoyo	Tegeta-Bunju	Bus-hire	5891	2,832	156	655	543	122	45	1,331	120	11,695
Mandela	Bandari-DSA	Kigamboni Bridge	2,882	1,300	222	493	718	54	2,320	111	21	8,121
Mandela	DSA-TAZARA	Serengeti	6,872	2,356	720	498	998	157	3,325	132	5	15,063
Mandela	Buguruni-Ubungo	Tabata Relini	12,192	4,600	1,313	969	1,893	421	5,537	399	10	27,334
Sam Nujoma	Ubungo-Mwenge	Osambi Hardware	13211	4,541	939	439	451	103	308	2,921	12	22,925
Regional and Other Roads												
Mwenge-Mlalakuwa	Mwenge-Mlalakuwa	Coca Cola Junction	4,991	2,204	279	137	134	8	103	132	0	7,988
Mwai Kibaki	Morocco-Kawe-White sand JCT	Mayfair Plaza	8601	4,321	2,110	1,232	619	99	120	1,670	201	18,973
Kawawa	JKT-VETA JCT	Keko	9691	4,229	1,811	941	314	185	237	2,327	127	19,862
Kawawa	Ilala Boma-Magomeni	Msimbazi centre	9290	4,499	1,001	1,030	314	85	437	4,727	22	21,405
Kawawa	Magomeni-Morocco	Mkwajuni	7123	3,229	1,910	832	619	122	57	2,427	19	16,338
Jangwani	Kigogo JCT-Jangwani	Jangwani sport club	2,710	1,234	124	321	278	142	170	1	0	4,980
Mabibo	Urafiki-Mabibo	NIT	1,719	910	122	300	101	180	207	80	71	3,690
Uhuru	Mnazi Mmoja-Buguruni	Malapa darajani	5,499	2,262	821	435	91	4	5,364	268	3	14,747
Temeke	Mtoni Azizi Ally-Sokota JCT	Temeke Centre	6,927	4,690	258	421	120	12	104	61	120	12,593
Shekilango	Shekilango JCT-Bamaga JCT	Sinza Kijiweni	10,921	4,218	430	145	12	7	1,254	11	2	17,000
Kinondoni	Kinondoni-Manyanya JCT	Makaburini	7,929	3,692	252	40	12	0	1,304	6	0	13,235
Mwananyamala	Studio -Victoria	Hospital	6,929	2,690	152	44	2	0	1,104	61	0	10,982
Makanya	Morocco Hotel Kijiweni	Kwa Mtogole	5,900	360	219	10	21	0	104	12	0	6,626
Buza	Temeke –Buza	Abiola	2,362	1,762	272	184	310	400	1,072	14	1	6,377
Buza	Temeke JCT-Vituka-Buza	Lumo	1,832	887	266	159	270	67	954	31	11	4,477
Goba	Mbezi Goba -Tankibovu	Goba centre	2000	1,196	105	192	50	0	251	274	0	4,068
Kinyerezi	Tabata Kinyerezi – Banana	Aroma	3,879	1,019	162	67	57	11	331	1,991	0	7,517
Kinyerezi	Tabata Kinyerezi – Banana	Njiapanda ya Segerea	3793	1,372	369	80	2	1	116	74	0	5,807
Tabata dampo	Tabata dampo – Kigogo	Darajani	2,873	1,065	212	129	19	5	28	13	40	4,384
Kwembe	Kibamba-Kwembe	Muhimbili University	15	58	14	18	6	2	2	0	3	118
Kimara-Kinyerezi	Kimara-Kinyerezi	Bunyokwa bridge	984	782	76	25	1	0	100	0	696	2,664
Makabe	Makabe-Mbezi Msakuzi	Makabe centre	475	328	140	35	6	1	285	7	48	1,325

Chang'ombe	VETA JCT-Mgulani JCT	TAMECO	2,810	2,121	160	306	201	121	2,024	452	201	8,396
Makoka	Kimara Makoka-External	Makoka	462	231	60	9	3	0	35	0	0	800
Makongo Juu	Makongo Juu-Goba JCT	ELCT Church	1,246	679	72	50	27	1	118	5	1	2,199
Kibamba	Kibamba-Magoe Mpiji	Kibamba shule	1,031	956	803	120	181	1,102	948	222	0	5,363
Wazo-Madale	Tegeta Kibaoni-Wazo hill	Msikitini	1,924	1,102	212	211	324	180	411	4	3	4,371
Wazo-Madale	Wazo-Madale-Goba JCT	Madale centre	414	346	166	58	19	3	101	6	0	1,113
Kifuru-Pugu	Kifuru-Pugu station	Kinyerezi JCT	1360	924	323	113	60	0	1,117	1	1	3,899
Drive Inn	Drive Inn-Namanga	Drive inn	4,991	2,204	279	137	134	8	103	132	0	7,988
United Nations	Fire-Palm Beach	Tambaza school	7,171	2,441	167	70	0	0	230	418	18	10,515
Ununio	Kunduchi - Boko	Kunduchi	3029	1,820	254	208	35	10	87	592	4	6,039
Mbweni	Bunju A - Mbweni	Bunju A	1,967	1,375	327	392	162	85	469	1,371	0	6,148
Kigogo	Mabibo-Kigogo	Kigogo Police	4270	1,777	386	334	81	24	471	1,437	0	8,780
Ubungo Maziwa	Ubungo external-Ubungo Maida	Darajani	4,873	1,065	212	5	0	0	210	69	7	6,441
Kivukoni - Kongowe	Mjimwema –Kongowe	Kongowe darajani	1798	660	429	305	259	48	712	215	1	4,427
Kivukoni - Kongowe	Kivukoni-Mjimwema	Efatha kanisani	3048	496	419	403	19	0	692	209	0	5,286
Mjimwema-Pembamnazi	Mjimwema-Pembamnazi	Kibugumo	819	479	327	256	11	2	890	174	10	2,968
Kibada - Pembamnazi	Kibada - Tundwisongani	Kibada bondeni	682	260	106	22	3	0	743	15	2	1,833
Tungi	Kivukoni-Tungi	Kivukoni	690	457	173	31	3	0	994	189	0	2,537

Source: TANROADS Regional Office & Traffic Counting October-November 2016



Map 11.3: Average Daily Road Traffic Volume, 2016

11.8. Parking Analysis

The rising number of cars on the roads of Dar es Salaam has resulted in high demand for parking. The city centre in particular, where space is constrained and buildings tend to be older, is overwhelmed by the competing demands for parking and circulation space.

The DART Survey that was conducted in 2006 identified more than 13,800 parking spaces in the city centre, with a mixture of on-street and off-street (both private and public) multi-storey parking garages (Nelson\Nygaard Consulting Associates, 2006) The report found, however, that demand exceeded supply for on street parking, while off-street public parking was not used in full. These findings are confirmed by JICA, who concluded that illegal parking was common on all main streets in the city centre, with Jamhuri St showing upwards of 90 illegally parked cars per hour during the day, followed by Ghana St with nearly 70 on average (JICA, 2012). DART predicted that up to 1,000 parking spaces in the city centre may be lost due to the planned BRT network. However, it can be argued that introduction of BRT should reduce car travel and consequently the demand for parking.

11.9. Public Transport

The need to provide public transport in Dar es Salaam grew as the city outgrew the colonial structure built by the Germans, and then the British, which now corresponds to the city centre. As distances increased within the city, so did rates of private motorization. Thus the predominance of the private car over other modes of transport, already apparent in 1979, became acute in the decades since, and today Dar es Salaam is notorious for its constant traffic jams. However, the majority of people in Dar es Salaam do not travel by car. 42.9 per cent of people travel by bus and about a 10.5 per cent walk. They all share the road network.

Dar es Salaam has endured many decades of declining public transport standards. A market gap in the supply of formal transport was filled with *dala-dalas*, which now form the core of public transport in the city. The service they offer is valuable: coverage is extensive, fares are low which ranges from 400tsh in most trips to 1300tsh from Kigamboni to Kimbiji route only, and frequency is high on main corridors. The network is however riddled with inefficiencies, vehicles are old, and services are crowded. Integration with planning is poor and ownership is split among an array of many individual owners.

With only a few main roads linking the now vast suburbs with the city centre, congestion levels have reached unsustainable proportions. Workers lose an average of 2.48 hours to traffic congestion while some spend up to 5 hours per day stuck in traffic jams. With this result, it can be safely said that workers spend valuable time commuting rather than working hence, a detriment to their productivity, Findings indicate that TZS 1.44 trillion is lost annually to traffic congestion in Dar es Salaam alone, this situation is a burden to the economy and discourages attempts to improve the quality of residents' lives. While better use of existing infrastructure might help to mitigate this, vehicle ownership rates are increasing; the volume of traffic in Dar es Salaam is over 400,000 with more than 6,000 being commuter buses. The study conducted shows that 70 percent of all vehicles in Tanzania are in Dar es Salaam therefore, it is no wonder that the big volume of traffic coupled with poor road infrastructure and city structure drastically slows down the vehicular travel speed. Only a combination of better public transport and the extension of the road network will offer a better chance of reaching acceptable traffic levels across the network.

Prior to the introduction of the BRT services Mini Dala-dalas with capacity of up to 15 passengers were prohibited from operating in the downtown area to reduce traffic jams. Following introduction of the BRT services SUMATRA extended the prohibition to include the Dala-dalas with the capacity of 15-25 passengers. Medium sized Dala-dalas with capacity of 26-45 passengers are still permitted to operate in all parts of the city.

Minibuses dominate the public transport sector in Dar es Salaam city. Vehicle capacity (25-45 passengers per vehicle) accumulates more buses that also increase traffic volume. On average about 20,000 public buses per day ply the major roads and additional 10,000-15,000 passenger vehicles operate on feeder and collector roads.

The Bus Rapid Transit accounts for 5-10 per cent of public transport in Dar es Salaam city. Experimental rail transport services in Dar es Salaam indicate a potentially big demand for this mode in the city; however the current catchment is low.

11.10. Non-Motorised Traffic

Over 30 per cent of all trips in Dar es Salaam are currently undertaken by non-motorized modes. A study carried out in 2016 found that over 40percent of walking trips in the city were less than 2kilometers in length and another 40percent were 2-5kilometers in length, with half of those trips taking more than 30 minutes. Cycling was found to be negligible (3percent), due to a combination of the comparatively high cost of bicycles and the lack of dedicated cycle facilities/routes.

Pedestrians and cyclists tend to be disproportionately affected by road accidents, and constitute most of the victims of high speed and poor driving standards, representing 42percent of all fatalities (JICA, 2008).

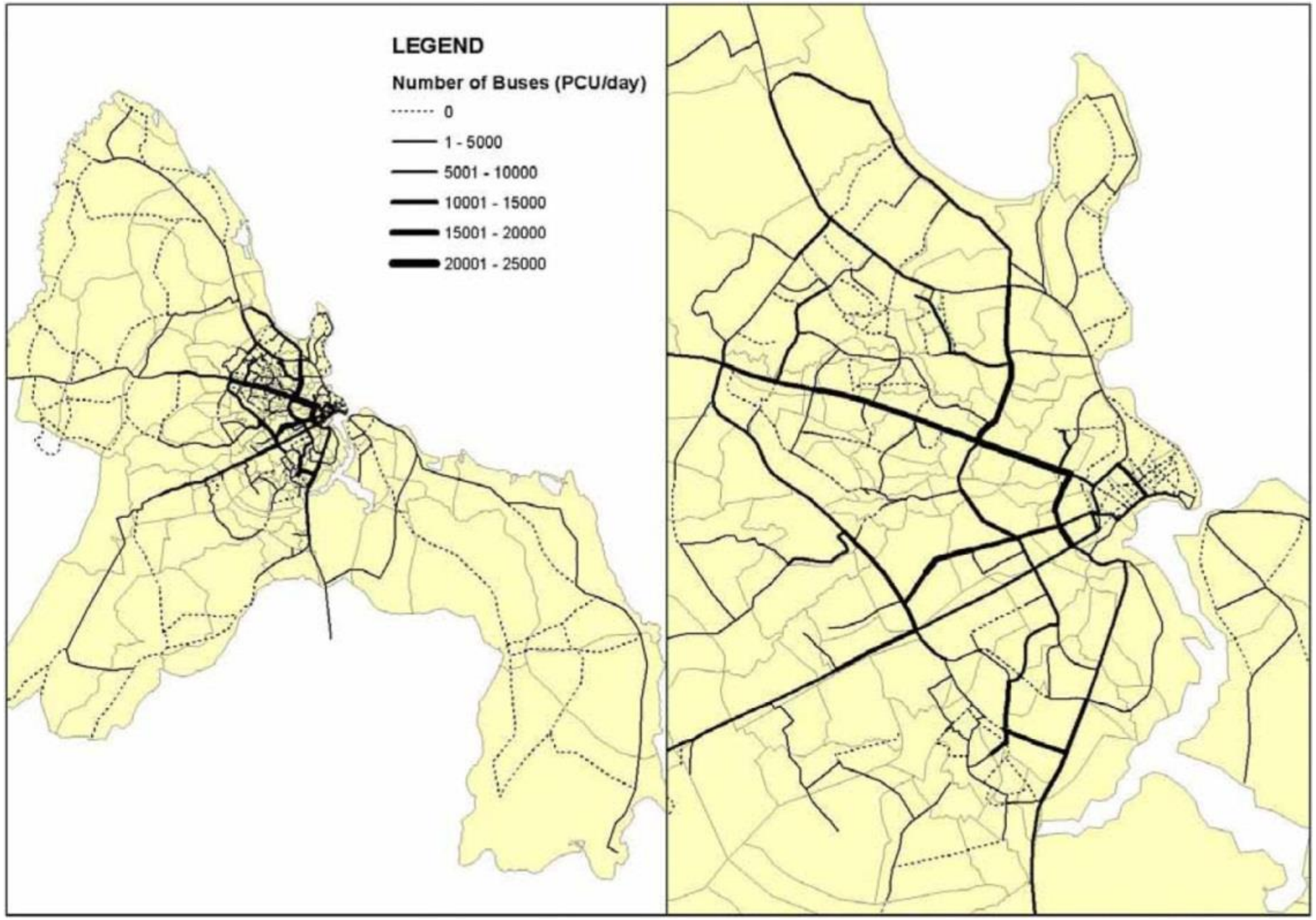
The necessary infrastructure to facilitate good mobility in walking and cycling is largely absent in Dar es Salaam (UN Habitat, 2009). Where pedestrian facilities are available, illegal parking frequently obstructs routes and poor pavements, mislaid utilities and abrupt changes of level contribute to a generally poor environment. Encroachment of carts and vendors tend to further reduce the availability of precious pavement space.

Investment in non-motorized facilities also tends to be cost effective, given the increase in accessibility they afford to local communities, the positive impact usually seen in the rates of traffic accidents (World Bank, 2005). Walking and cycling also have a positive impact on health conditions.

11.11. Bus Services

Buses form the core of the public transport network in Dar es Salaam. Public bus services are operated by the Usafiri Dar es Salaam (UDA), the main organ responsible for public transport in the city. The formal bus network shrunk from 220 vehicles in 1979 (Marshall Macklin Monaghan Limited, 1979) to not more than 36 minibuses of 26-seat capacity in 2008. Two main reasons may explain this reduction: losing the market share to informal dala-dalas; and a decrease in profitability from under-priced journeys, resulting in the company being unable to maintain its fleet and provide a regular and sufficient service. To mitigate this, a decision was made to formalise and regulate the growing dala-dala fleet instead.

Dala-dalas are privately operated minibuses, carrying between 18 and 35 passengers. The vehicles and services are regulated by the Surface and Marine Transport Regulatory Authority (SUMATRA), and run on fixed routes. About 7,000 dala-dala vehicles owned by 3,000 operators operate 190 routes in the city (JICA, 2016). The network is shown in Figure 8.6:



Map 11.4: Estimated dala-dala networks, city-wide and in the centre
Source: Japan International Cooperation Agency, 2008, Chapter 7, page 1-2

UN-Habitat (2009) points to inadequacies in the public transport network as aggravating factors for the excessive volumes of traffic and congestion in the centre of Dar es Salaam, adding that areas outside the city centre receive poor transport services. Other key issues include inadequate lay-bys, little security, aggressive language and behaviour of bus operators, reckless driving and overloaded vehicles (UN Habitat, 2009). Such concerns were confirmed by JICA, who found that the only aspects of the service the users consider as fair or satisfactory are the fare, access and service availability. A passenger survey conducted by the agency shown in Figure 11.2 concluded that over 80 per cent of users regarded dala-dala services as 'Never acceptable' and are 'Not satisfied' (JICA, 2008).

Table 11-6 A detailed breakdown of dala-dala fares and other attributes across the city.

Survey Location	**Travel time per trip (min)**	**Travel time by Dala-dala (min)**	**Waiting time**	**Fare per trip (TZS)**
Mwenge	74.8	54.8	35.4	400
Tandika	74.7	53.7	34.3	400
Mbagala	73.9	52.5	32.6	400
Posta	81.2	61.9	36.8	400
Ferry	80.4	58.9	34.1	400
Kariakoo	81.1	58.9	36.2	400
Ubungo	83.4	65.9	34.5	400
Average	**77.2**	**56.7**	**34.9**	**400**

Source: SUMMATRA, 2016

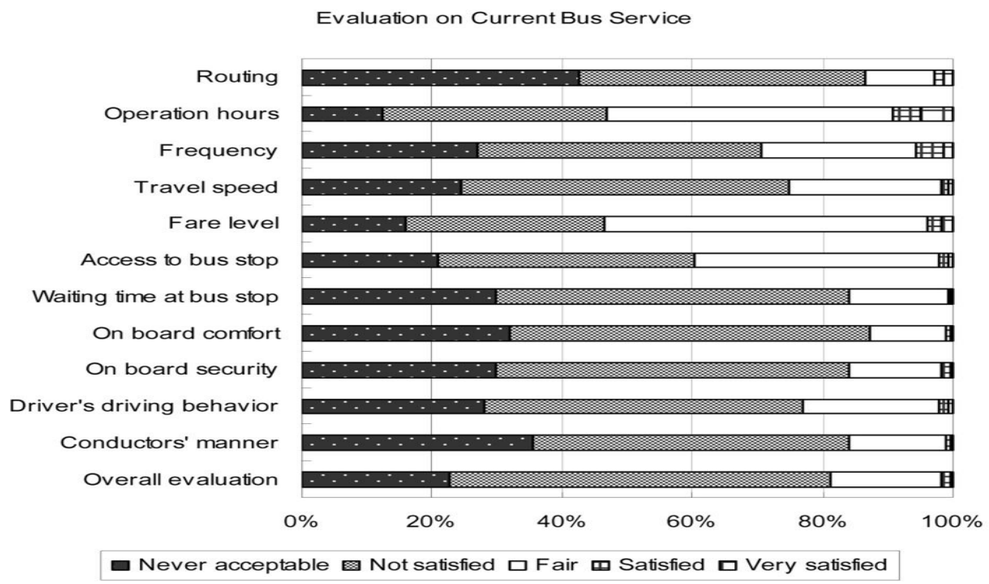


Figure 11.2: Evaluation of the bus service (chapter 2, page 8-7)

Source: Japan International Cooperation Agency, 2008

In spite of many perceived shortcomings, dala-dalas offer a reliable service and are by far the most affordable mode of transport in Dar es Salaam. They serve mainly low-income population with no alternative for long-distance journeys. Table 11.7 shows that car trips generally achieve much shorter journey times but at a cost more than 10 times higher than of a dala-dala journey:

Table 11-7: Time/cost comparison between car and dala-dala

Mode of Transport	Travel Time per Trip (min)	Waiting Time (min)	Total Travel Time (min)	Fare/cost per Trip (Tshs)
Car	59.8	-	59.8	5,551
Dala Dala*	77.2(56.7**)	34.9	112.1	324

* The above figures of Dala Dala are referred from the Bus Passenger Opinion Survey, conducted by JICA Study Team.
** The figure shows travel time by Dala Dala, which excludes access/egress time.

Source: JICA Study Team

Source: JICA, 2008

Given that the average income per household in Dar es Salaam is TZS 152,986 per annum (TZS 2,942 per week) as stated in the Socio-Economic report submitted as part of this Master Plan, the dala-dala is the only affordable option available to average households making longer journeys. This is despite the cost of using the dala-dala representing between 7 per cent and 18percent of monthly expenditure for most users.

Table 11.6: shows a more detailed breakdown of *dala-dala* fares across the city wards. Fares tend to vary according to location rather than travel time. Kariakoo and Ubungo wards command the highest fares, and the highest volumes of dala-dala traffic.

The dala-dala business model is highly demand-responsive and routes will appear where demand is felt. As such, the network reflects the general travel patterns in Dar es Salaam, with the city centre featuring prominently as a preferred commuter destination. An origin-destination survey carried out indicates that the destinations of trips are highly concentrated in areas such as the Kariakoo market, Posta and Muhimbili Hospital, which are commercial and institutional centres. Conversely, most of the trips originate in the outer residential wards, indicating a traditional city commuter movement pattern. The result is a high concentration of routes on the four main roads leading to the city centre (figure 11.3), with Morogoro Road experiencing particularly high volumes of dala-dala traffic.

Within the city centre, Maktaba Street carries the highest number of dala-dalas, due to its centrality and proximity to important institutional and commercial destinations.

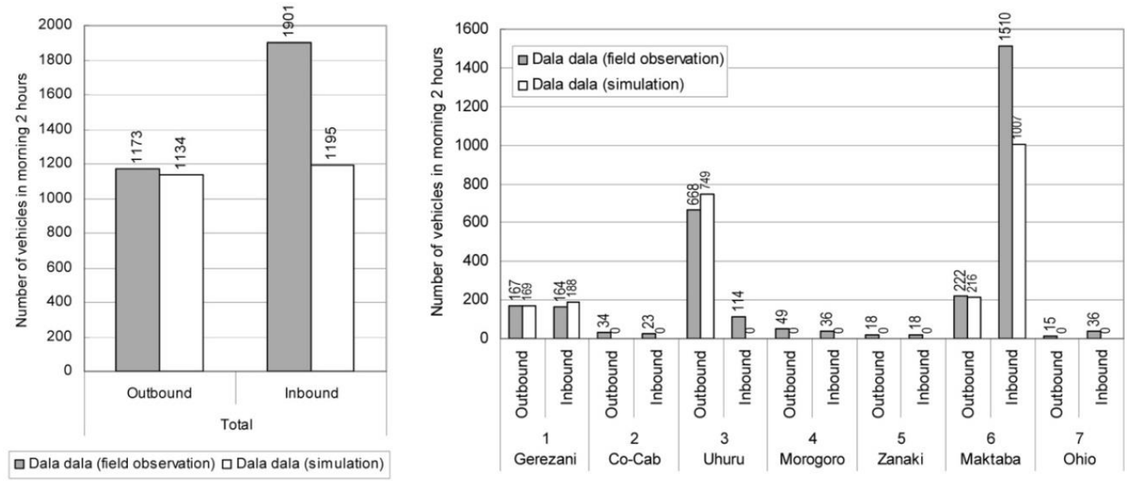


Figure 11.3 - Dala-dala Traffic Volume 07:00-09:00

Source: JICA Study, 2008, TR7 p. 2-18

Figure 11.4 – Passengers waiting for commuter bus transportation in the city

Long-distance bus services from Dar es Salaam use the Ubungo bus station situated on Morogoro Road, at the junction with Nelson Mandela. The station is an important hub and as such is on the route of local services running on Morogoro and Nelson Mandela roads.

11.11.1. Dar es Salaam Rapid Transit (DART),

A Bus Rapid Transit (BRT) system, known as the Dar es Salaam Rapid Transit (DART), was proposed for Dar es Salaam in 2003 with the aim of providing a low cost transport system to reduce congestion on

key routes in the city and improve the living conditions of city residents. The planned network covers a total of 133 kilometres, with 18 terminals and 228 stations, implemented in the following 6 phases (LOGIT 2009):

1) Phase 1 – Morogoro Road, Kawawa Road North, Msimbzai Street, Kivukoni Front – 20.9kilometers
2) Phase 2 – Kilwa Road, Kawawa Road South – 19.3kilometers;
3) Phase 3 – Uhuru Street, Nyerere Road, Bibi Titi Road, Azikiwe Street – 23.6kilometers;
4) Phase 4 – Bagamoyo Road, Sam Nujoma Road – 16.1kilometers;
5) Phase 5 – Mandela Road, New Road 1 – 22.8kilometers; and,
6) Phase 6 – Old Bagamoyo Road, New Road 2 and New Road 3 – 27.6kilometers

Figure 11.5 shows the extent of the planned DART system. The network is planned to operate as a trunk-feeder system, much like similar successful schemes in Curitiba, Brazil and Bogota, Colombia, where main trunk routes operate high capacity, high-frequency services fed by a network of conventional buses.

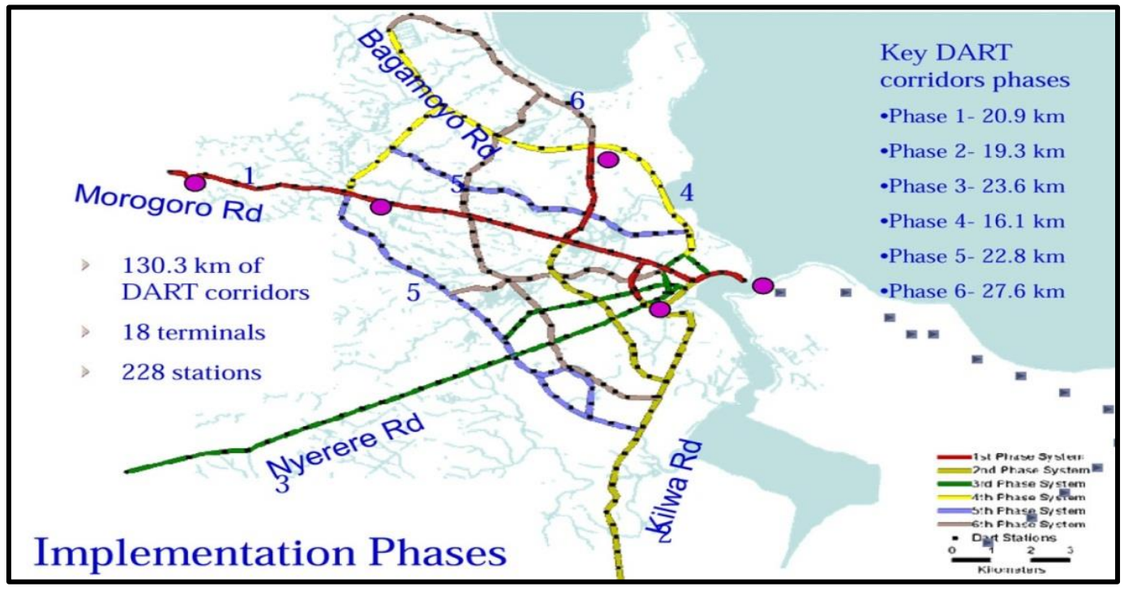


Figure 11.5 - The implementation phases of the planned DART network (Logit, 2009)
Source: DART

Construction of Phase 1 along the Morogoro Road from Kimara to Kivukoni in the city centre was completed and is operational, with branches on Morocco road and Kariakoo Terminals along Kawawa Road and Msimbazi Street to the north and south respectively. The initial corridor is 20.85kilometers in length, with 29 stations and 5 terminals was planned to have seven services running on the Phase 1 trunk corridor with the following operational features:

- 140-person vehicles for trunk-system services
- 50-person vehicles on feeder services;
- AM Peak maximum headway of 1.5 minutes, or 40 buses/h;
- Off-peak headway of 6 minutes or 10 buses/h.

Phase 1 includes connections to the Kigamboni ferry pier (Kivukoni Terminal) and the long-distance bus station (Ubungo Terminal). Both are crucial for the transport of the whole of Dar es Salaam and the integration with Dar will provide a much-needed improvement.

The construction of phase 1 of DART was carried out by TANROADS. It includes 29 ordinary bus stops within the roadway, five bus terminals, and two bus depots. The project is partly funded by the International Development Association (IDA). A typical cross section has been provided by TANROADS:

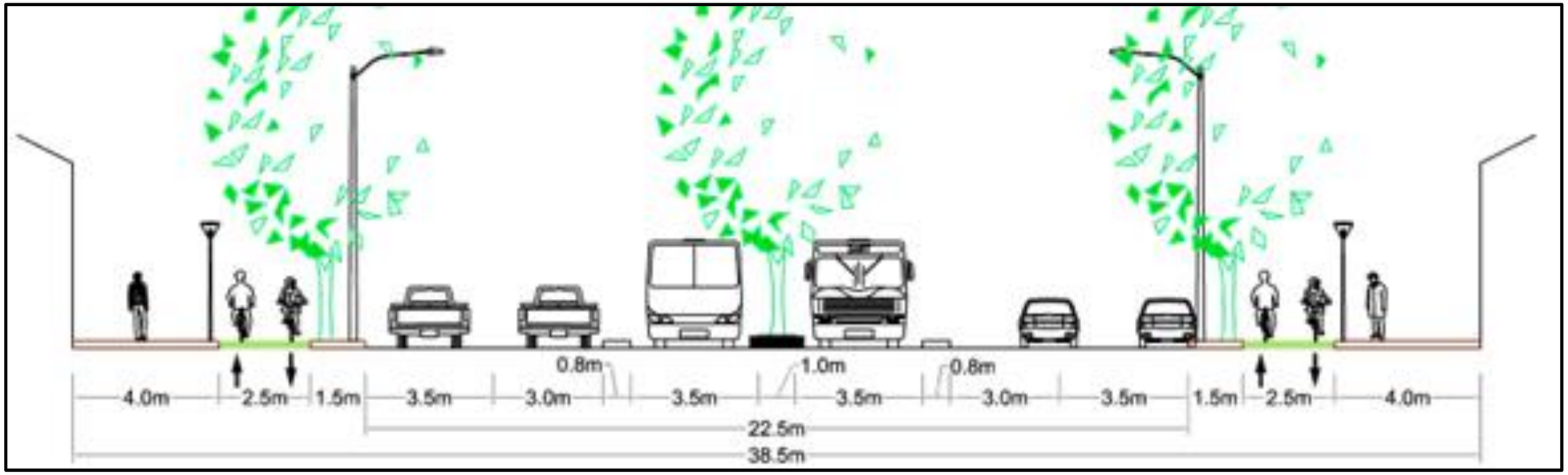


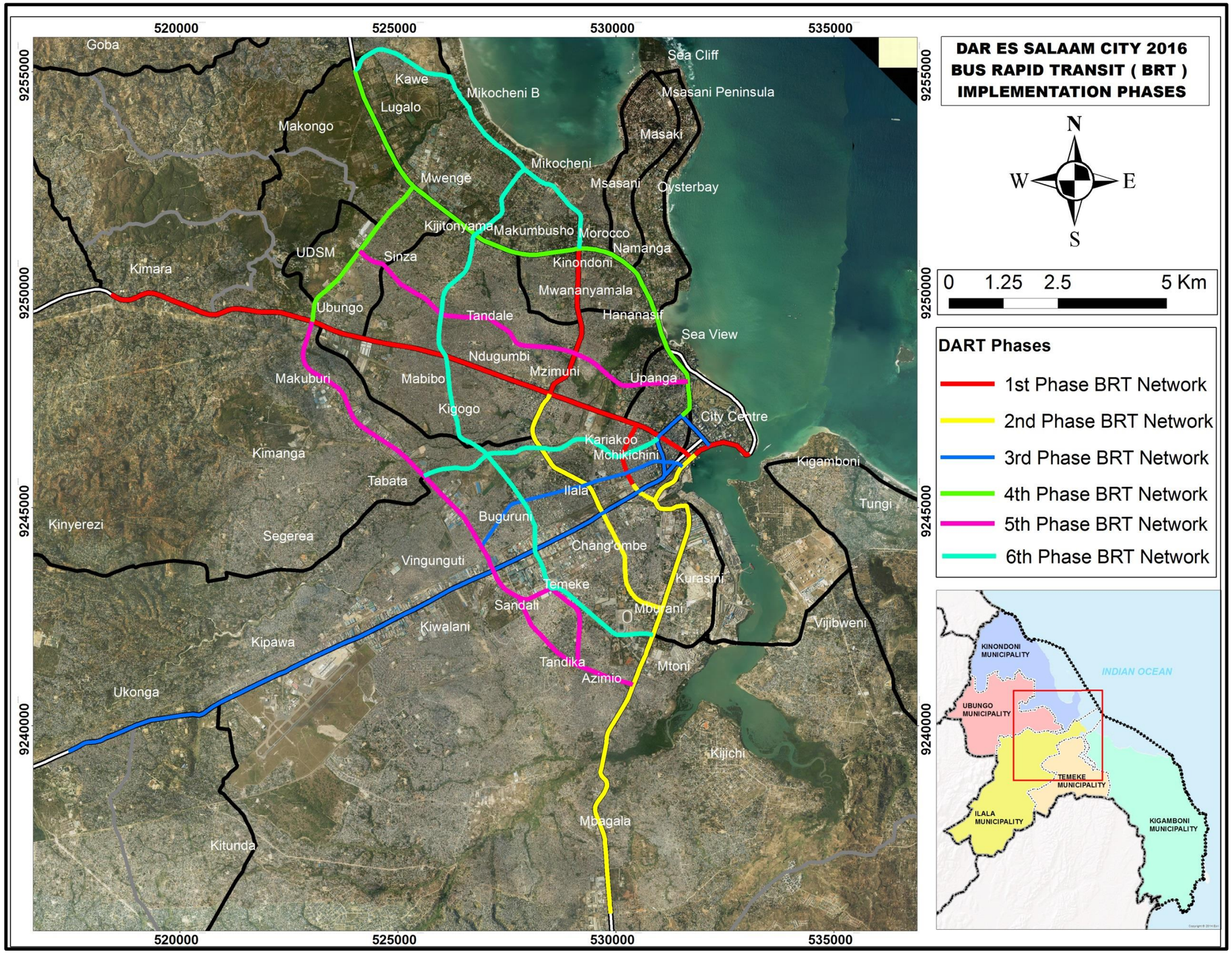
Figure 11.6 - Typical cross section of DART phase 1, TANROADS

Source: DART

The planned DART network will offer coverage of the existing city, with a dense network of lines using the main road network. An expansion of the network to offer a similar level of service beyond the current limits of DART (roughly Nelson Mandela Road) and the four main roads (Morogoro, Bagamoyo, Nyerere and Kilwa) would require an exponentially higher level of investment but it is not part of DART's current implementation plans.

A population increase to 11.9 million over the next two decades will however create demand for transport services far beyond the terminals currently planned, so it is proposed that services in the future city be offered by conventional buses operating both express services between the new metropolitan centres and feeder services elsewhere. There is scope for the participation of the private sector in this endeavour. The required scale and density of services will be better served by an agile and flexible fleet structure that would enable the services to grow organically, and the vehicle sizes to vary with demand, geographically and over time. The task of regulating services and routes does however fall to SUMATRA and coordination with DART services should be the responsibility of DART.

The commercial arrangement for the participation of the private sector, either under a direct service provision agreement or on concession, is to be determined by a future Dar es Salaam Urban Transport Authority (DUTA). Any transport proposals depend on wider planning initiatives for success. Supporting high-density development along BRT corridors or at key transport nodes, however sensible, will not by itself be sufficient to stop further sprawl in the periphery of the city: a review of housing policy and land use planning is required in parallel. The integration of transport planning with wider planning policy is therefore recommended.



Map 11.5 BRT Implementation Phases in Dar es Salaam

11.12. Rail Transport

11.1.1. Railway Network and Connectivity

Tanzania has a total of 3,676 kilometres of railway lines operated by The Tanzania Railways Limited (TRL) and Tanzania – Zambia Railways Authority (TAZARA). The mainline of TRC comprises the central corridor between the port of Dar es Salaam in the east, linking central and western areas of the country. The central railway line connects Dar es Salaam to the central regions of Dodoma and Singida, the western regions of Tabora and Kigoma, and the Lake Zone regions of Shinyanga and Mwanza. The Northern railway line connects Dar es Salaam to the Northern highland regions of Tanga, Kilimanjaro and Arusha.

TAZARA railway line connects Dar es Salaam to the Southern highlands regions of Iringa, Njombe, Mbeya and Songwe. The TAZARA line is 1,860 kilometres in length, of which 975 kilometres is in Tanzania and 885 kilometres in Zambia.

11.1.2. TRL and TAZARA

Dar es Salaam's role as the country's main city and commercial hub is reflected in the shape of Tanzania's rail network, which converges in the city. Both national rail networks, the Tanzania Railways Limited (TRL) and the Tanzania Zambia Railway Authority (TAZARA), offer passenger services from terminals in central Dar es Salaam and freight services from the city's port.

With a total network length of 2,706 kilometres, the TRL operates the central 1m-gauge line that runs from Dar es Salaam Central Station to Tabora where it splits into two branches: one to Kigoma in the west on lake Tanganyika, hence providing freight services to the west of the country as well as the landlocked countries of Burundi, Rwanda and the eastern part of the Democratic Republic of Congo (DRC); and a second running to Mwanza port on Lake Victoria, providing services to the north and north-western parts of the country. Another line runs from Ruvu Station northward to Korogwe and hence to the port of Tanga on the Indian Ocean on one branch, and to Moshi and Arusha on another and from Moshi, the line connects to the Kenya railway system. The TRL operates on infrastructure owned and maintained by the Reli Assets Holding Company (RAHCO) Ltd. It currently operates one urban passenger service in Dar es Salaam, along the Tabata Line from the Dar es Salaam Central Area to Ubungo.

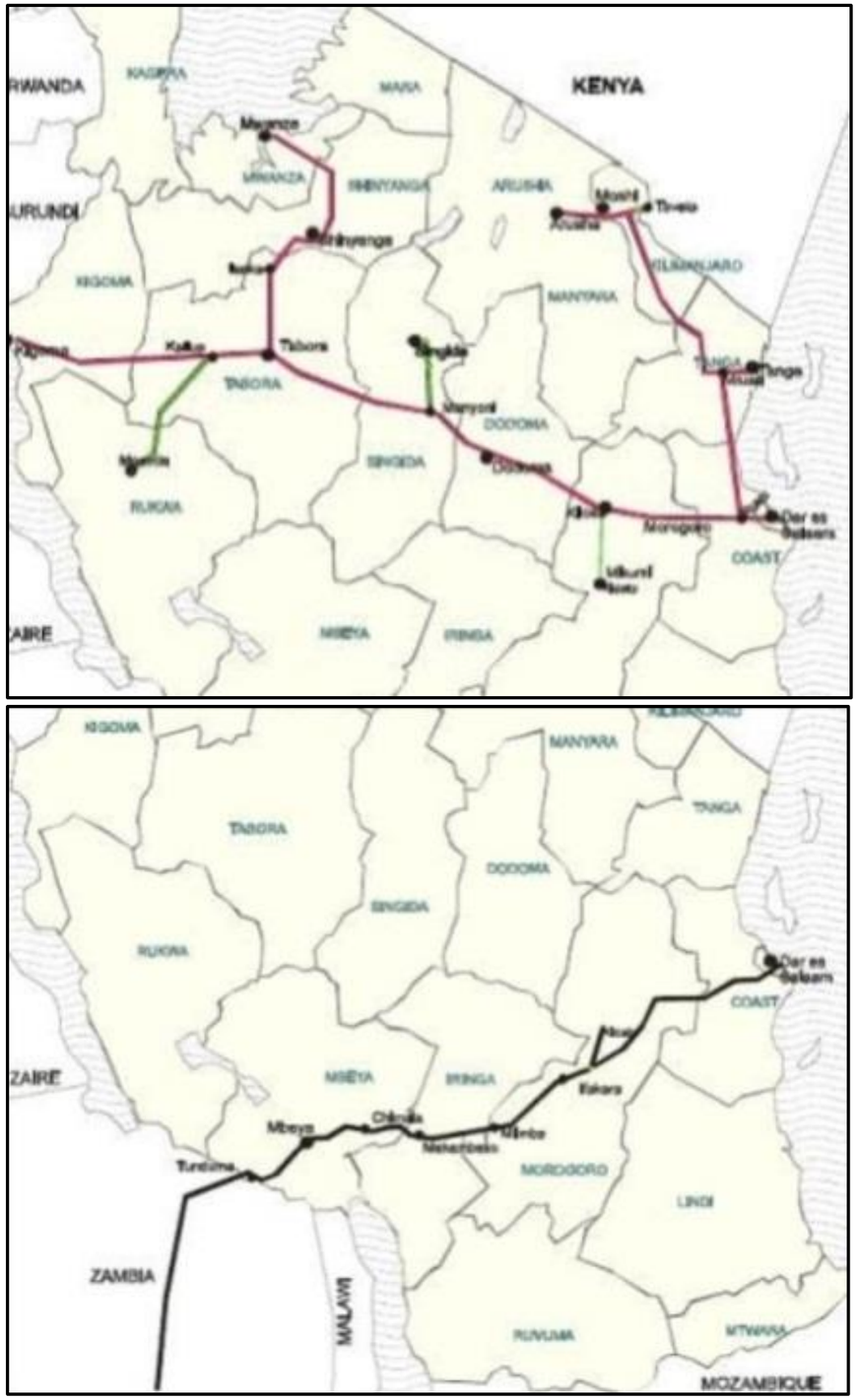


Figure 11.7 - Tanzania's national rail networks, TRL (Left) and TAZARA (Right)
Source: Royal Haskoning, inter-consult, Ardhi University, 2009

The TAZARA line, a 1.067m-gauge line totalling 1,860kilometers in length, was built in the 1970s mainly as a conduit for the export of Zambian goods. Opening new routes to the land-locked country was an important step to diversify routes to ports at a time of political uncertainty in the region. Through Zambia, the line handles freight for Malawi, Zimbabwe and the Democratic Republic of Congo. The line was an important trade route in its first decades, but has carried declining levels of freight due to the increase in road transport and a shift in the political context of the region. In addition to freight services, TAZARA offers two weekly passenger services between Dar es Salaam and the town of Kapiri Mposhi in Zambia.

While train passenger services were a component of the 1979 Master Plan for the Dar es Salaam, they never materialised, in spite of the availability of lines and rights of way in the city. With the focus of public transport being on the provision of bus services, eventually to be dominated by dala-dalas, investment in the city's railways for passenger transport has not been a priority – a proposed line to Wazo Hill was never built. The result is a network of little-used rail lines, which, though not carrying regular services, or any at all in some cases, have preserved valuable rights-of-way that can be used productively in the future for train services or other uses.

11.1.3. The Refurbished Tabata Railway line

The National Transport Policy 2003 establishes the importance of rail transport in alleviating congestion by advocating the creation of urban rail services in Dar es Salaam. In the pursuit of this objective the Ministry of Transport coordinated the refurbishment of the Tabata line, a rail corridor linking Dar es Salaam Central Area to Ubungo, for the purpose of operating commuter services. The line provides a much needed alternative to the congested Morogoro Road, connecting poorly-served suburbs to two of the city's main transport hubs: the city centre and the Ubungo bus terminal, thus introducing a degree of inter-modality to an otherwise road-based public transport network.

The project took advantage of existing rolling stock used for long-distance train services owned and refurbished by the TRL comprising 12 passenger coaches and 3 locomotives, all of which were recently repaired. The infrastructure, owned by RAHCO, was upgraded to suit the purpose. The service is available at the following stations:

i. Dar es Salaam Central
ii. KAMATA
iii. Buguruni
iv. Buguruni (Kwamnyamani)
v. Tabata
vi. Mwananchi
vii. Mabibo
viii. Ubungo

The city train operates in the morning peak hours, between 6am and 11am with a total number of 5 turns (trips), and in the evening between 4pm and 9pm with a total number of 6 turns (trips) on week days and on weekends, it operates from 8am to 10 am in the morning session with a total number of 3 turns (trips) and in the evening session from 4pm to 7pm with a total of 4 turns (trips). With a passenger capacity of 150 persons per coach, each service is forecast to carry 900 passengers.

Figure 11.8 - Upgrading the Tabata line for commuter train services, October 2012

While additional lines have been identified for commuter rail services in the city, the viability of operating such services remains to be established, given the need to coordinate the sharing of the infrastructure between freight and passenger services. The lack of spare rolling stock for dedicated passenger services may also remain a hindrance to such plans.

The rights-of-way of disused or under-used rail lines in the city are valuable in that they offer corridors that cut through the urban fabric and offer straight-line connections and much-needed car-free links. Preservation of such corridors, whether for public transport in any form (train, bus) or for the sole use of pedestrians and cyclists, is recommended as a key tenet of the transport strategy of this Master Plan.

11.13. Water Transport

Dar es Salaam is the principal port of Tanzania, and is recognized as one of Africa's most productive ports. It is a major sea outlet for the Republic of Zambia, Burundi, Malawi, Rwanda, Uganda, Zimbabwe, and eastern parts of the Democratic Republic of the Congo. The port also serves as a convenient freight linkage to the Middle and Far East, Europe, Australia and America. The marine transport sub-sector as a whole, however, remains characterized by poor performance. This stems from inadequate port handling facilities, low human resources capacity to adequately manage the maritime transport and increased competition from the Maputo corridor. For these reasons, the government, through the Tanzania Ports Authority (TPA), has implemented a number of development projects which were designed to further modernize the ports by providing additional cargo handling equipment, as well as improving and upgrading infrastructural facilities. Notwithstanding the investment made in the past five years, the Tanzania Ports Authority is still faced with several challenges in making the ports of Tanzania more efficient.

In particular, the Dar es Salaam Port remains characterised by a low handling capacity for containers, due to lack of space, the impossibility of handling ships of PANAMAX size, inadequate transport services from other modes and inadequate human resources capacity to adequately manage the maritime transport.

Sea ferry services are available in Dar es Salaam to the Kigamboni peninsula, Zanzibar and Mbudya Islands. An attempt to introduce sea ferry services to Bagamoyo town was not successful. The government operates most of the Ferry services to the Kigamboni peninsula while the private sector provides most of the ferry services to Zanzibar and Mbudya Islands.

11.14. Air Transport

- Aviation Services Network and Connectivity

The Julius Nyerere International Airport (JNIA) is the largest and busiest International Airport in Tanzania, located in Dar es Salaam. The airport is one of the 58 government owned airports and airstrips, operated, developed and managed by Tanzania Airports Authority (TAA). JNIA is about 12 kilometres (7.5 miles) southwest of the city. The airport was formally known as Dar es Salaam International Airport (DIA) before it was renamed in 2006 in honour of Julius Kambarage Nyerere, the first President of the United Republic of Tanzania who died in 1999. The airport serves flights to and from different destinations including Africa, Europe and the Middle East. Currently there are two terminals, terminal one and terminal two. The government is constructing terminal three (TB III), which will be the largest terminal at JNIA with a capacity of handling up to 6,000,000 passengers annually

- Dar es Salaam City Aviation services

The two-terminal Julius Nyerere International Airport (JNIA) located about 13kilometers south west of the city centre serves Dar es Salaam. The airport serves both domestic and international flights, covering mainly Africa, Europe and the Middle East.

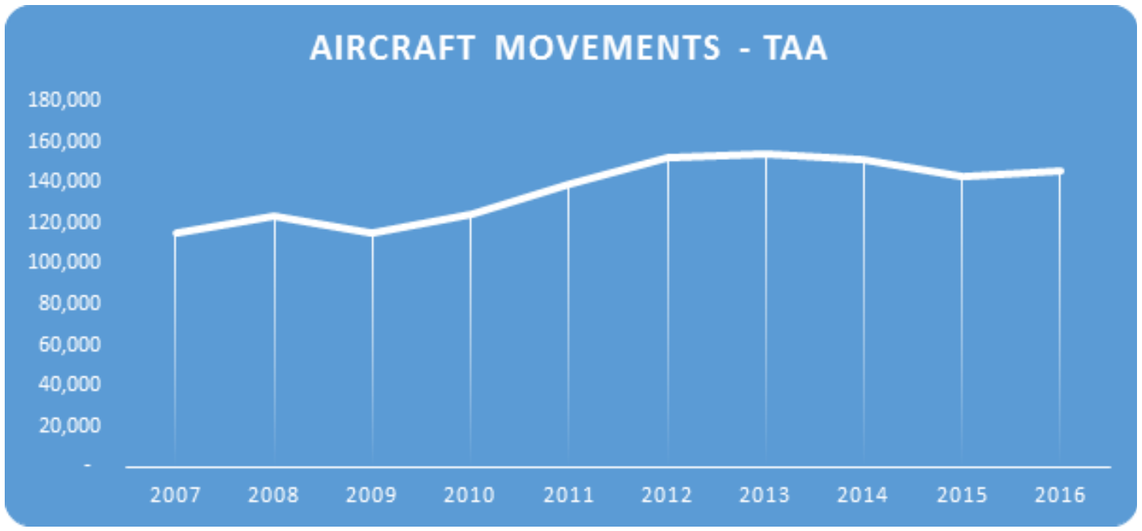


Figure 11.9 - JNIA Aircraft movements, 2007 – 2016

Source: Tanzania Airports Authority Statistics, (http://www.jnia.go.tz/index.php/corporate/airport-statistics) last accessed on 14th July 2016.

Demand for air services has been steadily increasing for the past decade. Figures provided by the Tanzania Airports Authority (TAA) show that the airport experienced a slowdown in passenger and freight traffic in 2016, but has rebounded with growth since, and appears to be trending upwards (Tanzania Airports Authority).

Figure 11.10 - JNIA passenger volumes, 2007 – 2016

Source: Tanzania Airports Authority Statistics, (http://www.jnia.go.tz/index.php/corporate/airport-statistics) last accessed on 14th July 2016.

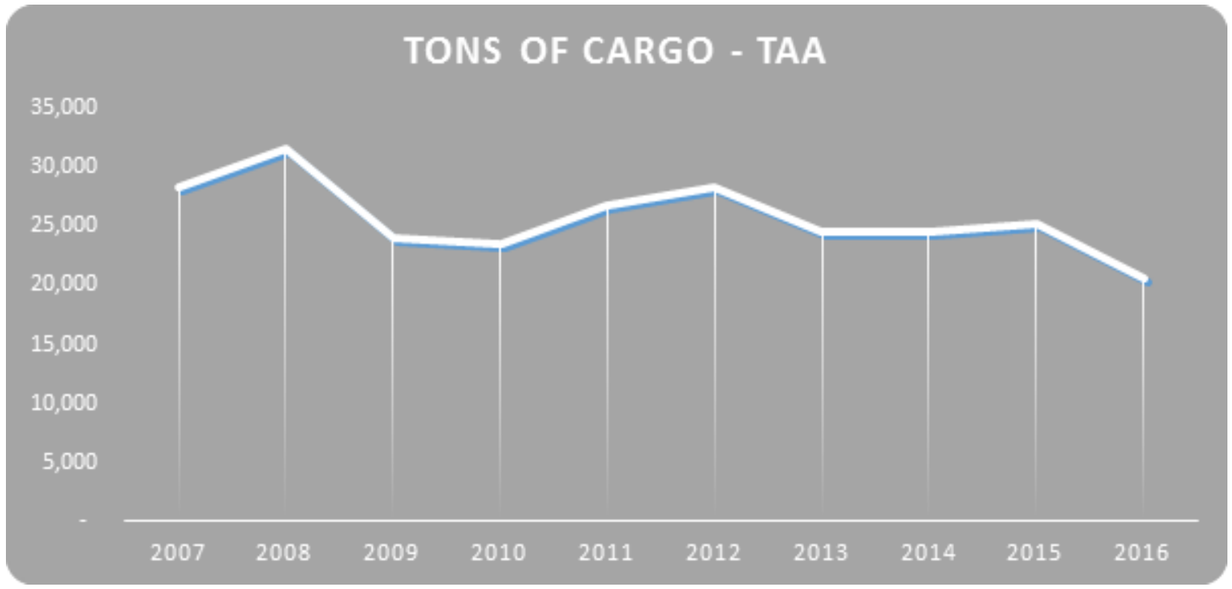


Figure 11.11- JNIA freight volumes, 2007 – 2016

Source: Tanzania Airports Authority Statistics, (http://www.jnia.go.tz/index.php/corporate/airport-statistics,last) accessed on 14th July, 2016.

The Tanzania Airports Authority (TAA) has a program of investment for JNIA, with a view to improving the facilities for increased traffic volumes. These are to include a third terminal, announced in 2011 by the TAA, currently under construction (The East African, 2011). With the construction of phase 3 of DART, access to the airport will be vastly improved, with a direct line to the city centre.

11.15. Freight

Freight in Tanzania is ferried by rail and road, with a predominance of road transport. TAZARA and TRL's share of freight traffic seems to be shrinking, in line with lower passenger traffic volumes. The growing freight volumes handled at Tanzania's main port, Dar es Salaam, are therefore increasingly being hauled by road. The projected road freight tonnage from 2013 to 2020 is shown below:

Table: Road Freight (Tanzania 2013-2020)

	2013	2014	2015e	2016f	2017f	2018f	2019f	2020f
Road Freight Tonnes (000)	202,625	219,458	220,112	228,557	236,758	245,581	254,462	263,639
Road freight tonnes, % y-o-y	4.4	8.3	0.3	3.8	3.6	3.7	3.6	3.6

e/f = BMI estimate/forecast. Source: BMI Estimate

Table: Rail Freight (Tanzania 2013-2020)

	2013	2014e	2015e	2016f	2017f	2018f	2019f	2020f
Rail freight tonnes ('000)	430	398	414	432	451	473	494	512
Rail freight tonnes, % y-o-y	4.1	-7.4	4.2	4.3	4.5	4.8	4.3	3.8
Rail freight tonnes-km (mn ton km)	886	904	923	948	973	1,000	1,027	1,055
Rail freight tonnes-km, % y-o-y	3.3	2.0	2.1	2.8	2.6	2.8	2.7	2.7

e/f = BMI estimate/forecast. Source: National Sources/BMI

Table: Air Freight (Tanzania 2014-2020)

	2014	2015e	2016f	2017f	2018f	2019f	2020f
Air Freight tonnes	36.54	38.14	39.91	41.82	43.83	45.79	47.68
Air freight tonnes % y-o-y	4.4	4.4	4.6	4.8	4.8	4.5	4.1
Air freight tonnes-km (mn ton km)	2.31	2.39	2.48	2.58	2.70	2.84	3.02
Air freight tonnes-km % y-o-y	15.0	3.4	3.8	4.2	4.6	5.5	6.3

e/f = BMI estimate/forecast. Source: National sources, BMI

Table: Major Ports Data (Tanzania 2013-2020)

	2013	2014	2015e	2016f	2017f	2018f	2019f	2020f
Port of Dar Es Salaam throughput, tonnes '000	12,530	14,400	18,000	19,476	20,917	22,569	24,420	26,496
Port of Dar Es Salaam throughput, tonnes '000, % y-o-y	15.3	14.9	25.0	8.2	7.4	7.9	8.2	8.5
Port of Dar Es Salaam container throughput, TEU	153,091	161,357	169,990	182,144	193,356	209,966	221,454	229,674
Port of Dar Es Salaam container throughput, TEU, % y-o-y		5.4	5.4	7.2	6.2	8.6	5.5	3.7

e/f = BMI estimate/forecast. Source: BMI/Tanzania Port Authority

Figure 11.12: Major Air Freight, Rail Freight, and Ports Data, 2013-2020
Source: Business Monitoring International Ltd (BMI, 2016)

The fall in freight traffic on the TRL and TAZARA routes may be attributed to the competition of road transport, and in the case of TAZARA the increase in trade being routed through South Africa.

Research published by Business Monitoring International Ltd (BMI, 2016) on Tanzania Freight Transport and Shipping Report, shows that freight facilities in the East Africa Community tends to underperform, with delays at ports being one of the main reasons for the overall inefficiency of the freight network: a 40ft container arriving at Mombasa takes 60 days to reach Kampala, Uganda. A container arriving in Dar es Salaam would perform much better in comparison, averaging 37 days. JICA suggests the following reasons for such high processing times:

- Rolling stock capacity constraints;
- Inadequate port infrastructure capacity;
- Slow customs clearance and document review;
- Delayed pick up by recipients.
- Delays at border crossings;
- Cumbersome weighbridges, police checks and police escorts;
- Poorly maintained tracks and roads, resulting in low speeds.

The analysis carried out by JICA shows that significant improvements in freight efficiency may be found by addressing 'soft' issues such as customs, management and legislation as opposed to simply investing in 'hard' infrastructure.

Traffic and network inefficiencies within the city of Dar es Salaam have a direct impact on the logistics cycle throughout Tanzania and the bordering countries. With the road network being the most-used asset for freight transport, road access to the port of Dar es Salaam becomes a critical link in the supply chain. The Dar es Salaam port is a significant generator and attractor of these freight trips, and as a result, movements of heavy goods vehicles making journeys through the city are significant.

11.16. Traffic Volume Analysis

The largest traffic volume exceeding 50,000 vehicles per day is experienced along Bagamoyo Road, between Kawawa Road Junction and the Selander Bridge. The largest traffic volume (pcu/day) is recorded at the Selander Bridge on Ali Hassan Mwinyi Road with 72,200pcu/day. Road composition: the traffic is composed of private cars, public buses, medium and heavy trucks, motorcycles and tricycle. Traffic volumes (vehicles/day) at each survey point are shown in *Figure 11.13*

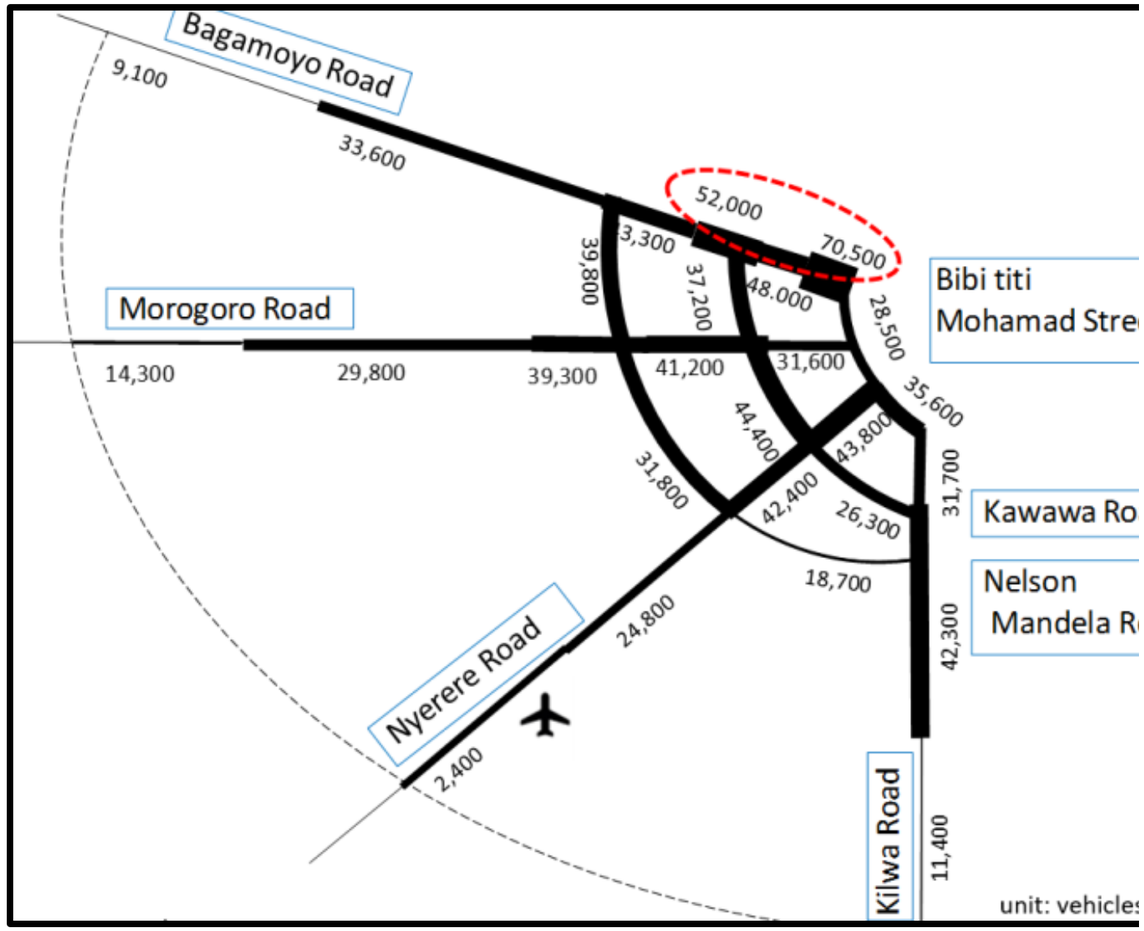


Figure 11.13: Traffic Volume at the Vehicular Survey Points
Source: Revision of Dar es Salaam Urban Transport Master Plan Draft Final Report

Regarding the bus and dala-dala traffic, the sections of the largest traffic volumes exceeding 10,000 vehicles are:

- Bagamoyo Road (Kawawa Road to Nelson Mandela Road Section): 11,000 vehicles/da
- Kigogo Road (Morogoro Road to Nyerere Road Section): 11,700 vehicles/day
- Kilwa Road (Chang'ombe Road to Mbagala Section): 12,200 vehicles/day

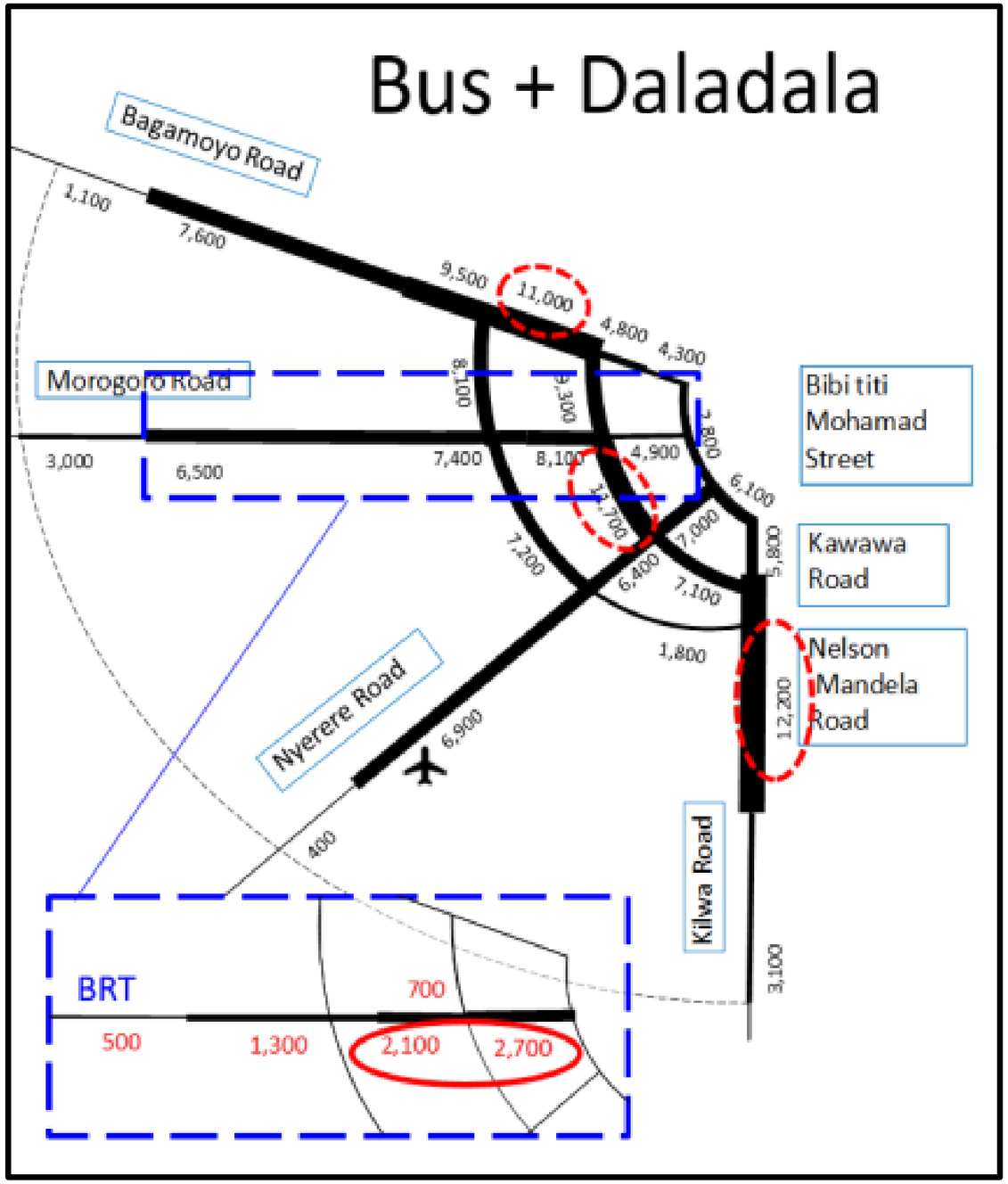


Figure 11.14: Vehicle Traffic Volume (Bus and Dala-dala)
Source: Revision of Dar es Salaam Urban Transport Master Plan Draft Final Report

For the trucks, the largest traffic volumes exceeding 4,000 vehicles are following 3 sections.

- Morogoro Road (Mbezi to Ubungo Section): 4,300 vehicles/day
- Nelson Mandela Road (Morogoro Road to Nyerere Road Section): 4,900 vehicles/day
- Nelson Mandela Road (Nyerere Road to Kilwa Road Section): 4,200 vehicles/day

As shown in Figure 11.15 the Nelson Mandela Road, which provides direct access to the port of Dar es Salaam as the city's outermost ring road carries the largest volume of traffic. Local congestion in the port area is common causing traffic jams along the road.

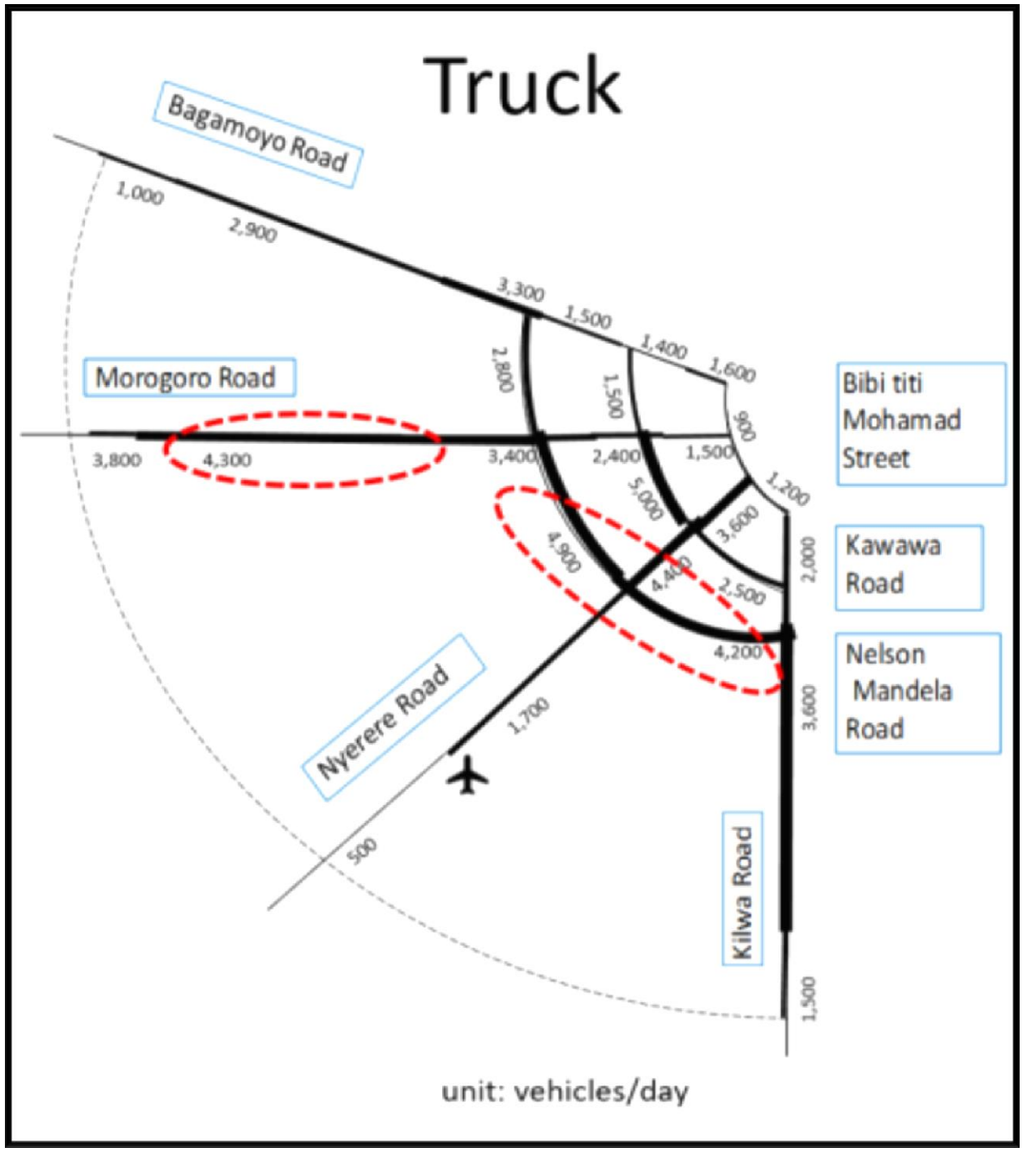


Figure 11.15: Vehicle Traffic Volume (Trucks)
Source: Revision of Dar es Salaam Urban Transport Master Plan Draft Final Report

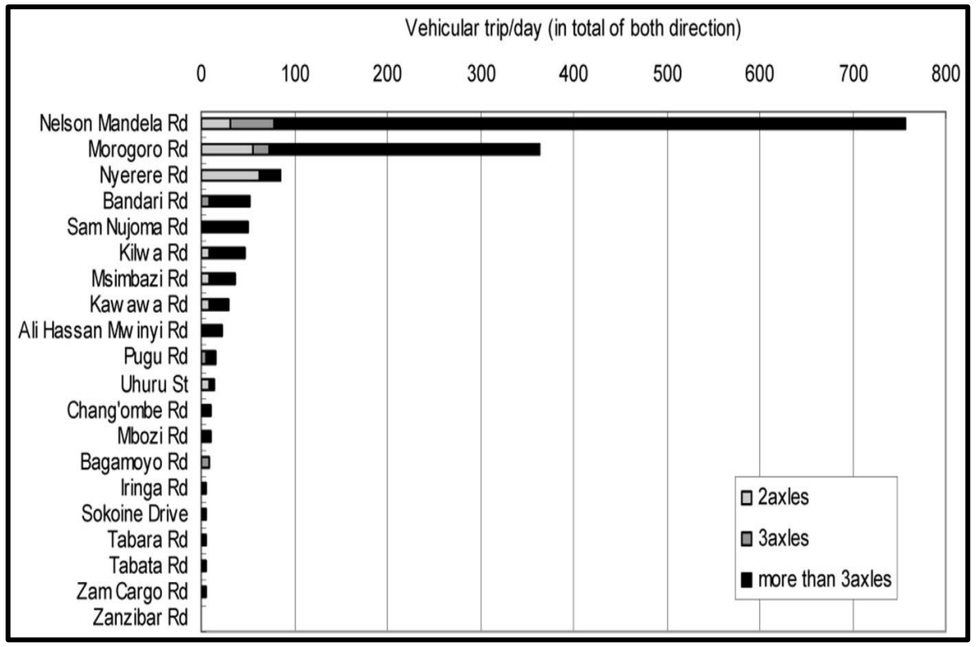


Figure 11.16 - Port-bound truck traffic volumes on main routes of access to the port of Dar es Salaam

Source: Chapter 2, page 3-8, Japan International Cooperation Agency, 2008.

Plate 11.1: Goods vehicles waiting by the port

Figure 11.2 presents the route distribution of general-purpose truck trips. It can be seen that the profiles are more dispersed across the city when compared to the port-bound trucks, but Nelson Mandela still carries the bulk of this traffic.

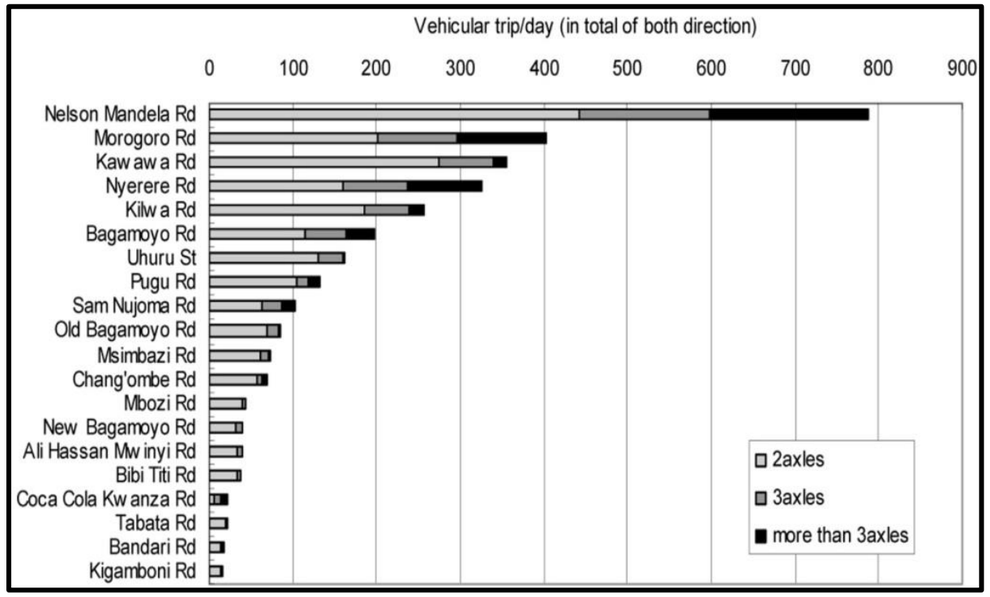


Figure 11.17 - Indicated Routes of Travel Trucking Companies

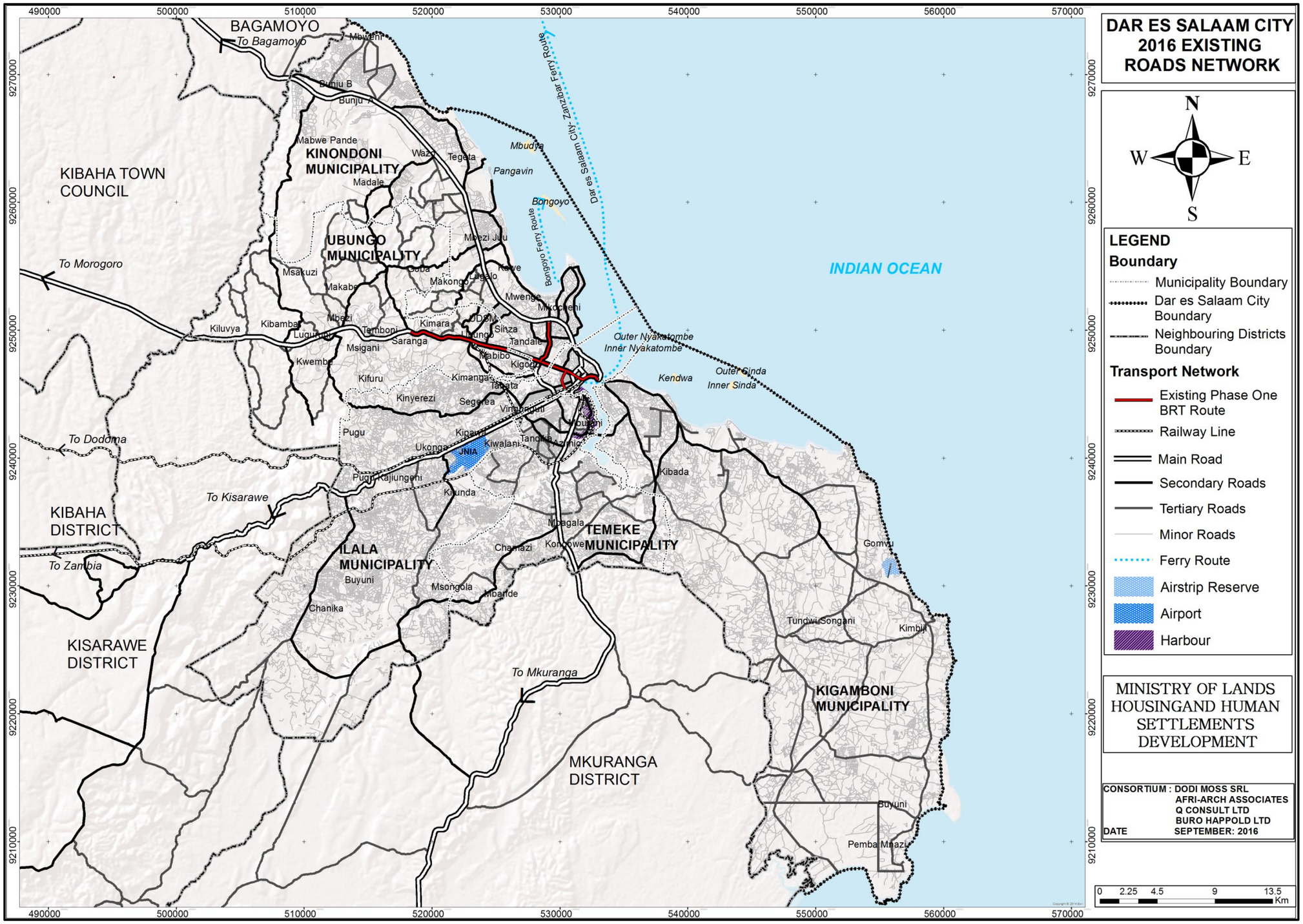
Source: Japan International Cooperation Agency, 2008. Chapter 2, page 3-7

While general-purpose trucks are predominantly two-axle vehicles, making them less disruptive than most port-bound traffic, the sheer volumes of freight traffic on Nelson Mandela are exceptionally high for what is essentially an urban road. Other roads that carry high volumes of freight traffic are the four radial roads: Morogoro, Bagamoyo Nyerere and Kilwa, as well as Kawawa, the inner ring road.

Although rail freight volumes have been in decline, rail access to the port is still of crucial importance. With planned improvements to the operation of TRC and TAZARA, any increase in the share of freight carried by train will have immediate benefits to Dar es Salaam's traffic. The main marshalling yard for the TRL is at Ilala, at the junction of Julius Nyerere and Kigogo roads. TAZARA's yard is located at Yombo, close to the TAZARA station. Both lines also operate marshalling yards at the port.

Two well-established Inland Container Depots (ICDs) are operated by Tanzania International Container Terminal Services Ltd (TICTS) at Kurasini (served by TAZARA) and Ubungo (served by the TRL). Other smaller ICDs operated by other companies exist in the port area. A large ICD is planned for Kisarawe, some 40kilometers inland from the port.

Faced with declining port operation standards and increasing competition from other ports for the custom of the landlocked countries in the region, the Tanzania Ports Authority (TPA) prepared a Tanzania Ports Master Plan. The relevant part for Dar es Salaam is described in the following section.



Map 11.6: Dar es Salaam Transport System

11.17. Water Transport

Dar es Salaam is the main Indian Ocean port connected to Mtwara and Tanga. Minor seaports serving coastal traffic include Lindi, Kilwa Masoko, Mafia Island, Bagamoyo, Pangani and Kwale. Dar es Salaam is Tanzania's principal port with intrinsic capacity of 10.1 million tonnes per year. The port handles over 92percent of the total maritime ports' throughput. The port serves the land locked countries of Malawi, Zambia, Democratic Republic of Congo, Rwanda, Burundi and Uganda.

Dar es Salaam has two types of water transport: long-distance services to Zanzibar and Pemba, and short-distance ferry services connecting the city centre to the Kigamboni Peninsula.

11.1.4. Marine Passengers Services

Several companies using vessels that range from high-speed catamaran boats to conventional ferries provide marine transport services to the island of Zanzibar. The terminal on the waterfront off Sokoine Drive, also serves passenger services to Pemba. The terminal's location benefits it by the excellent connectivity with DART's first phase project. The ferry terminal will thus be directly connected through the DART system to the Ubungo bus terminal, which offers bus services to destinations all over the country.

11.17.2 Local Transport Services

Equally well located to benefit from phase 1 of DART is the ferry terminal to Kigamboni, adjacent to the Kivukoni DART terminal. The ferry carries both passengers and cars. It is a most valuable service, offering a quick link to the city centre, which can take hours by road. Demographic pressure on the Kigamboni peninsula means that the service is often congested. With completion of a new bridge across the port as part of the port's expansion plans, the duration of the car trip to Kigamboni has been substantially reduced, but it is likely that the ferry will still remain the quickest option in the absence of a tunnel or bridge. The construction of a tunnel or bridge, though, is not recommended in this master plan, given the disruption it would cause to the city centre.

11.18. Communications

11.18.1. Overview

Two subsea fibre-optic cables EASSY and SEACOM lie alongside the coast of East Africa, linking this part of the continent to the network of undersea cables around the world. Both cables have connections to Tanzania, with landings in the City. Dar es Salaam has a comparative advantage over other cities in Tanzania in terms of accessibility to the network and the presence of highly skilled individuals, firms and educational institutions. Providing fibre-optic connections throughout the City will have a significant impact in the City's economy, and it is for this reason that this is an important component of this master plan. The government has appointed a Chinese company to lay a nationwide network of fibber-optic cable, connecting to all main cities. A total of 7,000 kilometres of cable will be laid under this contract.

The project is expected to be completed within seven years, after which 'last mile' connections will have been built by the Ministry of Communications, Science and Technology to serve end users, The objective of the programme is to transform Tanzania into a tech powerhouse, unleashing a second communications revolution after the advent of mobile telephony.

11.18.2. Telecommunications and Infrastructure

11.18.3. Radio and Television Services

Household survey results established that about 59 percent of households in Dar es Salaam owned at least 1 radio or television set while about 20 per cent of households in the city did not own any. The rest owned more than one set. This indicates that a considerable number of households in the city lacked basic facilities for digital communication in their places of residence.

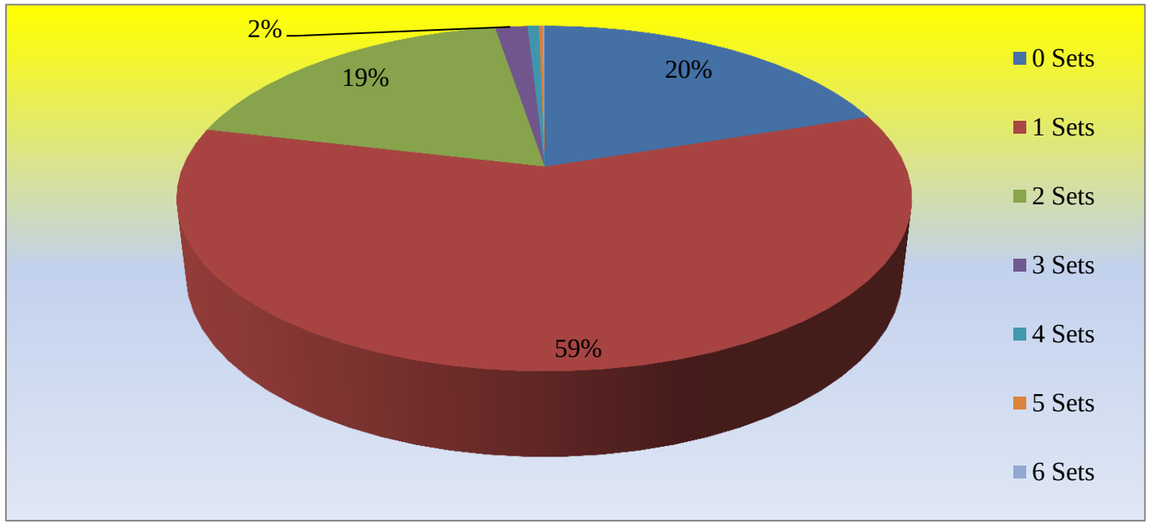


Figure 11.18: Households Ownership of Radio and Television Sets
Source: Household Survey in Dar es Salaam October, 2016

11.18.4. Challenges and opportunities

Challenges

Insufficient funding for transport projects

Closely related to the previous risk, the need for prioritization is best served by a dedicated agency with oversight over the entire transport planning practice, including budgeting and the allocation of funds.

Encroachment on Road Reserves

With little control over land occupancy, key rights-of-way for transport are being encroached upon at present. Reserving rights-of-way from early on, both reduces the potential for social conflict arising from the construction of transport infrastructure and keeps costs low for later implementation by avoiding compensation.

Insufficient road capacity

With major roads in the existing city already operating at or above capacity, it is important that a road upgrading programme be implemented to avoid a complete gridlock in the near future. There is therefore need to improve the quality and standard of existing roads but also constructing new ones. The road network in Dar es Salaam serves both private cars and the entirety of public transport at the moment. The impact of road upgrading will disproportionately benefit public transport users, as long as adequate priority measures are put in place. Lack of action in this respect will results in additional congestion, loss of productivity and reduced levels of mobility, with particularly adverse impacts on the poor.

Poor public transport provision

With ambitious plans for a complete overhaul of the public transport system, Dar es Salaam has started benefiting from a very comprehensive BRT network. Partial or sub-standard implementation would be counter-productive. It is therefore important to support the work of DART, and see its implementation as a priority. Delays in the implementation of the programme will only add to congestion and increasing inefficiency in the network.

Disconnect between transport and utility programs

Combining utility and road networks offers the opportunity to reduce implementation costs, by sharing manpower and equipment, as well as sharing excavation costs. Disconnected networks have higher maintenance costs, and duplicate disruptive interventions to the highway network.

12. DEVELOPMENT ISSUES AND PLANNING CONSIDERATIONS

12.1 Emerging planning Issues, Challenges, Constraints and Opportunities

A review of the 1979 master plan, field surveys as well as outcomes of community consultations and workshops on the review of the current plan, have enabled identification of current and emerging planning issues, challenges and opportunities in the city of Dar es salaam, that need to be addressed in the revised master plan in order to secure a sustainable path of growth and spatial development of the city. These are synthesized and presented below:

12.1.1 The scale and rapid pace of Dar es Salaam growth

The underlying factor in spatial development of Dar es Salaam city is the sheer pace of the city's growth, driven the persistent rapid growth in population. Census data for the last 30 years revealed that the city grew five times more, and this has resulted in an extensive linear expansion and sprawl development along the major circulation axes in the planning area. In some cases, developments lead frogged to pristine agricultural areas. The rate of land demand is escalating year after year. Such a rate of demand for residential, industrial, commercial and other land uses accelerates utilization of land for urban development purposes and may lead to shortage of land for future urban growth if the trend is left to continue. This is exacerbated by the current development pattern, which is predominantly characterised by extended low-density developments especially in the peri-urban areas. This development pattern has consumed (and still is likely to consume) an unnecessarily large amount of land resources imposing considerable economic, physical and social costs to residents and authorities in the planning area.

Unfavourable economic costs include higher costs of providing public facilities and infrastructure along with underutilization of the sizeable investments already made in Dar es Salaam's developed areas. Physical costs include over-crowded schools as studies for all the surveyed schools show that on average 81 pupils have to sit in a classroom that is normally expected to sit 40 pupils. Five pupils have to share one textbook in lower primary school classes (Standard 1-4) and six pupils share one text book in upper primary school classes (Standard 5-7). Overcrowding is also common in day care centres and other public facilities. Besides most of the residents of the city are forced commute over long distances wasting a lot of time in the process. It is now common for some people to start travelling at 5am to get to work y 7.30am. Social costs include deterioration of the community spirit as well as values.

Extensive low-density development of the city has resulted in urban sprawl and rapid transformation of the natural environment of the planning area into a vast man-made environment. More important, this phenomenon sets into motion continuous demands for more resources for building. Under such circumstances there is no balance between the need for protection, preservation and conservation of natural amenities and the extent of their substitution by the built environment disturbed. This imbalance has created unsustainable development of the city especially with regards to the sprawling development of residential areas not supported by adequate infrastructure, social services and other amenities. This situation indicates that a more proactive preservation of land should become an integral part of the overall land use management strategy in the city's planning area. For that purpose, planning measures such as restricting development in some areas by reinforcing development control to prevent unnecessary loss of valuable land that could be used for other non-urban purposes such as agriculture, will be a required.

Informal sub-division and transfer of land in the peripheral areas of the city, which is driven more by land speculation than the need to develop land, is one of the main reasons behind the sporadic and sprawling development of the city. Attempts to exercise control on the increasing "informal land transfers" by the Central Government and the Local authorities have not been successful. The main problems seem to be the current institutional and legislative framework, which seems to be not capable of both discouraging such practices and the lack of local tax instruments such as land value capture charges for maximizing social gains through capturing a part of land market price resulting from the impact of public investments in raising the value of particular area. In addition to this, the five local authority councils still do not have accurate and up-to-date information concerning both land properties in the planning area and property market conditions. These render them less capable of tightening up the control over the use of land which will be a necessary requirement in the future due to continuing pressure for land on which to build.

12.1.2 Growth management and planning issues

Dar es Salaam city has had a rapid population growth impacts which have impelled various authorities such as the five municipalities and the Ministry of Land Housing and Human Settlement Development to initiate growth management interventions by preparing a wide variety of land use plans such as the 1979 Dar es Salaam master plan, the City Centre and Kariakoo redevelopment plans, Kigamboni master Plan and Kawe New City plan that were meant to guide spatial development. While progressive for their time, these initiatives did not take a sufficiently long-term view of growth issues and failed to place adequate emphasis on the relationships needed between key actors for successful implementation. Despite substantial resource commitment over decades to growth management, the fragmentation of policy and implementation responsibilities across many organizations has created the perception that growth continues largely unimpeded and without any overall coordinating strategy. One of the consequences has been a history of poorly coordinated development, with investment in infrastructure and community facilities not in tandem with spatial development requirements.

The city is overwhelmed with multi-layered administrative structures having confecting powers and, at times, overlapping responsibilities. The multitude of institutions creates huge challenges for effective planning and land use management in the city. Moreover, divergences in policy objectives pursued by these institutions very often result in sectoral land or resource use conflicts. In the Dar es Salaam these sector conflicts are prevalent between the use of arable land, tourism especially on the beaches, natural conservation and settlement expansion, as well as between subsistence use like grazing and firewood extraction against the need for sustainable resource utilization. There is, therefore, a need to rationalize the existing institutional structure and to, harmonize policies and legislation in order to expedite decision-making processes, mitigate conflicts and improve land delivery service.

The situational assessment of the institutional framework in the city revealed that land use planning, allocation and servicing are hardly ever synchronized between the central government and the five Municipal Councils. Further, infrastructure providers often prepare plans and/or undertake installation of their infrastructure without adequate and appropriate coordination with the Municipal Councils and the Lands department. Moreover, the survey revealed that the local authorities are not always fully aware of the development programmes and plans of utility providers. A slow and inefficient process of land allocation by the municipal councils compounds these problems. The main concern seems to be lack of consultation on issues surrounding land, long periods of time taken to consider land allocation,

corruption, lack of planned and serviced land and the inability to repossess vacant land that has long exceeded the development period. Central government has of recent made promises to repossess such land, but hardly has any action been taken.

The five Councils are the leading local institutions regulating all aspects of land use planning and management in Dar es Salaam city. Their role is growing and this requires capacity enhancement to enable them curb land allocation problems. Other challenges that need to be addressed include eliminating fragmentation of policies and implementation across many organisations and ensuring more effective and better-synchronized spatial development and resource use in the city.

To fulfil these objectives, it will be necessary to reform the local government structure of the city and create a central authority that will have the responsibility to formulate well-coordinated land use plans and land use management systems across the whole of Dar es Salaam city. This undoubtedly, calls for Central Government to introduce changes to the existing legislation. Perhaps the biggest challenge however, refers to the need for generating sufficient local revenue to meet the costs of constructing and maintaining urban infrastructure facilities and services in Dar es Salaam city.

12.1.3 Population and local economy as an emerging planning issue

Demographic analysis revealed that Dar es Salaam city has a very young population in its composition implying that the master plan should be amongst others; focus on meeting the requirements for health, recreational, and educational facilities, as well as the creation of employment opportunities. Another characteristic of the populations, which has implications on poverty levels, is the relatively high proportion of the population that is economically inactive. With a high rate of unemployment of 11.46 per cent (NBS, 2016), the diversity of strategies for employment creations in the city should be accorded a high priority in the plan.

The main issue in this respect is a diminishing industrial sector providing employment to only 3 per cent of the entire city workforce. The plan will address this issue by seeking for ways to attract new industries and also zone new industrial areas close to high-density districts.

Dar es Salaam has an immense potential become a touristic centre, but its attractions have not brought in sufficient numbers of visitors to significantly contribute to the economy. Although the city is a centre of many manufacturing industries, their impact on the economy and employment has not been encouraging as time and again layoff have occurred in large numbers as factories closed down.

The informal sector has proliferated in the city with many people earning a living from this sector. The main problem is that not much has been done to facilitate growth and development of this sector due to a number of impediments, including lack of funds and unfavourable regulations. This plan will strive to enable the sector to grow as it complements the formal sector.

The situational assessment also revealed that although servicing of industrial and commercial plots has been an on-going exercise, demand for land, including that for residential use has continued to outstrip delivery. The long waiting and turnaround time for allocation of land makes it difficult to plan for business since access to land is uncertain.

Success in attracting foreign investment and promoting local investors will depend on the creation of a suitable investment climate including the provision of serviced commercial and industrial plots at an affordable price. Land servicing in the city lags far behind land allocation, for instance plots in areas like Mbezi Beach and Bahari Beach were allocated without the areas been serviced; there is need therefore to accelerate the servicing of land for commercial, industrial and residential purposes. One other priority is for the land authorities to repossess undeveloped commercial and industrial plots and reallocate to eligible applicants and lastly regulations on the development period for all plot categories needs to be vigorously enforced.

12.1.4 Housing challenges

The main issue in respect of housing is that access to good quality and affordable housing in the city is constrained by several factors related to availability of housing land; lack of serviced land; limitations on access to housing finance and inadequate supply of housing units. The plan will address all these issues including encouraging a bigger role for the private sector in the housing sector.

12.1.5 Infrastructure systems and community facilities

The state of infrastructure in Dar es Salaam is unsatisfactory. Many of the systems available do not deserve to be called “complete systems”. The authorities seem to have large difficulties in keeping the provision of infrastructure at pace with population and settlement growth. Furthermore, lack of coordination of infrastructure development activities is evident and very often results in delays in the provision of serviced land.

The water supply systems suffer from limited technical capacity of the systems with inadequate water supplies and poor quality of the water. Particularly pronounced is the disparity between water supply and demand. Customers with access to potable water network receive only 25percent of estimated demand due mainly to water loss through leakages in the system currently estimated at 57percent. Frequent water shortages in the city are a norm, which this harms industrial production and is also an inconvenience to urban communities. The water authorities admit that the combined water production from existing water sources is far less than the city demand. Added to the above is that the water quality is poor because the water treatment capacity is low.

With regard to on-site sanitation, the situational analysis revealed that close to 90percent of the households use on-site solution and only 10percent are connected to the sewer system. Sewage treatment capacity is around 38000m^3 per day, which is less than 10 per cent of the current demand. Furthermore, it has been acknowledged that the use of open pit latrines, as well as construction of septic tanks with inappropriate soak away pits pose particular environmental hazard of ground water pollution.

Transformation of Dar e Salaam city towards full waterborne sewerage reticulation cover seems to be a very slow process due mainly to lack of development funds. Many environmental challenges are triggered by poor sanitation including deterioration of air quality, water pollution, threat to health, loss of bio-diversity

Storm water drainage is in very poor condition due to lack of engineered storm water drainage in many places. Coverage is very low as they only exist in planned and regularized areas and this gets worse in flood prone areas especially in informal settlements.

The collection of solid waste in the city is currently highly selective and not all areas are covered, in particular the informal residential areas. Out of the waste generated in the city only 50.4 per cent is

collected by municipal trucks, the rest is disposed of by burying (26.4 per cent), open burning 3.2 per cent, throwing in open areas (4 per cent), throwing within the compound (11.2 per cent) and other unauthorised methods (4.8 per cent). It is also common for refuse to be dumped in neighbourhood open spaces, thus posing an environmental and public health hazard. Accordingly, Council authorities must work on policy to have all solid waste in the city collected as regularly as possible and disposed of in an environmentally acceptable way. The Pugu Kinyamwezi landfill site is too far (30 kilometres from the city centre) and does not cater for all the waste generated in the city.

The transport and circulation system is unsatisfactory due to poor conditions of most roads. In many of the neighbourhoods there is no rational road network, while several plots have direct access from main trunk roads – a situation that impacts negatively on traffic movement. The road network is irregular, winding and circuitous, owing to constraints in the form of existing development. Where possible, the random network of access footpaths and tracks will need to be rationalized. Furthermore developing an implementation scheme in which more internal roads will be surfaced in the city is bound to improve the public transport system, as more taxis will move to areas they never wanted to as a result of road conditions. Non-motorized transport will be encouraged in this plan, as most people have no cars.

Water and railway transport do not feature much in the city transport system, though there is potential for these modes of travel. A rudimentary commuter train service has been introduced between the city centre and Ubungo.

Field surveys revealed that primary and secondary (tarred) roads are in fair condition but require some improvements. Generally many of these roads are all bitumen standard. However, it appears that surface water drainage is a serious problem that requires proper attention now and in the future. With a few exceptions, almost all roads in Dar city, especially those in the outlying areas, have been constructed with no drainage facilities provided along them. Consequently, during heavy rains they are prone to ponding. Potholes are also spotted along many of the road sections.

Dar es Salaam's electricity grid is outdated and overburdened which results in continuous power shortages and power cuts. Unreliable power supply restricts the private sector's ability to operate and hinders national economic development. Current power and energy supply problems have been associated with inadequacies in achieving the revisions of the 2003 energy policy.

12.1.6 Impact on the environment

The low-density nature of development has been increasingly devouring the open space within the city regardless of the value and fragility of its natural resources. Poor coordination of development affects almost all spheres of social and economic life, resulting in conflicts between different uses at the expense of activities such urban agriculture or recreation that are not economically strong enough to fight the interests of more propulsive ones. This creates a gap between development and the quality of the environment. All this justifies the warning that the continuation of the existing trends would be in total discrepancy with the requirements of an environmentally sound and sustainable development.

Soil and vegetation cover are exposed to various forms of destruction. The increasing demands for urban land, as well as agriculture and extraction of firewood for cooking and heating have resulted in extensive land clearance. This has in turn reduced the land protection from spurring wind and water erosion. As a result the barren land, left without natural protection against negative effects of weather conditions, gradually loses its physical, chemical and biological characteristics. In addition, rainfall variability together with livestock pressure on available vegetation resources in the city has contributed to reducing the value of the land.

Coastal erosion is on-going, fuelled by climate change and is bound to be worse in the future. Core samples, tide gauge readings, and, most recently, satellite measurements tell us that over the past century, the Global Mean Sea Level (GMSL) has risen by 4 to 8 inches (10 to 20 centimeters). However, the annual rate of rise over the past 20 years has been 0.13 inches (3.2 millimeters) a year, roughly twice the average speed of the preceding 80 years. The plan suggests mitigation and adaptation measures including proper coastal management practices.

Sources of air pollution are mainly linked to the high vehicle population and construction activities, increased land degradation and burning of fuel woods and solid waste. All types of pollution including traffic emissions are expected to increase with development although greenbelt areas can help alleviate this impact (Table 12.1)

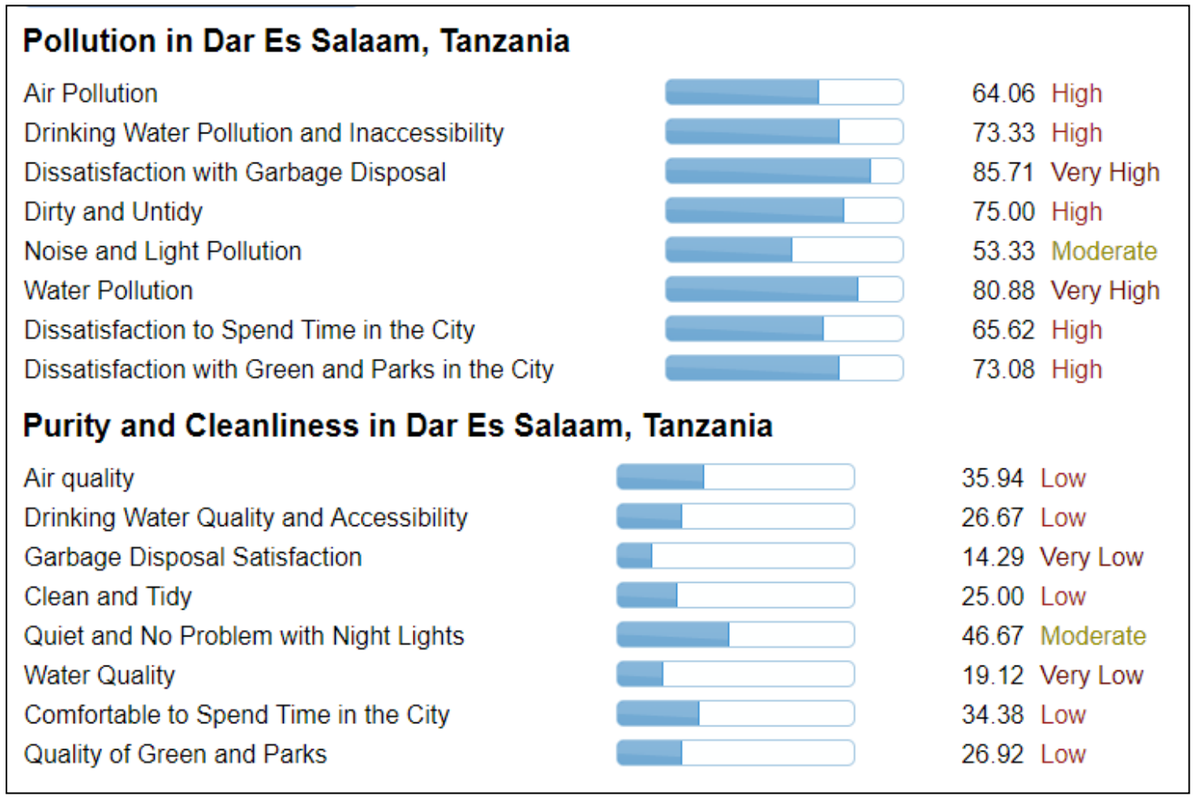


Figure 12.1: Pollution in Dar es Salaam
Source: TMA, 2017.

Note: If the value is 0, it means it is perceived as very low, and if the value is 100, it means it is perceived as very high.

Most of the surface water bodies are polluted. For example water courses such as the Msimbazi River are heavily polluted with solid waste, sewage and heavy metals, as high as 12 pH levels or 4 more pollutants as per State level, mandated for a safe river.

The current development practices have often caused the loss of open spaces and deterioration of landscapes, which over the time is likely to harm the competitive ability of the city to attract and retain investments. Many people prefer the good visual qualities of compact neighbourhood development or the uniqueness of older neighbourhoods to what they see as homogeneous subdivision and strip architecture. There is no doubt that a lack of open spaces; landmark buildings and pedestrian-scaled amenities detract from the good quality of the life.

12.1.7 Urban form and structure of the **Dar es Salaam city**

The present form and structure of Dar es Salaam is characterised by a spatial imbalance, which together with design of its components, diminish opportunities for more progressive development prospects. As in most towns in Tanzania, Dar es Salam was predominantly shaped by allocation principles, which focused on low-density developments and separation of land uses resulting in a settlement pattern of fragmented areas and neighbourhoods mostly characterised by mono-functional uses.

While the City centre functions as a Central Business District (CBD), the majority of the other areas are almost entirely planned as residential areas with limited mixture of land uses. They therefore serve as dormitory neighbourhoods, which make extensive commuting to the CBD and other areas such as the Nyerere Road industrial area, offering job opportunities, and those providing for everyday necessity. Inadequate hierarchical distribution of commercial centres across the entire city is noticeable. These were formerly provided but changed overtime as the city expanded along the arterial roads. This expansion occurred leaving the commercial centres concentrated in the CBD and hence contributing to traffic congestion. That the city centre is also home to many informal trading activities that occupy any available space compounds the problem even further. Recently however, many commercial nodes have emerged in several areas of the city.

The key planning issues with regards to residential development centre on the on-going densification in existing residential areas like Oyster Bay, Mikocheni and Upanga, which has led to overloading of the line infrastructure. Piecemeal redevelopment needs to be coordinated and implemented in a properly planned manner. Informal residential areas lack accessibility and connectivity to services, poor living conditions and high rates of gentrification in infill settlements, which is proceeding with no guidance from the local authorities.

The main challenges with respect to quarrying and mining are absence of control mechanisms to manage its extraction, incompatibility with contiguous land uses and haphazard sand mining that takes place in many parts of the city, which calls for proper regulation.

One of the key challenges addressed in this master plan review, relates to transformation of the spatial structure of Dar es Salaam city from a predominantly fragmented and mono-functional land use structure into one that can offer improved development prospect for many economically viable businesses to locate in the city. This requires promoting and permitting a greater mix of land uses and higher intensities of development at strategic locations.

The second key challenge is the need to curb further sprawling development and instead promote urban compactness in Dar es Salaam city. Observations indicate that the existing built up area of the Dar es Salaam city has very high potential for densification through infill, mostly in the peripheral areas and vertical densification mostly in the CBD and its environs which, if realised, can significantly reduce the future expansion of the city into “Green Field” areas. This is by no means an easy solution due many to limitations related to land allocation policies and other incentives currently in place, as well as, the willingness of owners to create additional plots through subdivisions of existing large plots. However, if densification is achieved on a large scale the city will benefit immensely from the many virtues of the “compact city”, for example, by rationalizing land utilization and public investments, lowering the cost of infrastructure provision per capita, reducing car trips, improving the sense of community, reducing inequalities, as well as inner zones revitalization. All these advantages are enshrined in the New Urban Agenda; Sustainable Cities programme, the Smart Cities concept and other new urban thinking.

To promote compactness and a greater mix of land uses, it will however, be necessary to review current policies and legislation guiding densities and allocations of various land uses in the city, as otherwise, the results may be chaotic if the local councils simply allow multiple uses without providing guidance about the densification and mix of uses and how they would spatially relate.

Poorly implemented neighbourhood forms with an ill-defined access road network not capable of facilitating easy circulation and servicing also characterize a great part of the built up area of Dar es Salaam city. Remedies to converting these neighbourhoods into suitable forms according to development standards must be deliberate and carefully planned so that they do not become cost prohibitive for the community. The local authorities in the city will need to use appropriate tools to achieve this objective including “Land Readjustment” techniques commonly used for managing good urban development of disordered neighbourhoods.

Perhaps the biggest problem of the present form and structure of the city is the lack of its distinctive character and visual quality. With regard to this, it should be pointed out that neither the 1979 Development Plan sufficiently addressed issues of the city form and its urban design nor have the authorities included aesthetic qualities and the visual design issues comprehensively into the normal sequence of planning and approval processes. On the contrary, the reappraisal on the ground has shown that the city’s visual appearance and character can generally be described as not pleasing and indistinctive to the eye of its residents and visitors, which is not conducive to vibrant urban living. Currently the city does not have any established guidelines for Urban Design or Urban Design Protocols to achieve compliance with Vision 2030 of the Urban Agenda objective of making cities liveable, marketable and competitive. These issues have been accorded proper attention at the planning stage of this review.

Though the 1979 Master Plan highlighted the need for the development of a hierarchy of public open spaces; reappraisal of the existing situation has shown that the city still does not have many sites exclusively developed for such uses. Most of the open spaces in the city are not designated, but exist because of the manner in which land has been allocated within the built up areas. These spaces have remained undeveloped and ill maintained, most becoming unkempt and some are even used as dumping areas by residents. In some cases open spaces have been grabbed by unscrupulous people in collusion with municipal planners and have had uses changed into commercial, residential or other unintended

land uses. Even the river valleys like that of Jangwani flood plain or the beautiful beaches of the city, which were supposed to have been developed for passive recreation have been invaded and converted to private use.

12.1.8 Summary and conclusion

In summary, the situational analysis leads to a conclusion that proactive management of the city's growth and development in a sustainable manner is one of the most fundamental challenges facing the city. This can best be understood through the following:

(i) Dar es Salaam city is one of the fastest growing areas in Tanzania and needs to have a robust framework to cater for such growth;

(ii) The recently announced move of central government to Dodoma slated to be completed by 2020 will certainly drain funds that could have been used to improve the city of Dar es Salaam.

(iii) There is an urgent need to identify the likely volume of future development of the city to be in a position to exercise some choice over both its form and location;

(iv) The potential impact of growth on the existing environment in its broadest sense needs to be clearly understood;

(v) Growth impacts and risks need to be identified well ahead of need, in order to identify and implement workable, avoidance and mitigation measures;

(vi) Given the high costs of servicing growth, consideration needs to be given to the most efficient use of public resources in order that the costs to future citizens and to the economy in terms of infrastructure provision can be kept as low as possible;

(vii) For prudent asset management and cost-effective long term provision of infrastructure services such as water, waste water and road construction, the five Municipal Councils need to have a comprehensive picture of existing services and likely future demands and growth directions;

(viii) It is necessary to restructure the local government system in Dar es Salaam by creating a single central planning authority to enhance coordinated planning and infrastructure development.

12.2 Vision and Mission

12.2.1 Vision of the Dar es Salaam city

In collaboration with key stakeholders, the planning team defined the vision of the city as well as the mission statement, goals and objectives of the master plan. The vision is based on the analysis of the existing situation and past trends and draws from the Tanzania Development Vision 2025 which foresees the alleviation of widespread poverty through improved socio-economic capability, good governance, transparency and improved sector performance. The vision stipulates the desire for achieving a sustainable semi-industrialized middle-income market economy by 2025. The National Policy Framework also guides the vision for the city *(See Figure 12.2).*

The vision of a city is an aspirational and inspirational yet realistic statement expressed in simple language, which explains what residents aspire for their city in the future and defines a clear picture of what makes the city different from any other. The vision for Dar es Salaam is defined as "***A sustainable, competitive and people-centred city.***" This vision of the city is elaborated in the following terms:

1) **A sustainable City** in which the focus is on enhancing resilience to climate change impacts, and on improving environmental conditions by placing the conservation of natural, physical and human resources and reduction of wastage is at the centre of all intervention strategies for the physical, social and economic development of the city;

2) **A competitive city** that can compete on an international level with the great cities of equal rank in attracting investments and businesses and locally by reinforcing the role of the city as a National Commercial Hub and promoting innovation centres and business incubators;

3) **A people-centred city** that provides equal access to basic services and livelihood opportunities for all; creates the spatial and functional conditions for the social, political, economic and cultural development for every citizen and for those coming into the city to integrate into local inclusive communities, thus enabling society to establish the common feeling of the sense of place and of belonging to the community of inhabitants of the city in order to build an urban identity, develop a collective memory and foster citizenship awareness while allowing for personal development and individual expressions by enhancing the role of the universities; equipping the city with adequate cultural facilities that at the present day is lacking.

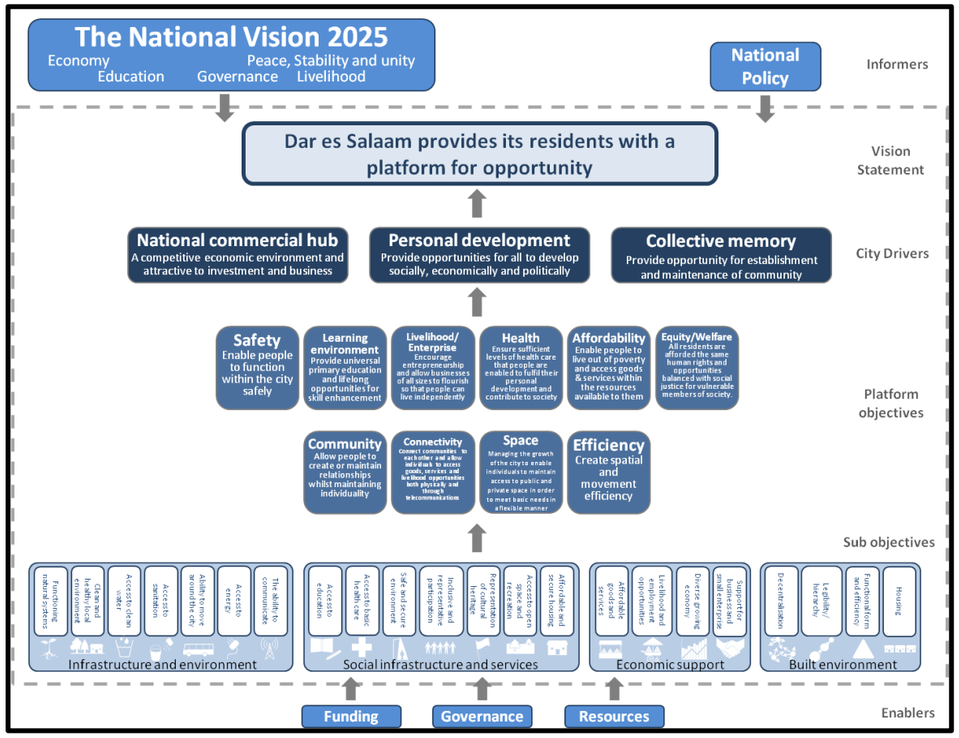


Figure 12.2: National Vision 2025

12.2.2 Elaboration of the Platform Objectives

The platform objectives which are indicated in Figure 12.2 are elaborated in paragraphs 1) to 10) below:

1) **Safety for personal development**

A safe city where all people and particularly women who often feel insecure to take public transport

or pursue livelihoods because of safety concerns, are free to function without fear of their personal safety and that of their property being threatened.

2) **Learning environment for personal development**

A place endowed with opportunities to learn at all levels, where people grow and improve their prospects throughout all stages of career and life.

3) **Livelihood and enterprise for personal development and as factors in promoting Dar es Salaam as a viable national commercial hub**

A city that facilitates entrepreneurship attracts investments and allows businesses of all kinds and sizes to flourish.

4) **Health for personal development**

A city that ensures a sufficient level of health care enabling its residents to fulfil their personal development needs and contribute to the development of the nation and society.

5) **Affordability as an attribute of personal development and as a factor in promoting Dar es Salaam as a viable national commercial hub**

A city that enables people to stay out of poverty and access goods and quality services within the resources available to them irrespective of their level of income.

6) **Equity and welfare to foster personal development and nurture the collective memory**

A city that treats all residents with equal respect and dignity, allowing each person to access human rights and basic services while supporting those members of society who are more vulnerable to experience personal development as a driver for collective memory, and ensuring that all members of society have an equal opportunity to contribute to the realisation of the vision for the city.

7) **Community development**

A city that fosters the sense of community, allowing all people, including those who come to the city alone find a place to fit in, without imposing limitations on personal development and individual expression.

8) **Connectivity**

A city that connects communities and activities to each other, allowing individuals to access goods, services and livelihood opportunities with ease.

9) **Space for personal development and for the collective memory**

A city capable of managing its own rapid growth of population that is expected to double in the next 20 years while enabling individuals to maintain access to both public and private space for personal fulfilment and community engagement that drives the collective memory.

10) **Efficiency of the city as a national commercial hub**

A city that facilitates fluid and logical movement of people, goods and services without navigational difficulties posing a barrier to its commercial development.

12.2.3 Mission

To prepare a master plan that will guide the growth and development of Dar es Salaam into a mega city capable of meeting the spatial and socio-economic needs and aspirations of its residents in a sustainable manner.

12.3 Planning Goals and Objectives

The major goal of the new Dar es Salaam master Plan is to turn the city into a well-planned urban settlement that is attractive, functional, safe, liveable and inclusive that portrays an image and character befitting a cosmopolitan metropolitan centre, which it is fast becoming. Specific goals and objectives of the plan are largely informed by the emerging planning issues and challenges, the remits of the Terms of Reference (ToR) and the outcomes of the stakeholders' workshops and community consultations. It is on this basis that the following planning goals and objectives have been formulated:

12.3.1 Goal 1: To create a well-planned city with a distinctive character

Specific Objectives:

i. To apply urban design principles and concepts in the planning and redevelopment of Dar es Salaam city in order to create a good image, form and character for the city.
ii. To formulate and prepare guidelines and strategies for the redevelopment and revitalization of the existing built-up areas;
iii. To formulate appropriate zoning and on-site development guidelines that will ensure orderly development of the city;
iv. To adopt rational spatial and growth management strategies in order to accommodate the anticipated population growth and developments of the city during the time frame of the plan;
v. To develop a logical, sequential plan implementation programme that includes phasing arrangements for developments and defines implementation roles and responsibilities; and,
vi. To recommend appropriate mechanisms for monitoring implementation of the plan in order to ensure that its proposals and recommendations are being observed, and for periodic review of the plan to accommodate changes in the social, economic and physical environment.

12.3.2 Goal 2: To make the best use of land in order to satisfy present and future needs of the city.

Specific Objectives:

i. To identify suitable developable land for expansion of the city;
ii. To identify suitable developable land within the existing built up areas for infill in order to ensure a compact city;
iii. To formulate and devise an incentive mechanism that will encourage plot owners to intensify use of their plots and promote mixed use developments; and
iv. To ensure provision of adequately serviced plots for various land use categories.

12.3.3 Goal 3: To formulate economic growth and diversification strategies for the city.

Specific Objectives;

i. To identify and exploit the areas of comparative advantages of the city in order to realize its economic potentials to the fullest.

ii. To identify the natural resources capacity of Dar es Salaam city that could support the manufacture of downstream products and contribute to broadening economic benefits to the city.

12.3.4 Goal 4: To provide efficient, safe, convenient, cost-effective traffic and circulation systems for Dar City.

Specific Objectives

i. To enhance the level of service and capacities of major roads in Dar es Salaam;
ii. To improve the capacity of major road intersections in critical areas of the city;
iii. To develop good and adequate road transport terminals;
iv. To formulate an adequate parking policy for the city;
v. To promote non-motorised modes of transport in the city by ensuring adequate provision of walkways and bicycle routes;
vi. To build new roads and develop new connections in order to improve movements and circulations within the city; and,
vii. To formulate strategies for continuously upgrading and maintaining roads in the city.

12.3.5 Goal 5: To protect the Natural Environment and Conserve the City's natural resources.

Specific Objectives

i. To identify and protect environmentally sensitive areas of the city;
ii. To formulate guidelines to guard against the indiscriminate dumping of solid waste including construction rubble;
iii. To formulate guidelines for the sustainable utilisation of natural resources in the city; and;
iv. To carry out Environmental Impact Assessments of proposed major developments and recommend appropriate impact mitigation measures.

12.3.6 Goal 6: To rationally zone and designate land for various categories.

Specific Objectives:

i. To designate adequate land for the development of residential, commercial and industrial land uses, as well as community facilities including schools, day care centres, health facilities and cemeteries; and
ii. To provide for the development of planned and integrated systems of parks, recreation and open spaces that meet the leisure, outdoors sports and passive recreational needs of the city residents.

12.3.7 Goal 7: To improve line infrastructure services to adequate and affordable standards.

Specific Objectives

i. To formulate strategies for extending and upgrading the capacities of existing infrastructure services, including sewerage and storm water drainage systems;
ii. To formulate strategies for extending and upgrading electricity and telecommunication networks in Dar es salaam city;
iii. To formulate strategies for extending and upgrading water supply network in the city;
iv. To formulate strategies for a programmed phasing out of pit latrines in Dar city during the 20 year planning period; and,
v. To improve solid waste collection and disposal practices

12.3.8 Goal 8: To preserve the culture and historic heritage of Dar es Salaam.

Specific Objectives

i. To provide strategies and programmes for the preservation and restoration of historic sites and buildings in Dar es Salaam City; and,
ii. To preserve existing and build new monuments and landmarks that celebrates the culture and history of Dar es Salaam.

12.4 Limitations

11.1.5. The sprawling expansion of the city and haphazard development of the peripheral areas of the city

The Dar es Salaam city sprawls across 80 kilometres from North to South and 40 kilometres from East to West. This makes it difficult to and costly to provide infrastructure and services. It also entails long travel distances and high costs of travel between different parts of the city.

11.1.6. Poor quality of available data

Most of the data that is available is unreliable and often out of date because it mainly originates from the national population and housing census, which is updated at ten-year intervals. The data is not always adequately disaggregated across gender lines and administrative sub-divisions. This makes it necessary to collect primary data through time-consuming and costly physical and socio-economic surveys. Besides the city is not adequately mapped and access to digital geographical information is highly limited. Unreliable data also applied to the alignment of the administrative boundaries of the city and the wards.

11.1.7. Low level of stakeholder participation

The level of public participation in planning is low particularly during preparation of general planning schemes especially when the schemes are prepared at the national level. This hinders residents of the city from expressing their opinions and needs as well as articulating their desires, which inhibits ownership of the final plans. Similarly, the level of participation of communities, the private sector institutions and Civil Society Organisations (CSO) is equally low which inhibits access to private resources for implementing the master plan proposals such as in provision of infrastructure and public services.

11.1.8. Inadequate time allocated to the project

The time frame of eight months that was allocated for completion of the master plan for the city of the size and complexity of Dar es Salaam was unrealistic.

11.1.9. Frequent changes of administration in the Department of Rural and Town Planning (DRTP)

During the course of the preparation of this master plan, there have been five changes in the leadership of the Department of Rural and Town Planning; inevitably each new leader came with a different

perception of the assignment, which contributed to delays in the completion of the Master Plan preparation process.

11.1.10. Creation of two new municipalities while the planning process was in progress

At the beginning of the preparation of the Dar es Salaam master plan, the city was divided into three municipalities of Ilala, Kinondoni and Temeke. Two more municipalities in Kigamboni and Ubungo have since been added. This entailed re-organisation and disaggregation of key planning data and information including the population distribution to reflect those changes.

13. GENERATION AND DEVELOPMENT OF CONCEPTUAL PLANS

13.1 The Urban Form and Spatial Development Concept

Urban places are products of pure human innovation, reflecting the unique human ability to transform landscapes to increase the chances of survival of mankind, happiness, and comfort. What matters is not merely that human beings embark on this transformation; but how they carry it out. The physical patterns, layouts, and structures that make up an urban place are collectively called the urban form (Lynch, 1958). The current form of Dar es Salaam City is a product of its growth pattern over the past years. The trend of Dar es Salaam City has been to grow outwards along the current directions of the main corridors as shown in Figure 13.1. As a result, the city stretches about 100 kilometres between the Mpiji River to the north and beyond the Mzinga River in the south, covering a total land area of 1,630.7 square kilometres, which is about 0.2 per cent of the entire area of Tanzania mainland *(ILRI, 2007).* Four major arterial roads, which radiate outwards from the City Centre, form the backbone of the city road network. These are Bagamoyo, Morogoro, Nyerere and Kilwa Roads. Much of the expansion of the city has been taking place along these radial roads Figure 13.1. This pattern of growth concentrates vehicular traffic on the radial roads leading to traffic congestion, which is aggravated by the mono-centric character of the city.

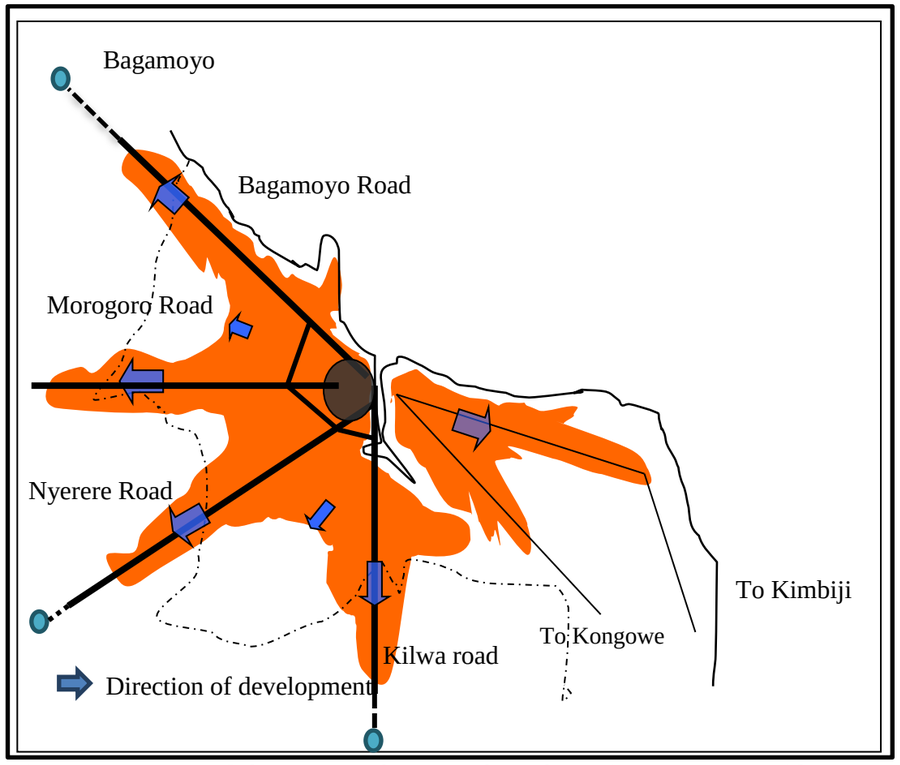


Figure 13.1: Dar es Salaam – Development along the Main transport corridors

13.1.1 The Urban Concept

Mono-centrality creates a trend towards mono-functional concentration of activities in the City Centre and few adjacent areas. Mono-centrality causes imbalance and malfunctioning of the City, characterised by a high level of traffic congestion, which inhibits urban mobility. In the case of Dar es Salaam the problems associated with mono-centrality are compounded both by the pattern of the main roads that concentrate traffic in four main roads that radiate from the city centre and the sprawling nature of urban development that forces people to travel long distance to the city centre and to other areas of the city. The three main objectives of the Master Plan regarding the urban form are to:

1) Achieve an alternative spatial organization to the current strong urban polarisation determined by the mono-centrality of the City Centre, which appears to be the main problem of the City of Dar es Salaam Figure 13.2.
2) Transform the basic road network from the current radial pattern that concentrates traffic in few roads by introducing a network of concentric ring roads (Fig. 13.3); and
3) Adopting a compact form of urban development.

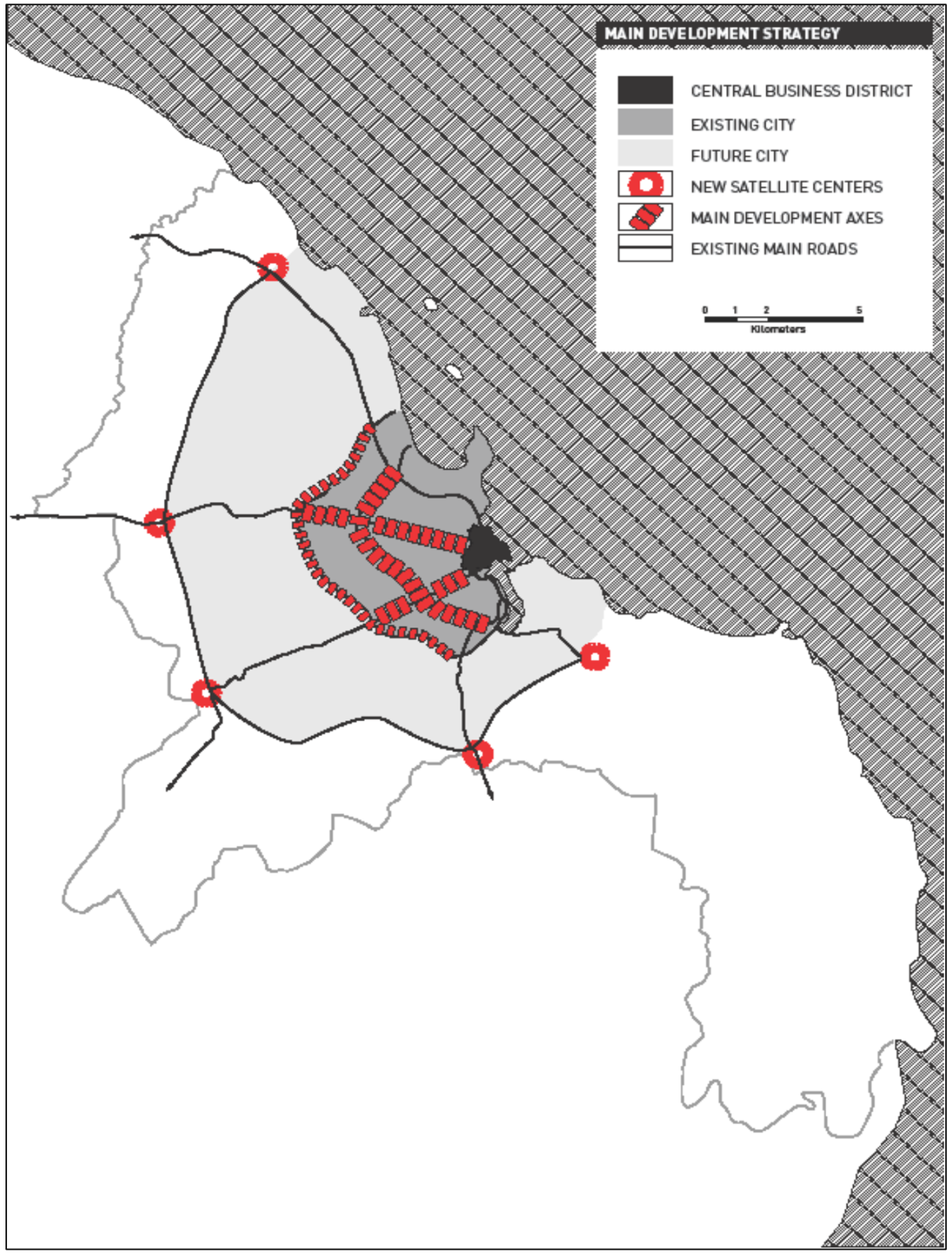


Figure 13.2: The main development strategy

13.1.2 Hierarchy of decentralised central city functions and services

The neighbourhood centre will be the basic unit in the hierarchical structure for delivery of public services in the city. Second order facilities and services will provided in the residential community centres. These structures are described in Section 13.6.3 and Section 13.6.5 of the report.

The Master plan identifies axes of development that are suitable for the location of new urban sub-centres of metropolitan scale, characterised by high density residential development with commercial, tertiary and productive activities that can attract traffic, especially of people and vehicles away from the current city centre and divert it to the new urban sub-centres, proposed along an intermediate axis between the existing City Centre and the greater urban expansion area. The goal in developing the new urban sub-centres is to create a kind of filter zone that intercepts traffic movements from the periphery to the City Centre, by establishing new areas of urban sub-centres distributed evenly within the metropolitan area. These nodes are proposed along some of the main road arteries of the existing built part of the City, both in the formal and informal settlements. Located between the City Centre and the areas of peripheral expansion of the City, the new sub-centres will also act as new poles of attraction, which will offer some of the same services available in the City Centre and help, reduce the current pressure of movement towards the city centre.

These new sub-centres will be located in areas of more intensive development, particularly at the intersections of major roads. The sub-centres will be intensively with mixed uses and different activities, like trade, production, residential uses and services, thus promoting a mixed use form of urban growth rather than that of mono-functional specialisation. With respect to the hierarchy of service delivery, these urban sub-centres will take the role of district centres.

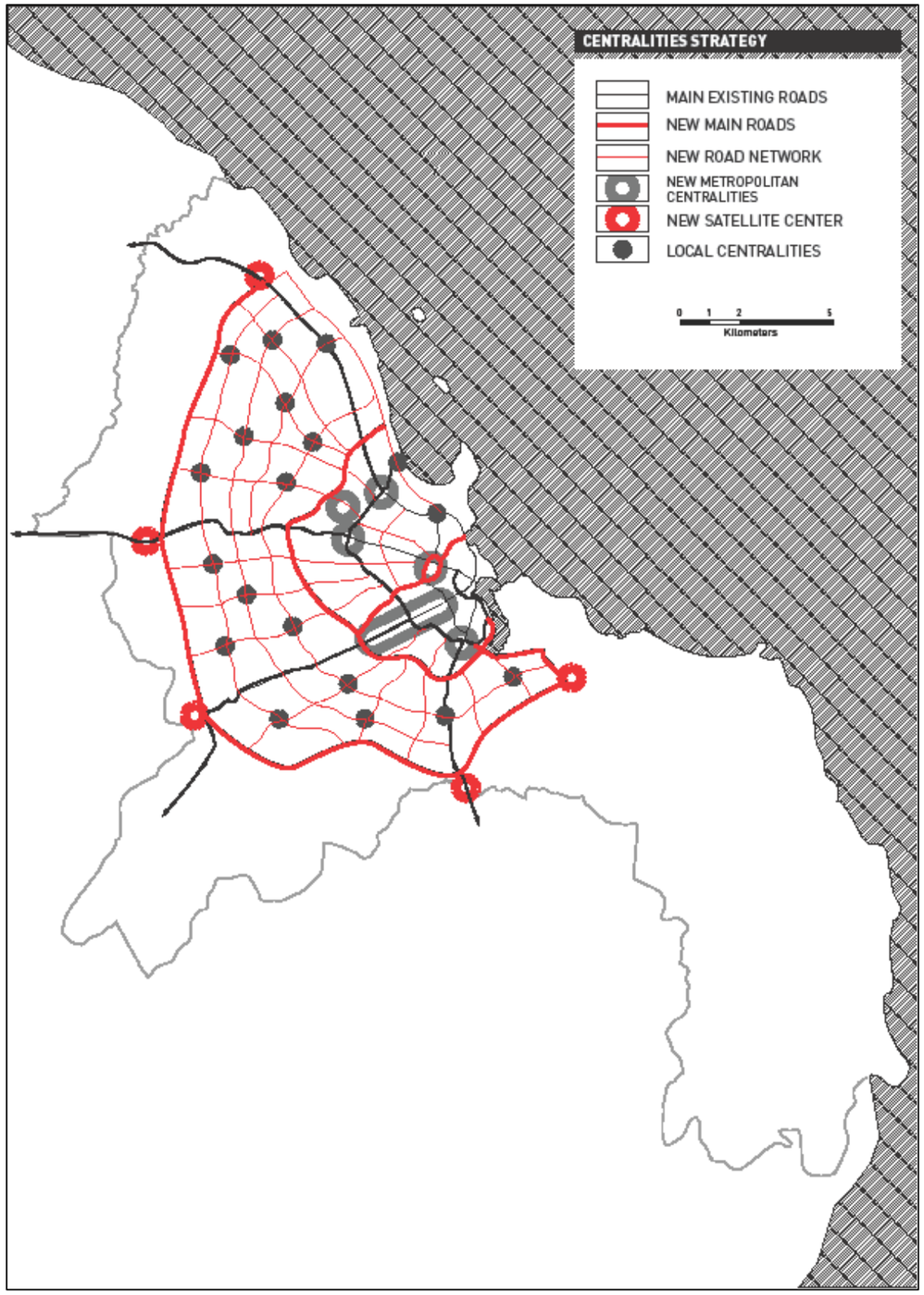


Figure 13.3: New sub-centers and concentric ring road strategy

In the areas of urban expansion, specific sites for the development of this new function of urban aggregation will be identified in areas that are not yet densely built up. In the informal city, the approach will be to encourage the location of collective urban functions (commercial and recreational activities, social infrastructures, public transport, along the existing main road axes, which pass through these areas and subsequently connect to the main roads. The purpose is to propel transformation in informal settlements along the major roads. In order to achieve this it is critical for the developers to appreciate the use of development guidelines.

The primary aim is to create a hierarchy of new urban sub-centre along existing infrastructure, which creates the potential to generate a process of urban upgrading of the informal city. The strengthening of these transit routes would promote a better urban permeability of which to the benefit of the whole City. The land use concept described above is supported by a proposal for a new organization of the road and transport system that ensures its functionality. The new hierarch of central city functions will be decentralised to comprise:

1)The City Centre;
2)New urban sub-centres with functions and services similar to those provided in the city centre;
3)The community centres which will provide second order social and economic services and community facilities; and
4)The neighbourhood centres to provide basic services within a walking distance to the residents.

13.1.3 The concentric Road System of the Expansion Areas

The boundary of the existing City is marked by a new arterial road that is proposed from the harbour aligned along the railway line up to the Nyerere road and beyond to Bagamoyo Road. This road will function as a new axis of the ring that relieves Mandela Road of heavy traffic and connects between the new metropolitan sub-centres.

Similarly, a major new outer ring road is proposed that will connect the new satellite urban centres, all crossing the radial roads, which originate from the historic centre. This arterial road will play a role in connecting the metropolitan area and will provide connection between the north and south parts of the city without crossing through the City Centre. The areas lying between these two arterial roads constitute areas of future expansion of the City.

The new metropolitan ring road is a big project in terms of dimension and costs, but will only be a part of the complex system of road network that has to be realized to support the urban expansion that foresees the settlement of 7.5 million inhabitants in the next twenty years. The Master plan designs this system as

a reticular network, departing from the existing radial-centric pattern. This would permit a more balanced spatial organization, participation", greater accessibility and an easier organization of traffic hierarchy both automobile traffic to pedestrian routes in large parts of the urban fabric[14].

13.1.4 The Compact City Development Concept

The third objective of the land use concept is to counter balance the current trend of the City growth that reinforces a continuous expansion of the ribbons alongside the main roads towards the urban periphery. This trend, if left uncontrolled, will lead to imbalanced growth, which on the one hand concentrates too much pressure on specific transit routes, while on the other hand generating an uncontrolled occupation of the interstitial space between areas. To counterbalance this tendency, the Master plan proposes a compact form of development which will be realised through a process of infill of vacant developable land within the existing built up areas of the city, redevelopment and densification of the dilapidated planned areas of the city, and the process of inclusive redevelopment and densification of the consolidated unplanned settlements. In the areas of urban expansion of the city, the master plan proposed a compact form of new urban development based on the proposed new urban design guidelines and structured around the proposed neighbourhood units and residential communities.

13.2 Conceptual Plans for the Existing City

The existing City is made up of many different parts, each of which has a distinct character determined by its built form, location and its temporal dimension. These have been grouped into four broad categories as the historic city (the City Centre); the consolidated city; the recently formed parts of the City; and, the informal city. The master plan recommends that this unique feature of the urban structure of Dar es Salaam be retained and enhanced. It therefore proposes specific policies listed underneath, to guide the future development of each of these four sectors of the city:

1) The historic city (the City Centre): Policies of the Master plan for this part of the city, are based on the recognition and enhancement of the historic urban structure as well as the integration of different types of architecture, urban morphology and landscape values found in the city centre. Development in this part of the city should focus on recovery of the morphological, architectural and functional structure of the historic centre, which is of great importance in itself, but also a condition for defining the character of the entire City;
2) The consolidated parts of the city of less recent formation that has characteristics of both urban and architectural quality. These areas of the city must be protected and improved in the context of overall urban redevelopment with focus on enhancing accessibility, increasing availability of services, improving the urban and environmental quality);
3) The recently formed parts of the City, mainly organized around the five radial axes that have significant urban characteristics, being the result of previous planning previsions. These parts of the City have great potential for further growth and should therefore be developed according to the new objectives the City through requalification, transformation, physical and functional densification and the establishment of new metropolitan sub-centres; and
4) The informal city: development policies on these parts of the city may vary depending on their position in the urban system and their present structure. In any case, a profound transformation and redesign is needed for these parts, as well as their requalification through the provision of minimum standards of liveability, often non-existent. In particular, these areas need action to make them more accessible and activate mechanisms of gentrification and reconstruction. Improving accessibility will therefore be the first form of integration of the informal areas.

The different parts of the existing city depict distinct traits, which have been generated from settlement patterns that are clearly identifiable both in time and space. The policies to guide planning and development of each part of these areas of the City must not only focus on improving each area separately, but also focus on the integration of these different parts of the city into a coherent urban form by encouraging progressively uniform quality standards.

13.2.1 The City Centre

The Master plan proposes improvement of the urban quality of the City Centre and recommends a qualitative policy to balance the land use composition in a manner that will integrate tertiary, commercial and dwelling functions. The policy discourages the on-going intensive vertical growth, which should be controlled in favour of developments that will transform the City Centre into an attractive place for tourism and for business. It suggests adopting a set of legislative instruments to facilitate re-organisation of the existing city and redirect its future growth. A good set of facilities will be required to enable people live, work, walk and congregate in a City Centre that is rich in heritage, cultural amenities, diffused open spaces and the unique water front recreational area that has been proposed. Specific design guidelines have been proposed to achieve the objectives of these development policies.

Based on an extensive and detailed survey of the city centre[15], the Master plan has identified the following main policies that need to be adopted in the City Centre, producing a specific detailed plan for

[14] On road and transport status see Technical Supplement 2.8 "Road network and Transport Status"

[15] For a detailed presentation of the survey documentation and the project proposal about the City Centre, see the Technical Supplements number 4 "The City Centre" and Annex. 3 – "Buildings with historical architectural value".

this part of the metropolitan area[16]. As a synthesis of the main proposals, the key strategies to guide the future development of City Centre are:

1) Conservation of cultural heritage;
2) Increased access to facilities capable of supporting a mixture of activities;
3) Improved urban mobility and pedestrianisation;
4) Increased access to open spaces;
5) Proposed new water front recreation area; and,
6) Proposed new design guidelines.

13.2.2 Conservation of Cultural Heritage

Preserving, maintaining and rehabilitating architectural and urban heritage should form the basis for future development of the existing City Centre. Conservation and development of will convert the existing historical buildings into excellent elements of the urban texture. An in-depth study was conducted in the City Centre, which identified the historical signs that contributed to shaping the current urban morphology. Landmark buildings, or groups of buildings such as rows of Indian houses, which are still recoverable should be protected and renovated in their entire original structure or, at least, in their external walls and facades. Restored buildings could be reverted to their previous functions or converted to other functions so long as they conform to the proposed urban form of the new City Centre.

Many of the identified buildings of historical significance have already been included among listed heritage protected buildings, which must be preserved and rehabilitated in compliance with the rules and existing laws, under the principles and guidelines for the conservation and management of cultural heritage resources in Tanzania, 2008. Some of the buildings identified for conservation in this master plan, however, are not included among listed heritage protected buildings. It is proposed to append a list of Non-listed heritage protected buildings either as single buildings or whole units, which, because of their architectural quality or their history, hold relevance for the future cultural development of the historical City Centre. Recognising the value of these buildings, which play a significant role in shaping the urban morphology, will emphasize a vision of a diffused architectural quality. The fine foreshortenings of typical street corners and the original morphology of some of the streets should form part and parcel of the urban heritage to be preserved and restored. Particular attention could be given to restoration and conservation of the following streets:

[16]The proposed Detailed Plan for the City Centre is presented in the Technical Supplement n.4. The three project maps are attached also to the Main Report, maps n3.5, 3.11 and n.6.1

1) Samora Avenue, which has lost its previous boulevard typology;
2) Zanaki Street, one of the first streets in urban morphology since the German period; and
3) Indira Ghandi Street that could be restored to its previous Indian morphology.

Dar es Salaam City Centre has a clear urban morphology characterised by a road network that runs parallel to the waterfront underlined by valuable architectural examples able to make the City one of the most interesting example in town planning and architecture in East Africa. In this urban landscape can be found an environment reminiscent of the age of the German domination and of the British administration that has been conserved to date; preserving, maintaining and rehabilitating architectural and urban heritage will be the foundation for future development of the new CBD. To protect the urban quality still present in the City it's necessary to extend the listed buildings with other artefacts as has been proposed in the Technical Supplement. Current development of Skyscrapers should be controlled in favour of maintaining the horizontal original urban environment of the City. For this purpose a survey sheet has been prepared for each building with specific value, where the suggested operation for its valorisation is indicated in detail.[17]

High quality commerce and public facilities would contribute to making the City Centre a good place to work and live in. Availability of high quality businesses in other parts of the City could provide attractions not only for local stakeholders but also for tourism. In the meantime, it is important to enhance the identity of the City Centre by locating appropriate public facilities within it. A wide range of cultural services, could satisfy this purpose including public libraries, museums, exhibitions, Botanical Gardens, theatres, cinemas, information points, book shops, music stores, tea/coffee houses, sports centres and others.

13.2.3 Mobility and Pedestrianisation

In its present form, the Dar es Salaam City Centre suffer a lack of safe pedestrian ways and services for the citizens. To improve the quality of the environment it is necessary to implement a policy oriented to reducing the vehicular traffic and improving the management of a good system of mobility. Alternative transport systems should be planned to connect the City Centre to the other districts of the metropolitan area. The Master Plan proposes introducing an urban railway line to be integrated with the DART system, which has been incorporated in the Master plan proposals. To reduce the volume of commuting motorized traffic to the City Centre, it will be necessary to introduce new parking facilities near the DART lines and to provide shuttle buses to and from the car parking facilities and the main attraction poles of the City Centre. Pedestrian areas and a better network of sidewalks, in combination with the

[17]See Technical Supplement – TS 5. "CBD Cataloging Historical Buildings"

conservation of cultural heritage, would be a good start to the development of new urban activities in the field of a cultural and creative economy.

Ensuring safe and convenient mobility is a prerequisite to creating a good quality urban environment. The Master plan aims to enhance the urban quality of Dar es Salaam City by proposing the provision of safe pedestrian and bicycle routes, while improving and easing access to public transport. Motor vehicle pressure has actually reached a traffic jam end-point that creates dangerous situations for pedestrians. In the City Centre the primary First goal is to reduce vehicular traffic and in the long-term, convert many of the central areas into pedestrians' only environments.

Pedestrians will in future, constitute the most traffic in the City Centre. The gradual phasing out vehicular motor vehicles of from the city centre in favour of pedestrians and bicycles will require that adequate and appropriately located parking areas must be provided along the main public transport routes. For those vehicles that will have to enter the central areas, proper parking spaces must be provided along the streets, but in a manner that does not interfere with sidewalks, or with the lanes.

In a short term, pedestrian areas are proposed for part of the City Centre and Kariakoo areas. It will be necessary to prequalify these areas, providing them with appropriate urban furniture and proceeding with the restoration of the existing buildings. The central area would then become more attractive for people to visit from other parts of Tanzania and from abroad. In tandem with this, the use of bicycles for the private mobility within the City needs to be improved, paying particular attention to the mobility of handicapped persons. The network of sidewalk must be completed and qualified for the benefit of handicapped persons by introducing ramps. The master plan proposes introduction of reserved bicycle routes to promote cycling.

13.2.4 City Centre open spaces

The City used to have large green areas bordering each part of the City centre. Most of these areas are still present and these are cultural elements strictly connected with the quality of the life in the City. It is necessary to upgrade these areas and create opportunities for the City communities to access new places for sports and playgrounds for children. Open spaces, either green zones or urban paved squares, should be connected to each other into a whole, creating a system of physical relations for urban aggregation. Walkways, redeveloped and improved on existing streets, even, new walkways and bicycle ways designed on new routes should provide the links in between the network of open spaces. The Master plan proposes improving the green areas within the City Centre through many detailed project proposals. All the green areas are to be connected to each other with footpath and cycle routes. Protected playground for the young generation and services such as public toilets are plan proposed along these routes.

13.2.5 The Waterfront

The waterfront, now underutilised only as a road, is one of the most representative places in the City. Rehabilitation of the waterfront is essential to attain a good urban quality of the City as a whole. With the objective of turning the port entrances to better account, the waterfront should be developed with the aim of reviving its significance as the main entrance into the City, as it used to be during the German colonial period. Meanwhile, commercial activities, leisure areas and pedestrian routes facing the waterfront would benefit by privileged sightseeing and by a unique quality factor. As already realized in many examples from cities on the water with the waterfront rehabilitation around the world, the old buildings, sheds and warehouses that are not anymore used for port activities can be converted to cultural and other public functions.

The waterfront of the City will then regain its status as the "main entrance" and one of the best places of the City which, complementing the renewed and restored buildings, and equipped with appropriate urban furniture, will create a high urban quality that will attract tourism and other economic activities[18].

13.2.6 The Existing City

The structural approach of the Master plan is based on the articulation of two main issues: the definition of the existing city, its physical boundaries, specifying the policies and measures that need to be adopted when dealing with the specific zones and the development of options to be implemented in the next twenty years in the future city, based on reliable growth forecasts. This choice is determined by the need to put a limit to the urban development - undifferentiated and without borders - that is taking place especially in recent years, identifying what can be considered the consolidated urban structure to be improved and where necessary to be redesigned. Future development will therefore be founded on this structure that promises to be of enormous dimensions.

The existing city is the core structure from which the future city will grow. The Master plan identifies an 'existing city' in parts of the city that are physically delineated by a new ring road, destined to absorb all the heavy transient traffic, from the port up to the Bagamoyo Road. Significant parts of this City fall outside the new ring and will be considered peri-urban areas to be integrated in the future city.

[18]On this aim of the Detailed Plan for the City Centre see the Pilot Project resumed in the following TS. 3).

The City's development has been characterised by a conflict between the forecasts of the previous plans (from 1949 to 1979 and the SDP)[19], and the rapid population growth, which have generated an urbanization pattern, which the previous plans did not foresee nor manage to contain because within a short time, the City had exceeded the target population to more than three million people. The City has currently taken on a generally informal structure, which seems to grow indefinitely driven by negative patterns of the urban sprawl. This occurred despite an evident historical urban structure and the expansion of planned areas, which was supposed to be supported with a well-consolidated system of infrastructure, including radial and ring roads.

This master plan focuses its attention on tackling the rehabilitation and the re-structuring of the existing City, so as to avoid the current urban malaise. This makes it an imperative that the new master plan greatly focuses on the existing City as well as on its future growth. As a starting point, it is important to first establish the boundaries of the existing city, and then identify the constituent components that will serve to design specific policies of each City zone. Finally, it must propose a new functional structure, which encourages new sub-centres and land use patterns to emerge. All future expansion must be developed in accordance with the upgrading and reorganization of the existing City.

The Master plan defines the general objectives for improvement and redesign of the existing City that correspond to specific planning choices and to the identification of sectorial intervention on mobility, on the environment, on facilities and on the residential areas[20]. The Master plan then identifies the specific actions to be applied to each specific zone, according to the different parts into which the City organism is divided resulting in proposals for conservation, improvement, densification, or redevelopment of different areas of the existing city.

13.2.7 The Consolidated City

These are parts of the City of recent and less recent formation having characteristics of both urban and architectural quality. They must be protected and improved in the context of overall urban redevelopment, with a focus on improved accessibility, availability of services and increased urban and environmental quality. The low Density City is a section of the City lying north of the historic centre. Back in the 1920's it started to take shape along the coastal strip and over the years extended to become the prevailingly residential, with quality buildings, a low density, good accessibility with good services and facilities that include gardens and open spaces. In these parts of the City there are, however, areas with lower urban standards and even some informal settlements, which, could still be thriving as the surrounding areas, with adequate policies to improve them. This model can be replicated in other areas that foresee future urbanization projects (as for instance Kigamboni) and be, with some differences, a design approach to follow when rehabilitating other currently informal parts of the City.

The Plan proposes policies for the conservation and enhancement of pre-existent spatial organisation of the low-density built-up areas of the city. In operational terms: no high-rise buildings can be built; the present heights and density must be preserved, except along certain access routes, which have a high concentration of business and service activities, or certain public buildings, hotel and accommodation facilities. Existing buildings can either be preserved or replaced with new ones as long as they meet such criteria. Future land use in these areas of the city will continue to be mainly residential, characterised by high standards of quality, which is likely to benefit the entire City, especially if the City progressively reinforces its internationalization. The characteristics of the organisation of mobility must be such as to limit or even totally exclude the presence of through traffic. Instead, they should promote solutions that improve the connections work and home.

13.2.8 The Parts of the City of Recent Formation

These are zones in the City, which were built in the last thirty years in compliance with the 1979 Plan. Lying mostly along the radial axes, these zones are built and moulded according to standard criteria shared by other medium/large cities in the world. These zones host economic activities such as high order services, shopping and production areas and urban-scale equipment. They are mainly located along Nyerere Road, Bagamoyo Road, Ali Hassan Mwinyi Road, and Mandela Road or adjacent to the port areas.

One of their characteristics is the incompleteness, a randomness of the settlements often alternated with vacant or underutilized areas. These parts of the City possess a great transformation potential and could become the blueprint for realizing the modern City. The Plan foresees the future location of the tertiary and directional functions in these parts of the City that today tend to be concentrated in the historic centre that has become a pole with great attractive force with a very negative impact particularly on urban mobility. Some manufacturing, commercial functions and other major urban functions will also be located in these areas.

The typology of the planned functions will allow for high-rise buildings and high-density settlements, according to the criteria that characterize the best international examples of the contemporary city. The strategic role of these parts of the city is evident, both in defining a new urban form that corrects the

[19] See Background studies Annex 1.

[20] All the database of the sectorial intervention can be found in the related Technical Supplements.

radio-centric model that has become unsustainable and worsen as the metropolis expands, and in offering economic opportunities functional to the development of the City.

13.2.9 The Informal City

About seventy five per cent of the urban fabric of the City consists of informal settlements. This is almost an inevitable result of an extremely rapid process of urbanization in the face of inadequate planning of residential expansion coupled with the acute scarcity of economic resources available to the local government authorities as well as low incomes of most of the new inhabitants of the City. One characteristic of the informal city in Dar es Salaam is that it distinguishes it from similar situations in other large cities of Africa, Asia or Latin America is its prevalent integration with the formal structures of the City and its relative urban consolidation.

Informal settlements in Dar es Salaam face many problems in terms of relative poor quality housing, lack of infrastructure and road network, lack of services that are typical of informal settlements elsewhere. However, its location inside the urban structure demands overall improvement policies, which may gradually improve - in a substantial way - the quality of life in these parts of the City. The Master Plan identifies three strategies in the informal City:

1) Areas on which to operate through systematic policies for the improvement of services and for residential redevelopment. The scope of the policies in these areas is to gradually raise the overall quality, re-modelling them to the level of the low density formal City;
2) Areas located in strategic zones for urban development (informal settlements along the major roads), which will be subject to policies of radical transformation. The changes envisaged in these areas will aim at achieving the specific objectives identified by the strategies for the different areas; and
3) Areas highly unstructured, without services and infrastructure such as Kimara, Mbezi Luis, Boko, with a low building density of poor quality. Policies of building replacement are to be implemented in these areas.

The upgrading of the informal City, for its extent and the economic effort it represents, is the greatest challenge the City has to confront in the coming decades. The destiny of Dar es Salaam is largely related to how this challenge will be addressed[21]. With reference to the first typology of informal areas, one of the intervention strategies that the Master plan proposes as a priority action is redevelopment through provision of infrastructure, consistent with the policy and the good practice already implemented in the informal settlements. The second group of informal settlements will have to be relocated in other areas (through a shared and participatory process, to be identified with respect of the characteristics of each community and of the different quality of the areas. The third group of areas will be subjected to policies of densification similar to the proposal for the Madale presented in this report.

Densification is proposed as the fundamental approach for the upgrading of the existing City and the control of future growth. Densification will take place as a part and parcel of the broader policies of urban redevelopment of much degraded informal parts of the City that lack urban structure. Considering the current particular disarticulation of the settlements in these areas, a policy of consolidation is not very feasible. Even in areas with scattered settlements and poorly constructed buildings, it is necessary to proceed with interventions of more radical urban transformation. In these areas interventions will be in the form of redevelopment of existing settlements, with the dual purpose of achieving better quality of housing and to liberate land for the accommodation of civic services and leisure facilities, entirely lacking at present. The approach will be to replace the existing one-floor buildings with new three to four floors buildings in a collaborative manner.

13.2.10 The Future Expansion Areas (the new Residential Communities)

Over the next twenty years, the threshold population is projected to be 13.3 million inhabitants. This corresponds to the threshold expected in the presence of national urban policies aimed at distributing the increase in urban population, due to natural growth and the increase of urbanization in various areas of the country. This means that future expansion will provide for the settlement in the metropolitan area of Dar es Salaam of about 8 million new inhabitants, representing an annual average growth population of 400,000. These are impressive figures that any urban system would struggle to absorb in an orderly manner. Certainly expansion areas are available within the metropolitan boundaries of the City, so the main problem is not where to locate the massive population increase, but that settlements of this size that are carried out with this speed, pose enormous problems for the provision of infrastructure and services, and in terms of supplying housing with an adequate standard of living.

In order to limit the negative impact that would occur from such growth, the Master plan assigns priority to the provision of the necessary infrastructure and the protection of free areas of open environmental qualities. These two elements together form the minimum basis for urban quality, from which a process of upgrading of the future metropolis can depart.

13.2.11 The Main Future Extension Areas

The planning proposal outlines the mode of expansion for Dar es Salaam to be as follows:

[21] About the Urban Design proposal for the Informal City see the Technical Supplement no 3.

1) The construction of two new arterial ring roads to enhance accessibility between the existing city and the new areas of urban expansion;
2) The creation of urban sub-centres as previously proposed in the 1979 Plan:
3) The realization of a system of Community Centres that will be the centres of aggregation for the various residential neighbourhood units. These centres will be provided with level two type of services
4) The creation of an infrastructure network that is supported by the large radial and ring roads. This network will be strengthened by a series of internal arterial roads in north-south and east-west direction, at intervals of 1 – 1.5 kilometres that will ensure adequate access in all new areas of development;
5) The creation of a large-scale open environmental system that supports the urban fabric and connects with the environmental system of the existing City;
6) The protection, conservation and development of peri-urban areas and non-urbanized territory; and
7) The on-going planning practice:
   - Urban sub-centres determined by the 1979 Master plan;
   - The allotments drawn (20,000 plots);
   - The structure plan of Kigamboni Master plan.

13.2.12 The Environmental System

Dar es Salaam is surrounded by an environmental system of high quality. The coastline, rivers, wooded areas and agricultural areas are all factors that constitute an integral part of the City's identity to preserve and enhance: These are factors that constitute the urban form of the future city[22].

As regards the future urban structure, the Master plan provides policies of conservation and agricultural valorisation for all areas outside the future urban perimeter. Within its limits, natural parks will be created at the community level, connected to the green protected environment of the existing City, and parks with appropriate equipment will be provided to serve the various areas of the City. It will be necessary, however, to develop strong regulations and exercise strict controls to prevent encroachment into these environmental areas, which would compromising their function in the urban design, once these areas are identified in the Master plan. In fact, if an entirely planned development of future expansion would not be achieved, the protection of these areas could be a sufficient element so as not to compromise the possibility of future improvement for the spontaneous settlements.

13.2.13 The Tourist Park

The City of Dar es Salaam falls outside of the large international touristic circuit and is characterised as a business and cultural centre. Although many tourists enter Tanzania via the Julius Nyerere International Airport (JNIA) in Dar es Salaam, they do not stop to visit the City because of inadequate advertisement of touristic attractions. One of the key features of this Plan is the conservation and transformation of the City Centre, which has all the characteristics necessary to perform this crucial role of attracting tourists, but only if it's architectural and morphological heritage will be conserved and revitalized according to recommendations contained in this master plan. In order to assert the role of the City Centre and to improve its attractive capabilities, this Plan proposes to slow down the replacement of existing buildings in the city centre in order to maintain the historical buildings. It also proposes to eliminate the decay produced by motorized traffic and establishing pedestrian areas that can initialise a commercial and cultural revitalization process.

Some touristic businesses including good quality hotels have located along the northern and southern coast of Dar es Salaam. These areas are essentially urban and they can be developed into attractive areas for internal weekend tourism or for people who have to stop in Dar es Salaam for other reasons and prefer to stay along the seaside, instead of the City Centre.

The lodges in the south of Kigamboni area near the City Centre are not able to create a real attractive point for international tourism. This Master plan offers a strong choice capable of representing a real international attraction, which can exploit other tourism potentialities of Tanzania. The master plan proposes a Territorial Tourist Park in the southern part of the Kigamboni Municipality, along the ocean coast. This is an area that has high qualities of environmental characteristics: it has high touristic prospects and, located 57 kilometres from the City Centre, it is far enough from the City to be considered an out of City facility. Yet despite its distance from the city centre the area can still be easily accessed. Based on these characteristics, the area can thus develop into an ideal tourism resource for the City.

The concept of a touristic park includes the realization of some touristic/hotel settlements in order to exploit the qualities of the coast and build a very large farm holiday too, which creates possibilities for integration of the water environment with the agricultural and naturalistic spaces, where the land resources and its commodities will integrate with environmental ones. Such a project will be successful only if it will be developed to high standard of quality and a creative integration of based recreation, agricultural functions, and environmental quality for total sustainability. The Plan delimits the area and

[22]For a detailed description of environmental characteristics and constraints see the Technical Supplement .2.5.

indicates some rules to respect during detailed planning and design, which define the intervention modalities and its quantities, controlling the balance and compatibility between the urban built form and the care of such environmentally sensitive places. Development of the proposed Tourist Park will thus provide additional tourist attractions to complement the historical attractions of the city centre. Such centres can be located in strategic places like Mwenge and other areas as will be proposed in this master plan.

13.2.14 Coherence with Previous Master Plans

Some choices of on going planning, resulting from previous urban plans or actions spurred by recent spatial policies at the metropolitan level, are the result of decisions that should, wherever possible, be incorporated into the new Master plan. Among these, the main previous plans that are maintained or re-proposed by the Master plan are:

1) The Satellite Urban Centres ;
2) The 20,000 Plots Project ; and
3) The Kigamboni Master plan.
4) The new "satellite urban centres" is a project led by the Ministry of Lands Housing and Human Settlements Development (MLHHSD), in collaboration with the Dar es Salaam City Council and the Kinondoni, Ilala, and Temeke Municipalities.

The description of these projects is presented in Chapter 2 of this report

13.3 Urbanisation Strategy

13.3.1 The New Urban Sub-centres

Dar es Salaam City, like many other metropolises around the world, grew radially from the city centre that hosted the main urban functions. In the initial phase of urban development such a model offered the benefit of having a mix of functions, from residential to tertiary functions. It also guaranteed easy access to the entire urban sub centres. Currently, the City centre is undergoing an intense densification process triggered by increasing demands for high-level urban service and functions. These aggravate the existing city problems, such as the constantly heavy and unsustainable traffic congestion in the city. The Master plan conceives a more appropriate new urban system with urban growth centres that are likely to better reflect a metropolis of more than ten million people, as the City is expected to have in the master plan period of implementation. Such urban sub-centres are located along the existing radial and ring roads including the Nyerere and Mandela Road axes, from its intersection of Kilwa Road up to the University of Dar es Salaam and the service centre along Bagamoyo Road. The new urban sub-centres are proposed to be located at Kurasini, TAZARA, Buguruni, Ubungo and Mwenge on Nelson Mandela Road; Tanki Bovu and Bunju on Bagamoyo Road; Kimara and Kibamba on Morogoro road; Chanika on Nyerere road; and Kongowe on Kilwa road. Figure 13.4 illustrates the position of the proposed main urban sub centres.

These proposals are based upon effectively observed qualities, which include:

1. The role of existing and future road network and the development potentiality in creating the new urban sub-centres;
2. Transformation of two existing railway lines to create a metro service, which runs along the old railway tracks from the city centre to Pugu and Buguruni to Ubungo. Introduction of a metro service is proposed in order to improve urban mobility, linking the new urban sub-centres to the city centre;
3. The plan of the new ring road system will mark the City limits and help decongest part of the traffic that currently flows through Mandela road;
4. Presence of important central city functions as the University, the shopping malls along Mandela road, as well as the high level services, production and trade centres along Nyerere Road;
5. Uninterrupted connection of the new urban sub-centres with the City centre; and,
6. The presence along the road axes of buildings, which can be used for provision of directional services, without having to undergo costly remodelling or which can be restored to host new functions or take on more qualified residential functions.

The new urban sub-centres will be important for diversifying and generating new functions, creating employment opportunities and encouraging the upgrading of the existing urban structure. They are also expected to relieve the City Centre of its current pressure and congestion by redistributing the traffic flow and making the overall city mobility pattern more efficient. Development of the proposed sub-centres will ensure efficient utilization of under-used areas and lead to upgrading of unplanned informal settlements by procuring lands for the required metropolitan functions of the urban sub-centres.

13.3.2 Urban Redevelopment

In summary the Master plan proposes the following key interventions:

1) Conservation and enhancement of the historic city;
2) Growth, enhancement and densification of the low-density areas of the city;
3) Upgrading the existing planned city;
4) Redeveloping the informal areas of the city; and.
5) Urbanization of peri-urban areas to accommodate the portion of the future population growth that cannot be accommodated through intensification of the existing city.

The Master Plan identifies city sectors that are meant to undergo radical transformation, coherently with the vision of greater zone integration, with the aim of creating new city sections within the existing city. The most significant of these fast growing sectors include;

1) All areas earmarked for development of the new urban sub-centres, in particular those on the Nyerere Road Axis, the areas on Mandela road between Nyerere Road and Buguruni will be characterised by a functional mix of residential areas, which are progressively foreseen to replace the informal settlements located south of Msimbazi River. The river basin will be developed into an urban park, and production of high ranked service areas can be created on the adjoining land;
2) Any informal areas, encompassed within the consolidated low-density City boundary such as Kimara and Bunju, will be redeveloped and upgraded to harmonize with the surrounding areas;
3) The areas of Kigamboni are planned for urbanization that is compatible with the marine and coastal environment, following the settlement patterns already experimented along the north peninsula and coast of the City. The Kigamboni Master Plan is a good reference tool to decide the spatial and typological characteristics of the future settlements in this sector of the city;
4) Areas adjacent to the Port will be transformed into a logistics hub of the city, as established by the Kurasini Redevelopment Plans of the Tanzania Ports Authority; and,
5) The proposed new outer ring road, starting from the Port will provide easy access to the proposed areas for urban expansion of the City. The vast fringe areas lying between the current ring road, Mandela Road, and the proposed new outer ring road, which are currently consolidating (partially urbanized), are expected to accommodate most of the planned expansion of the existing city over the next few years. A series of radial roads are planned to link these new urban development areas to Bagamoyo and Morogoro roads. Enhancing and preserving significant green spaces, which have until now not yet been affected by urbanization will be one of the key criteria governing development in these areas

13.4 Development Strategies for Specific Urban Sectors

The Master plan proposals intend to translate into reality, the vision of Dar es Salaam as a city of the third space, a city that provides for recreation, leisure and entertainment in addition to work and residence, with a competitive environment that supports residents and attract investors in terms of land use. To this end several proposed strategies need to be implemented, actions taken and projects executed that would contribute to achieving the goals, which the community of Dar es Salaam City has set for itself. Proposed interventions are structured around key issues that represent both the main potentials of the City that have not yet been realized, or those that have only been partially realized and the major weaknesses that must be overcome to enable full development of the City's potentials. These issues revolve around the following themes:

13.3.3 Conservation of the city centre

Urban quality is a decisive factor in the implementation of the strategic elements of the Master plan, consistent with the roles that cities now play in the development of nations across the world. In the worldwide competition between cities, countries have lost their decisive role in favour of territorial areas and economic players. Large cities with their touristic, commercial and cultural qualities are becoming the real factor of development of nations and it is no coincidence that the world has for several years now witnessed the affirmation of the discipline called 'City marketing'.

The last decade has seen some international models of urban development imposing themselves in various locations across the continents, producing economic profit but also creating a homogeneous urban panorama, which is repetitive and which fails to bring out individuality or the sense of place. The model of the "international city" in many instances has eliminated the unique and specific nature of places. These are qualities that belong only to the places that have produced them and they cannot be artificially re-created; once they have gone, they are lost forever. Europe has been tackling this problem for a long time, and in recent decades have been defining a type of urban planning that creates balance between conservation/enhancement of historic town centres on the one hand and the innovative development of territorial expansion on the other. This practice, which guarantees the preservation of specific local qualities, has turned some European cities into the most liveable of urban environments, with the highest score in urban quality and the greatest attraction for tourism and innovative urban functions.

Other countries have experienced a different model, focused on the removal of all previous urban forms and the intensive development of modern architecture. As a result, all cities that developed in China, Latin America and the Arab countries tend to be identical and therefore no longer attractive, neither for tourism nor for investments in other sectors. Dar es Salaam City has not yet begun this process and can still initialize urban growth based on other models that have greater prospects of success. These models of growth are based upon:

13.4.1 Conservation and valorisation of the historic urban structure

In Dar es Salaam the architectural qualities of the first urban settlement are evident and important: their valorisation can constitute a powerful factor of attraction for those not familiar with the City and an element of identity for those who live in it on a daily basis. The economic importance of valorisation of

historic centres, with all activities related to trade, tourism, directional and a residential quality, but also their importance as an organisational centre of the whole urban system, are now universally acknowledged. For this reason the recovery of the morphological, architectural and functional structure of the old town is of immense importance in itself, and also a condition for the redevelopment of the entire City.

13.4.2 Recognition, protection and improvement of the consolidated City

There are large parts of the City that have characteristics of both urban and architectural quality. These areas represent a fundamental resource that must be identified, enhanced and conserved as part of the overall urban redevelopment by improving accessibility, availability of services, and increase of urban and environmental quality. They should form a sort of pivot between the historic City and the new expansion areas, which constitute the informal City.

13.4.3 Redevelopment and transformation of the Informal City and control on its expansion

Cities in many parts of the world cities have physically grown beyond their margins, spreading urban space into adjacent non-urbanised parts of the territory. This phenomenon, which is commonly defined as urban sprawl, has generated a kind of diffused city, nearly always characterised by an unsatisfactory urban quality and often, as in the case of informal areas, totally below minimum standards of liveability.

The consolidated city, especially its historic centre, is a dense and compact City, where the multiplicity of forms and functions is the main generator of the urban atmosphere, while in the diffused city, and especially in the informal city, no such features exist. To the contrary, in the parts of the city subject to poorly or uncontrolled urbanisation, a random construction of the urban landscape is generated that presents severe crises of identity and produces an unsatisfactory quality of life. To achieve the above preconditions the following procedures can be adopted:

1) Identification of areas to be redeveloped,
2) Collaboratively mapping property boundaries,
3) Propose planning interventions,
4) Present and discuss the proposed plans to property owners and other stakeholders
5) Make corrections as agreed in the discussion
6) Submit the final plans for local authority for approval.

13.4.4 Development of new urban sub-centres

The mono-centric structure of Dar es Salaam city characterised by the convergence of many central city functions in the CBD is a major constraint to its growth and prosperity. The CBD suffers severe congestion and lack of space, difficult accessibility, traffic congestion, environmental pollution, the conflict between preservation of the historic buildings and urban patterns and the trend to increasingly replace historical buildings with new high-rise buildings. All these elements contribute to serious negative impacts on urban quality and on the development of the city economy. For this reason, one of the policies of the Master plan is to broaden and multiply the urban sub-centres so as to introduce a real metropolitan dimension to the urban structure of the City. To address the mono-centricity problem there is a need to introduce hierarchy of centres in the city structure. The first order centre will be in the current CBD followed by the second order centres that will be along Chang'ombe Road, Kigogo road, Kawawa road and Mwai Kibaki road. The third order centres are proposed along Sam Nujoma road and Nelson Mandela road. Fourth order centres will be allocated along Kinyerezi/ Segerea road to Mbezi Mwisho northwards through Mabwe Pande to Bunju.

13.4.5 Establishing the criteria to ensure quality and sustainability of the new areas of urban expansion

It is anticipated that Dar es Salaam will continue to experience high rates of growth over the next twenty years, which makes it difficult to exercise control of the future urban quality through the implementation of the Master plan, especially with regard to the residential developments, that will likely contain an informal component. The Master plan intends to ensure an acceptable level of quality in the future expansions through the following strategies:

1) Developing a network of roads that will guarantee maximum accessibility, along with a network of environmental protection areas including a system of public parks, creating ecological areas that will ensure an adequate level of liveability in the metropolis;
2) Adopting a model of growth based on the residential Community and its central facilities, which is able to provide minimum standards of essential services and quality housing.
3) Conservation and valorisation of the environment, aiming to place Dar es Salaam among the leading cities in the field of sustainable energy and environmental quality.

These strategic objectives will apply to all actions for improvement of the existing City and its future expansion. The strategies are intended to enhance mobility and lead to better methods of construction of buildings, improved quality of infrastructure networks and better access to energy sources. Other strategies include the implementation of green areas policies to conserve and protect green areas outside the urbanized structure from being encroached upon by residential developments. The conceptual plans of the proposed neighbourhood unit and the residential communities are shown in Figure 13.4

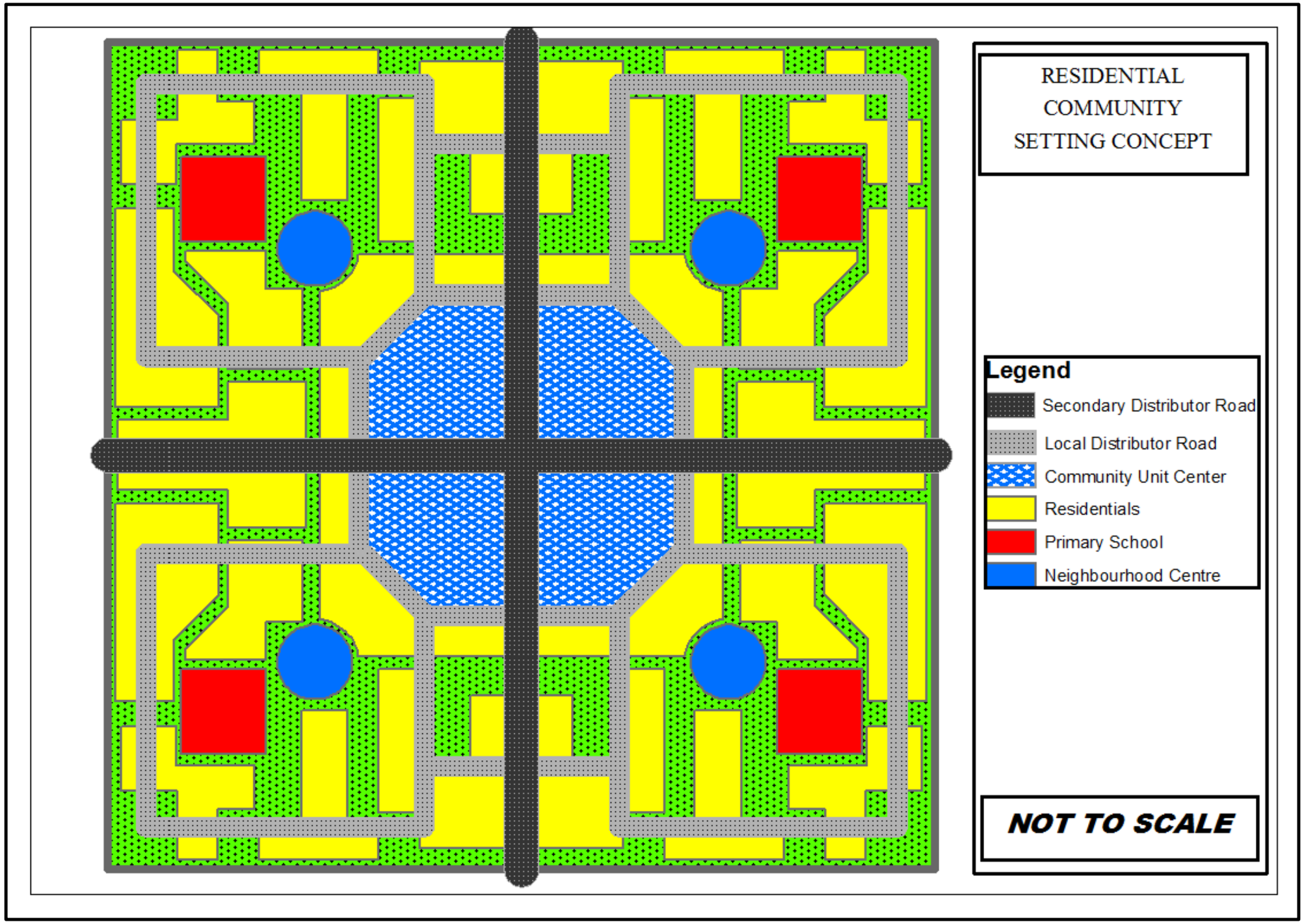


Figure 13.4: Conceptual Residential Community of Four neighbourhood Units

13.5 Anticipated future growth trends

13.5.1 Population projections

The National Population and Housing Census 2012 revealed that the life expectancy of Tanzania was 61 years. Based on a forecast of Tanzania's national population projections by age and sex distributions have been made[23]. These projections incorporate assumed changes in the quality of life of Tanzania's residents including greater access to health care. According to the National Population and Housing Census 2012, the population of Dar es Salaam city grew at an average rate of 5.2 per cent p.a. between 2002 and 2012. Projected at that rate, the total population of Dar es Salaam City would increase threefold, from the estimated population of 5.4 million in 2016 to 15.2 million by 2036 as presented in Table 13.1.

The projections in Table 13.3 above are based on the following formula: $P_t = P0\ (e^{rt})$ as defined below:

P_0 = initial population is 4,364,541

r = annual rate of growth (population growth rate) is (r/100)

e = base of the natural logarithm is approximately equal to 2.71828

t= time

Table 13.1: Projected Population of Dar es Salaam City at the 2012 Growth Rate of 5.2 percent p.a.

Year	Population
2012	4,364,541
2016	5,373,623
2021	6,969,052
2026	9,038,163
2031	11,721,593
2036	15,201,735

It is however highly unlikely that Dar es Salaam would retain such a high population growth rate of over the next 20-year planning period. Several factors both internal to the city and external strongly indicate a possible reversal of the population growth rate of Dar es Salaam. Internal factors that will contribute to Dar es Salaam losing its previous lustre and thus likely to slow down migration into Dar es Salaam are:

1) The existing difficult living conditions in Dar es Salaam city and the high cost of living due to high food and housing prices;
2) Massive unemployment particularly among the youth who normally constitute the vast majority of immigrant populations in cities, but who can no longer get decent jobs in the city;
3) Increasingly diminishing availability of livelihood opportunities in the city;
4) Highly constrained and costly mobility system in the city that deters productivity also making it difficult for the urban poor to access coping mechanism.
5) Worsening social and economic conditions that influences change in attitudes of urban households against the practice of inviting relatives from their ancestral rural homes to stay with them while searching for jobs or pursuing education opportunities in the city. Entry to the job market in the city is no longer as easily guaranteed as it used to be; and education facilities up to university level are now widely dispersed across Tanzania unlike previously, when nearly all higher education facilities were concentrated in Dar es Salaam.

External factors that are likely to drive migration into urban areas other than Dar es Salaam include the following

1) Implementation of the Tanzania Strategic Cities Project (TSCP) that aims to increase access to urban infrastructures and services in 7 secondary cities of Arusha, Dodoma, Kigoma/Ujiji, Mbeya, Mtwara/Mikindani, Mwanza and Tanga will contribute to an increase in economic opportunities in the cities, making them more attractive to people moving from the rural areas. This is likely to reduce the level of migration into Dar es Salaam with the consequent effect of lowering the current high rate of population growth of the city.
2) Similarly the Urban local Government Strengthening Programme being implemented in 18 intermediate municipalities and towns, which in part aims at improving infrastructure will create better economic prospects in the benefiting towns thereby making them viable destinations for people moving from rural to urban to areas who would choose to settle in these towns, rather than moving to Dar es Salaam where economic prospects are bleak, thus impacting also on population growth rates of the city.
3) New poles of economic growth are emerging which will divert some of the anticipated population likely to migrate to Dar es Salaam. These include Dodoma municipality following on-going implementation of the decision to shift the seat of government from Dar es Salaam; Mtwara/Mikindani following exploitation of natural gas deposits and the attendant

[23] To arrive at the projection figures (2010-2030), the same male-female and age group to total population ratios as in the projection report published by the National Bureau of Statistics, Ministry of Planning, 'Economy and Empowerment' in 2006 have been used. To forecast the figures for 2030, the trend growth by age cohort has been extrapolated.

industrialisation of the area; and Bagamoyo following construction of the proposed new port and development of the EPZ which is on-going.

On account of these factors, the population growth rate for of Dar es Salaam is expected to see a gradual decline from the high growth rate of 5.2 per cent in 2012 to a more modest growth rate of 3.9 in 2036 as shown in Table 13.2

13.5.2 Demographic characteristics

Despite the anticipated decline in the overall population growth rate of Dar es Salaam, the demographic profile is expected to continue having a youth bulge. This is primarily due to expected natural increase in population. As far as the absolute increase within age cohorts is concerned, the group (15-19) will see the biggest increase followed by the age group (10-14). One of the possible explanations for the above trend could be the gradual decline in rates of migration leading to natural growth increasingly contributing more to the increase in the population of the city.

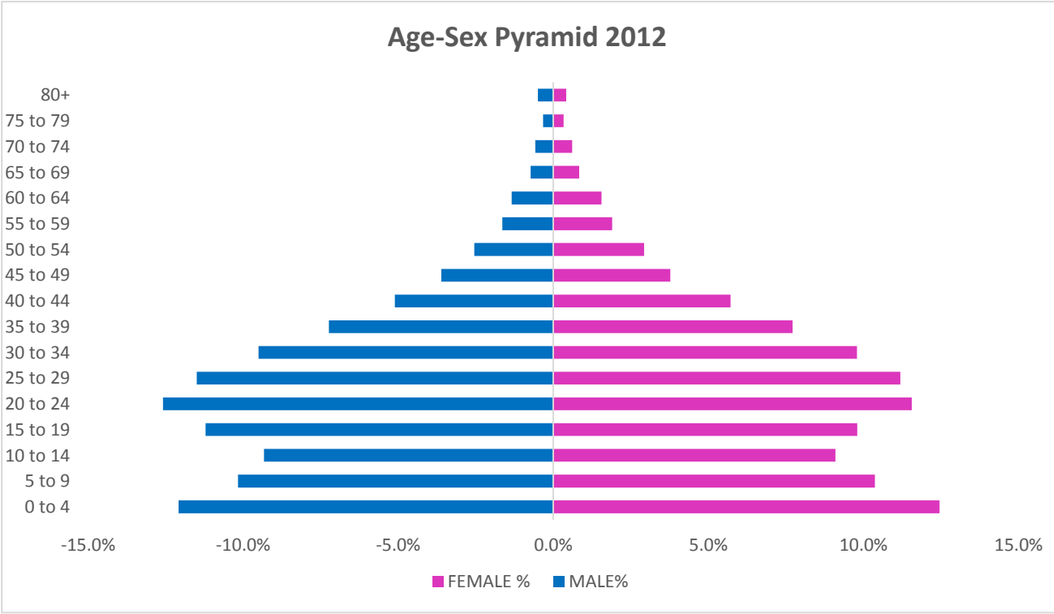


Figure 13.5: Population Pyramid 2012

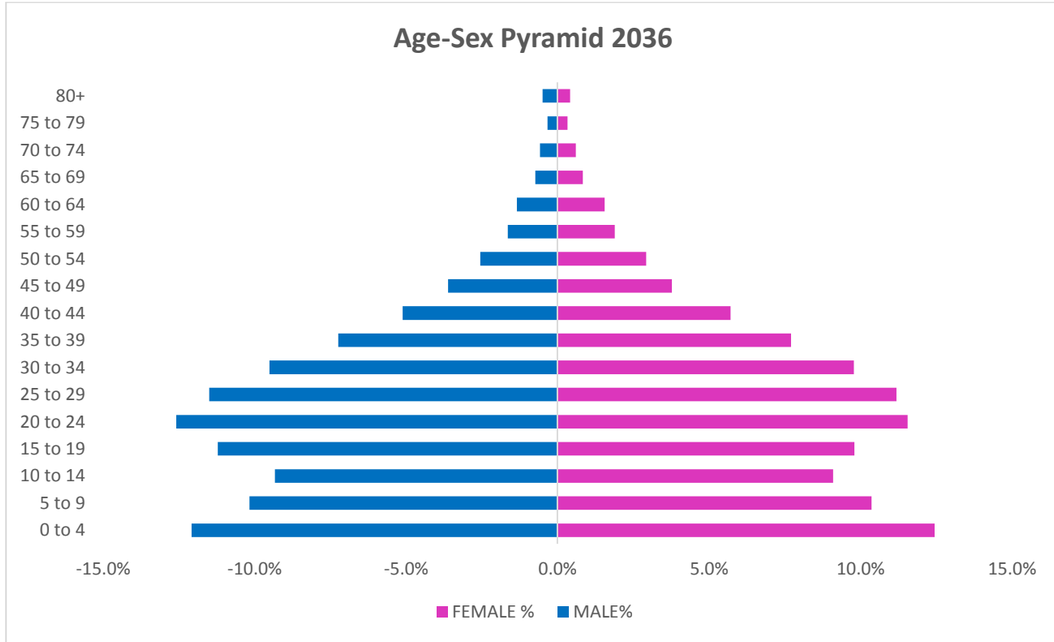


Figure 13.6 Population Pyramids 2036

13.5.3 Key assumptions which impact the population profile

- Life expectancy is expected to improve. Male life expectancy is projected to rise from 56 years to about 65 years and female life expectancy from 61 years to 69 years.
- Although, the total fertility rate is expected to decline from 2.8 to 2.0, a consistently increasing population of women in the adult age group as well as better life expectancy for children is expected to offset the decline, resulting in a fairly consistent birth rate
- The population will continue to attract young immigrants looking for employment but will also grow significantly from natural population growth of the resident population.

13.6 Broad Land Use Requirements

13.6.1 Estimation of Land Requirements

Dar es Salaam is estimated to have a population of 5,382,352 in 2016, which is projected to increase to 13,342,947 in 2036. A residential community of 24,000 populations is proposed to form the basic planning unit to calculate the land required for future expansion of the Dar es Salaam city to accommodate the expected population increase of 7,960,595 by 2036. The proposed residential community will comprise four neighbourhood units each having a population of 6,000.

13.6.2 Residential land requirements

The following criteria have been used to estimate the residential land requirements for each neighbourhood and the community:

1) A proposed combination of three building typologies composed of Two-storey buildings (60 per cent), Four storey walk-up apartment buildings (25 per cent) and 10 storey high-rise apartment buildings (15 per cent).
2) A plot area of 300 square metres for the two storey houses, 600 square metres for the four storey houses and 1,200 square metres for the ten storey apartment buildings as specified in the Urban Planning (Planning and Space Standards regulations 2012)
3) At the existing average size of 4.0 persons per household, each of the proposed neighbourhood unit with a population of 6,000 will be living in 1,500 households, and will require the equivalent of 1,500 dwelling units.

Based on these criteria, the calculation of residential space requirements for each neighbourhood unit is shown in Table 13.4.

Table 13.2: Net residential land requirements for each neighbourhood unit

House Type	**2 Storey Buildings 60 per cent**	**4 Storey Buildings 25 per cent**	**10 Storey Buildings 15 per cent**	**Total**
Number of dwelling units	900	375	225	1500
Number of Residents plots	450	94	6	550
Plot area	300 m^2	800 m^2	1,200 m^2	NA
Land Area (m^2)	135,000m^2	75,200m^2	7,200 m^2	217,400m^2
Net residential land area (ha) at 40 per cent plot coverage	(13.50ha)	(7.52ha)	(0.72ha)	(21.74ha)

13.6.3 Land requirements for neighborhood facilities:

The neighbourhood unit will form the basic unit for provision of basic social, economic and recreational facilities. The type of facilities to be provided at this level and the area of land allocated t each facility is shown in Table 13.5, which is based on the Urban Planning and Space Standards 2011, published as government Notice No. 395 of 2011.

Table 13.3: Land requirements for neighborhood facilities

S/N	**Land use**	**Size in Ha.**	**Number of units**	**Area in ha**
1.	**Economic activities**			
	Service industry	0.5	1	0.5
	Market	0.2	1	0.2
	Commerce	0.5		0.5
	Sub-total			**2.2**
2.	**Community facilities**			
	Nursery schools	0.25	4	1.0
	Primary school	2.0	1	2.0
	Dispensary	0.5	1	0.5
	Social hall	0.2	1	0.5
	Religious buildings	0.2	4	0.8
	Cemetery	1.0	1	1.0
	Sub-total			**5.8**
3	**Recreation and open spaces**			

	Children playground Play fields Sport fields/Stadia Neighbourhood Park Sub-total	1.0 2.5 2.5 5.0	1 1 1 1	1.0 2.5 2.5 5.0 11.0
Total Area for neighbourhood facilities (ha)				**19.0**

13.6.4 Neighbourhood land use composition

The neighbourhood land composition is a sum of the residential area, community facilities, the circulation area and way-leaves for other infrastructure. Most of the infrastructure will be located on the road reserves. The land use composition of each neighbourhood in shown in Table 13.6. Each neighbourhood unit will therefore require a land area of 48 hectares.

Table 13.4: Land use composition of the proposed neighbourhood unit

S/N	Land use	Area in ha.	Percentage
1.	Residential	21.7	45.2
2.	Economic activities	2.2	4.6
3.	Community facilities	5.8	12.1
4.	Recreation and open spaces	11.0	22.9
5.	Circulation and infrastructure	7.3	15.2
Total		**48.0**	**100**

13.6.5. The land requirements of a residential community

Four neighbourhood units will form a Residential Community of 24,000 persons. The four neighbourhood units will cover a land area of 192 hectares. Each residential community will be served by a set of community facilities to be located at the residential community centre. The type of facilities at the Residential Community level and the land requirements were calculated on the basis of the Urban Planning and Space Standards Regulations, 2011 as shown in Table 13.8:

Table 13.5: Estimated land requirements for residential community central facilities

Category	**Activity**	**Size in Ha.**	**Number of units**	**Area in ha**	**Total area (ha)**
Community facilities	Health Centre/Clinic Secondary School	3.0 2.0	1 1	3.0 2.0	5.0
Open spaces and recreation	Children play area Community Park Play fields, Sports fields and Stadia Zoo or Arboretum, Botanical garden	4.0 10 20 10	1 1 1 1	4.0 10.0 20.0 10	44.0
Commerce and trading	Market Commercial zone, Shopping mall Shops Petrol and Service Station Motor car show rooms Motor-cycle show rooms Bicycle showrooms	1.0 0.5 1.0 0.2 0.2 0.1 0.05 0.02	1 1 1 1 1 1 1 1	1.0 0.5 1.0 0.2 0.2 0.1 0.05 0.02	3.1
Public buildings	Public areas/building Religious sites Library Community hall Post/Telecom.	1.0 0.2 0.5 0.5 0.2	1 5 1 1 1	1.0 1.0 0.5 0.5 0.2	3.2
Hospitality	Hotel Guest house Bar /restaurant	0.5 0.2 0.2	1 1 1	0.5 0.2 0.	0.9
Industrial	Small scale service industries, Light industry and warehousing Fire Station	1.0 0.5 0.2	1 1 1	1.0 0.5 0.2	1.7
	Cemetery site	2.0	1	2.0	2.0
	Sewage ponds	0.7	1	0.7	0.7
Sub-total area					60.6
Circulation (15 percent) and					19.7
Parking (10 percent of area for central facilities)					6.1
Total Area for community facilities					**60.6 ha**
Add total area for four neighbourhood units					192.0 ha
Total area of a residential community					**278.2 ha**
Population Density of a Residential Community					**86.3**

Thus articulated, every Residential Community with a population of 24,000 persons will require a land area of about 278 hectares at a density of 86 persons per hectare. This land allocation standard can, however be fully met only in respect of a completely new residential communities. In the case of already existing settlements, these standards will be accordingly modified and adapted to the actual situation.

The predicted increase of 7,960,595 new inhabitants for the next twenty years would therefore constitute a total of 332 new residential communities that would require about 92,362 hectares of land for expansion of the city to accommodate the projected population increase.

13.6.6. Proposed strategy to distribute the expected population increase

The estimated residential land requirement of 96,280 hectares to accommodate the projected population increase presumes availability of vacant land for future expansion of the city. Analysis of the 2016 satellite image reveals, however that except for a large are of land south of Kigamboni and some few pocket of in the outer margins o the city, most of the other areas of the city un which news will take place are already built up to varying degrees of intensity. The proposed strategy to accommodate the expected population increase will be by infill in those areas having consolidated development but at a population density lower than 84 persons per hectare and densification of the sparsely populated areas of Kigamboni and the outer fringes of the city.

Although there are 102 wards in Dar es Salaam at the present, however, the threshold population density of 84 persons per hectare was applied to assess the infill and densification potential of the 90 wards existing in 2012 as there is no comprehensive, reliable population and demographic data for the new wards created after the 2012 population census. This assessment revealed that 48 of the 90 wards have no infill or densification potential as the population density in those wards already exceeds 84 persons per hectare. The other 42 wards have a total infill and densification capacity for a population of 8,609,646 slightly higher than the anticipated increase in population of 7,960,595 by 2036. The worksheet containing the assessment of ward infill capacity is attached as Appendix one to this report.

13.6.5 Industrial land requirements

The government directive for each region to establish at least 200 industrial units has guided the allocation of land for industrial activities. The master plan sets aside land to accommodate 400 industrial units in the long term, of which 200 will be light industries and 200 heavy manufacturing industries. Additional land is set-aside for 200 warehousing units. An average plot size of 15 hectares of land is allocated for each heavy manufacturing unit and 0.5 hectares is set for each of the light industrial and warehousing unit amounting to 300 hectares for heavy industry, 100 hectares for light industries and 100 hectares for warehousing. The total area for industrial activities is 500 hectares.

The necessary areas for all other activities of a higher order, which are not included in the neighbourhood and residential community centres, such as the port areas, universities, referral hospitals, tourist facilities, central business areas, transport terminals and other metropolitan functions. Figure 9.7 elaborates the proposed land uses while Figure 9.8 shows the various sizes of the proposed land uses by 2036 and The Future City – proposed land uses.

13.7. Alternative Growth Plans

The methodology for the generation of alternative development scenarios for the future growth of the Dar es Salaam city involved a sequence of logical deductions based on a consistent set of assumptions. Given the uncertainties brought about by the rapid growth of the city coupled against the recent decision to implement the shift of the capital to Dodoma, each scenario has to provide guidelines on the following:

i. The likely trajectory of economic growth of the city and its impact on the distribution of income and government revenues within Dar es Salaam and development of business opportunities in the city, considering the fact that government is in the process of moving to Dodoma;
ii. The future growth and change in composition of the city population; and,
iii. Possible pressures on existing land and institutional arrangements, notably those responsible for allocation of land, regulation of its use and development; and, delivery of infrastructure and public services.

The following section reviews three alternative spatial scenarios, v: (a) Suburban Growth Model based on simultaneous, spontaneous and ad hoc concentration and sprawl and (b) Compact Growth Model predicated on planned densification, infill and structuring of the city of Dar es Salaam and (c) decentralizing development to Satellite towns.

It is argued that the latter is the preferred scenario as it supports the ten key spatial principles defined to accommodate the concerns of the people/communities in Dar, address the key planning issues identified earlier, provide a basis for rational allocation, usage and regulation, a framework for cost effective delivery of services, facilities and public transportation and support local economic development with the city.

As best practice, each alternative must achieve a set of 11 urban Sustainable Principles as set out below. In essence, the preferred scenario should:

i. Endorse a rational approach which will lead to the most efficient and effective use of land taking into account that much of the land within the city boundary is already in some kind of use;

ii. Support the creation of total environments by focusing on the provision of a range of employment, consumption and recreation opportunities for all age and income groups. Mixed land use developed at variable levels of intensity and quality encourages a more diverse, legible and accessible cityscape;

iii. Create the conditions for the integration between larger scale uni-functional zones of activities, notably the larger institutional, transportation, urban housing and industrial uses with smaller scale multifunctional activity spaces within the commercial nodes of the city;

iv. Focus on providing a range of densities and where possible a concentration of higher density at points and lines of maximum accessibility, intermediate densities where traditional forms of settlement prevail and lower densities at the interface between urban and rural land uses;

v. Provide for a mix of housing types which takes into account affordability constraints, lifecycle considerations, and life styles;

vi. Endorse flexibility as a principle to allow for alternative land allocation, usage and regulatory practices and procedures to exist within an overall spatial framework;

vii. Provide a clear distinction between urban and rural land uses to avoid the potential for conflict at the interface between urban and rural oriented activities;

viii. Provide for multi-faceted employment and income-generating opportunities where appropriate trading platforms for small businesses can be created to land zoned for specific services/light industrial and institutional purposes. Heavy industrial areas should be zoned out in appropriate locations;

ix. Emphasize the importance of providing access within the city and its impact region by delineating a clearly identifiable and operational transportation hierarchy for both private and public sector transportation. A clear spatial layout linking transportation and land use is critical in improving accessibility for all types of movement patterns and to reduce conflict between vehicular and pedestrian traffic;

x. Highlight the importance of environmental concerns, which lays emphasis on the preservation of areas of environmental sensitivity, agricultural potential, and open spaces for passive and active recreation;

xi. Create a resilient city. Resiliency here is described as "the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow, no matter what kinds of chronic stresses and acute shocks they experience". Chronic stresses are defined as slow-moving disasters that weaken the fabric of a city. These include high unemployment, an overburdened or inefficient public transport system, and financial and/or economic crisis.

4. **There are three qualities that a resilient city needs to develop to mitigate shocks and stresses. These include being:**
   - Reflective and resourceful: The ability to learn from the past and apply the lessons to inform future decisions, while also finding alternative ways to use existing resources better.
   - Robust, redundant and flexible: Robust, for example, in terms of developing infrastructure that will not fail catastrophically when design thresholds are exceeded; redundant in terms of purposively creating spare capacity to accommodate disruption; and flexibility in terms of the ability to adopt alternative strategies in response to changing circumstances.
   - Inclusive and Integrated: Ensuring broad consultation, engagement and involvement while at the same time bringing together systems and institutions and the pooling of knowledge and resources.

Two alternative development growth scenarios were generated with a view to accommodating the target-projected population of the city 13,342,947 people who are expected to reside in the plan area during the plan period. The growth options are as follows.

1. Alternative 1: Suburban Concentric Model predicated on Simultaneous, Spontaneous ad hoc concentration in the current built up areas of the city and massive outward lateral growth to the city periphery (city suburbs) - north, west and south of the city.
2. Alternative 2: A Compact Hybrid Model based on three strategies, (a) Compact development based on planned densification, infill and restructuring of the current built up areas of the city in the short run, followed hand in hand with (b) Expansion to the south, i.e. Kigamboni South where land abounds and later after compaction (c) Decentralization of city development due to lack of land space in the city into the neighbouring four satellite urban centres of Bagamoyo, Kibaha, Kisarawe and Mkuranga that will take the heat off the rapid growth of the city.

13.7.1 Alternative One: Suburban, Concentric Model based on Simultaneous Spontaneous ad hoc Concentration and lateral growth to the north, south and west.

This scenario will result in a vast and large monotonous city stretching from the coast to the urban periphery in three directions with development continuing to concentrate in areas along the major trunk roads and thereafter in many of the agricultural lands in the urban periphery. This alternative as can be seen in map 13.1can be viewed as a continuation of the spontaneous and amorphous development process that is currently occurring in many parts of the city, though efforts could be made to curtail this practice by applying strict spatial planning and development control. Whilst spontaneous processes often provide important cues on how to structure space, this scenario cannot fulfil all the 11 principles articulated

above. A few advantages of this alternative centre on aspects like (a) equal concentric development of the city, (b) less destruction or disturbance of current and on-going activities and (c) rising land values for people who already own land in the peri-urban areas. On the negative side, this scenario will certainly lead to further urban sprawl with all the attendant problems that have already played havoc to the people living in the city today.

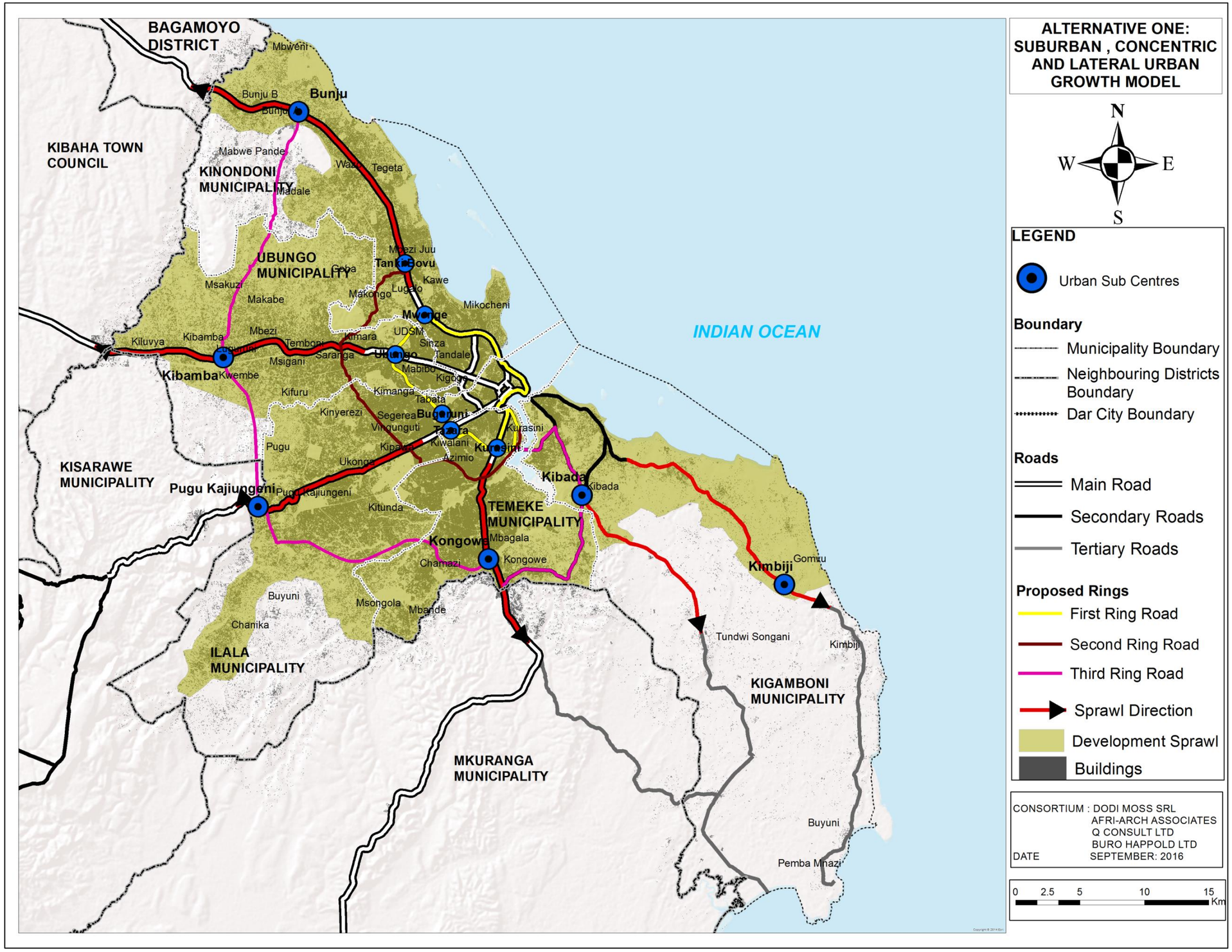
In essence, the scenario will:

- Lead to problems of haphazard land fragmentation, scattering of households, "leap-frogging" into "new peripheral areas and creation of wasteful use of land. All these would lead to fragmented urban growth;
    - Pose challenges to implementation of planned urban development;
    - Result in large-scale encroachment on high potential agricultural lands and vegetation cover;
- Will impend proper allocation of land resources;
- Irrigation areas (mostly for rice and vegetables), which are high potential areas for urban agriculture, will be shrunk due to the expansion of the built up area. In the **process of** urbanization up to 30 years from now, agricultural land will be continuously pushed and converted to built-up areas;
- Will threaten water quality, climate protection and land conservation;
- Will lead to air pollution resulting from longer travelling and distances to these far flung areas;
- Will have a long term negative impact on the city reducing the value of the city;
- Will lead to increased development costs of financing infrastructure; and,
- Should sprawling not be regulated, the future urban development of Dar es Salaam might reach a stage where the situation will be critical and irredeemable.

Table 13.6: SWOT Analysis of the Concentric Growth Approach

STRENGTH	**WEAKNESS**
SUBURBAN CONCENTRIC CITY GROWTH APPROACH 1) Continuation of the existing development trend that can proceed with limited planning intervention; 2) Will lead to equal concentric growth for all 5 municipalities. 3) The limited consolidation and infill alternative growth model will lead to compact growth with all its benefits; 4) Close proximity to the CBD and centres of employment from all parts of the city; 5) Will raise land values in the peri-urban areas 6) Less costly to implement in the long run, 7) Can create a variety of housing options, both single family and multi-family with a good cross section of variety and price options.	**SUBURBAN CONCENTRIC CITY GROWTH S APPROACH** 1) Will lead to haphazard land fragmentation, scattering of households, leapfrogging-Fragmented urban growth; 2) Urban sprawl with all its environmental, social and economic and economic problems; 3) Distance from the city to the peri-urban areas will be long. 4) Will lead to increased growth of unplanned settlements and slums, costly to improve and provide services in the future; 5) Housing and social service provision will be a difficult to achieve. 6) Difficult to administer a city of this size. 7) Traffic congestion and traffic jams, long travel distances, costly and time-consuming travel patterns. 8) Loss of agricultural land and greenery to sprawling urban growth; 9) Difficult to conserve environmentally sensitive areas; 10) Increased pollution from vehicular emissions; 11) In the long term, the city may run out of land for its continued growth and development.
OPPORTUNITIES	**THREAT**
SUBURBAN CONCENTRIC CITY GROWTH APPROACH 1) With some compact growth, the city may be able to accommodate more people and activities; 2) Potential of a larger regional market centre emerging;	**5.** SUBURBAN CONCENTRIC CITY GROWTH APPROACH 1) Urban planning authorities may be overwhelmed by the spontaneous development leading to poor living conditions;

3) Possibilities to develop new urban sub-centres in the peri-urban areas; and **4)** With abundant land, both the public sector as well as the private sector will be able to engage in greater investment.	2) Will result in large-scale encroachment on high potential agricultural land leading to food shortages and poor nutrition; 3) Encroachment on fragile environments such as wetlands, river valleys, steep hilly areas, natural vegetation and forest areas may result in increased flooding; 4) Increased surface run-off resulting from expansive built up and hard paved areas may also lead to increased flooding; 5) Redevelopment coupled with infrastructure provision requirements will result in high financial outlays; 6) It will be difficult to provide services in the proper hierarchical order across the sprawling city if not adequately structured; 7) Will threaten water quality, climate protection and land conservation; and, **8)** Urban governance of the 5 municipalities will be disjointed and difficult to coordinate.



Map 13.1: Alternative One Approach

13.7.2 Alternative Two: Compact City Growth

There are strong arguments emerging today that the compact city is the most sustainable urban form. Compact City is a high-density urban settlement that has the following main characteristics:

- Revitalization of the central area
- City Regeneration & regularization of informal settlements
- Mixed-use development
- Easy access to services and facilities: hospitals, parks, schools, leisure and fun

By adopting a compact city form it is more likely to achieve a more sustainable urban form than Alternative 1 which is encourages urban sprawl For this to happen the city authorities should pursue policies of urban compaction that involve the promotion of urban regeneration mostly of the informal settlements, revitalisation of the CBD, exercising restraint on development in rural areas/urban periphery, enforce higher densities, promoting mixed-use development, promotion of public and non-motorised forms of transport and the concentration of urban development around public transport nodes. There are many benefits of the compact city over urban sprawl, which include: less car dependency thus lower emissions, reduced energy consumption, better public transport services, increased overall accessibility, the re-use of infrastructure and previously developed land in the city, a regeneration of existing urban areas and urban vitality, a higher quality of life, the preservation of green space, and the creation of a milieu for enhanced business and trading activities. As sustainable development relies upon the combination of economic, social and environmental elements, the following are some of the issues that should be addressed for the compact city to show improvements across all three spheres.

Community-Based Society:

The envisaged Sustainable Compact City could reinstate the city as the ideal habitat for a community-based society. It is an established type of urban structure that can be interpreted in all manner of ways in response to all manner of cultures.

1) **Proximity:** Proximity, the provision of good public space, the presence of natural landscape and the exploitation of new urban technologies can radically improve the quality of air and of life in the dense city. Another benefit of compactness is that the countryside itself is protected from the encroachment of urban development. The concentration of diverse activities, rather than the grouping of similar activities can make for more efficient use of energy. The compact city can provide an environment as beautiful as that of the countryside.
2) **Energy Conservation**: A Compact City reduces the wasteful use of energy particularly for transport. City rubbish, which is usually either dumped on landfill or incinerated, both with polluting effects, can be burned and supply up to 30 per cent of a community's energy needs. In a city that combines a variety of activities, it is easier to transfer waste heat from one activity to another. Excess heat generated by offices, for example, is usually dissipated into the environment, but it can be reused in hospitals, homes, hotels or schools if they are reasonably close protected from the encroachment of urban development.
3) **Overlapping uses**: The whole premise of the Compact Dar es Salaam City is that interventions trigger further opportunities for efficiency. A Compact City composed of overlapping activities, for instance, is more convivial and can reduce the need for car journeys, which in turn dramatically reduces the energy used for transportation - usually a quarter of a city's overall energy consumption. Fewer cars mean less congestion and better air quality, which in turn encourages cycling and walking rather than driving. Better air quality makes opening windows to fresh air more attractive than turning on filtered air-conditioners.
4) **Rich Urban Landscaping**: There are other important environmental advantages to a compact form of city that has fewer roads but more landscaped public spaces. Parks, gardens, trees and other landscaping provide vegetation that shades and cools streets, courtyards and buildings during the hot season. Cities are generally 1-20C warmer than their hinterland. The overall effect of rich urban landscaping is to reduce the heat 'bloom' of cities, measurably reducing the need for air-conditioning. Plants dampen noise levels and filter pollution, absorb carbon dioxide and produce oxygen - further factors that reduce the need for air-conditioning to supply cooled fresh air to buildings in what would otherwise be hot and polluted urban areas. Urban landscape absorbs rain, reducing the discharge of urban rainfall and storm water. Landscape plays an important psychological role in the city and can sustain a wide diversity of urban wildlife.

Compact City Issues:

The following are some of the issues that need to be addressed by planners and policy makers for a successful Dar Compact City:

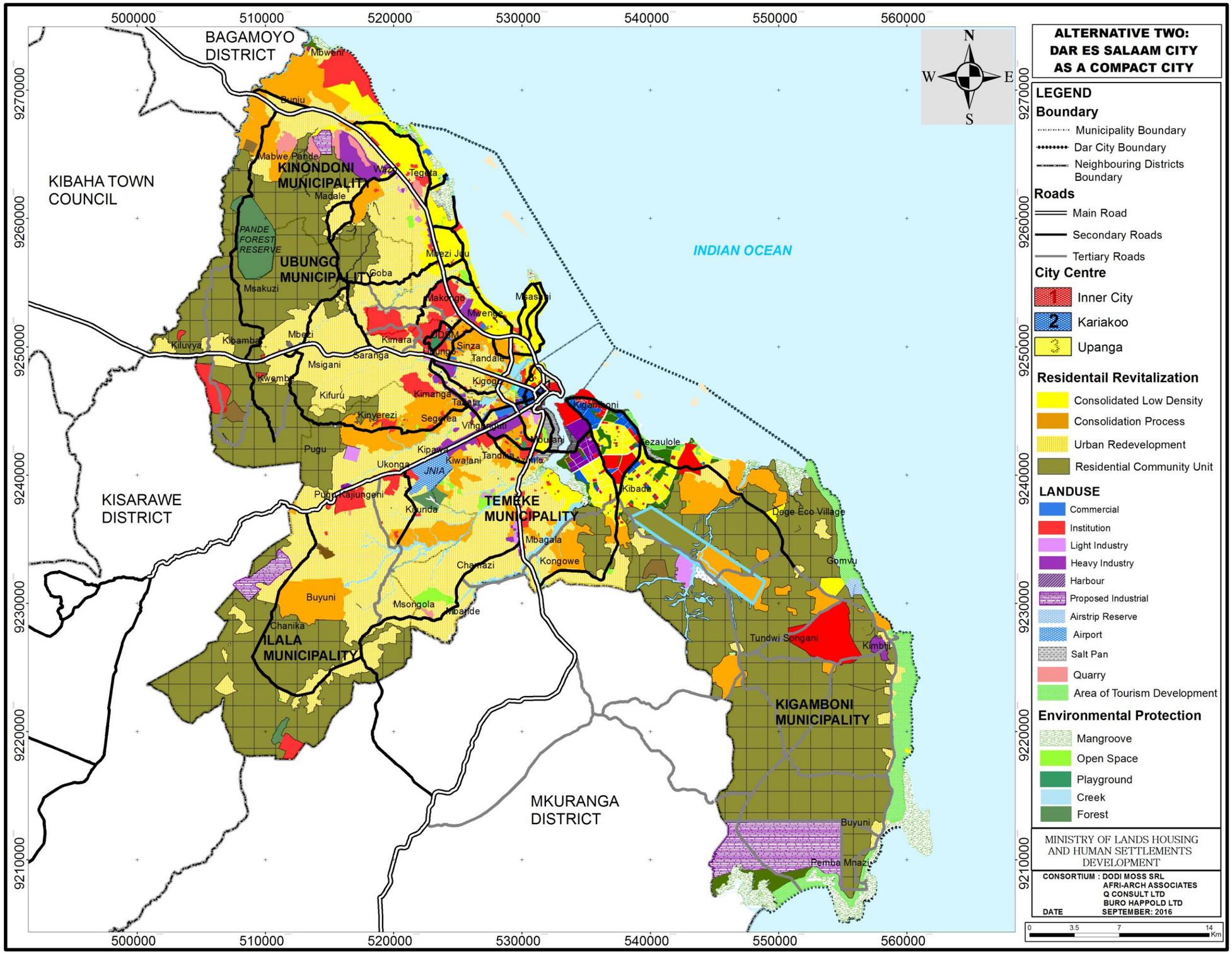
- Densification has limitations when a compact city achieves its highest possible density;
- Compact City forms have implications for individual lifestyles;

- The link between city compactness and social equity: Sustainable development involves more than just environmental conversation; it embraces the need for equity. Both intra-generational equity providing for the needs of the least advantaged in society, and inter-generational equity, ensuring a fair treatment of future generations need to be considered.
- Equity and community issues: The urban periphery, doughnuts of deprivation, social inclusion / exclusion, crime and security issues;
- Urban management and safety concerns;
- Industry structure and the redistribution of population;
- Family size, lifestyle, culture, effect on dwelling / building size, type and design, housing needs, relocation and transaction costs, health, education infrastructure, facilities and services
- Compact City implications for decision makers and planners regarding health and education services; communication and information systems, and industry;
- The effect of intensification on the increase or decrease in urban vibrancy;
- The effect of compactness on travel and feasibility of public transport, thus reducing emissions and contributing to environmental sustainability;
- The effect of compactness on the efficiency and optimum use of services, such as public transport, sewers and refuse collection; and
- The impact of intensification policies on the urban landscape.
- The 'environmental clash' between housing, industry and traffic that can no longer be solved through the traditional methods of placing distance between 'environmentally intrusive activities' and 'environmentally sensitive areas' through zoning. As a result of its mixed-use and compaction ideologies the compact city policy makes it difficult to solve environmental conflicts by keeping a sufficient distance between intrusive forces and environmentally sensitive areas, activities and functions.

Table 13.7: SWOT Analysis of the Compact Growth Approach

STRENGTHS	**WEAKNESSES**
COMPACT CITY GROWTH APPROACH There are many perceived benefits of the compact city over urban sprawl, which include: 1) Less car dependency thus lower emissions, reduced energy consumption, 2) Better public transport services, 3) Increased overall accessibility, 4) The re-use of infrastructure and previously developed land in the city, 5) A regeneration of existing urban areas and urban vitality, 6) A higher quality of life, 7) The preservation of green space, and 8) T**he creation of a milieu for enhanced business and trading activities.**	6. COMPACT CITY GROWTH APPROACH 1) Due to redevelopment and infill, resettlement can cause problems with resettling people 2) There is always an issue as to what next when a compact city achieves its highest possible density? In the case of Dar es this would be resolved by decentralising development to satellite towns around Dar. 3) There is an issue on Compact City implications for individual lifestyles. 4) The link between city compactness and social equity: Sustainable development involves more than just environmental conversation; it embraces the need for equity.
OPPORTUNITIES	**THREATS**

COMPACT URBAN GROWTH APPROACH	COMPACT CITY APPROACH
1) Emerging industrial growth create the potential to capture international markets 2) A great opportunity to achieve urban sustainability. 3) The potential positive effect of compactness on the efficiency of services such as public transport, sewers and refuse collection. 4) Great opportunity to attract investors in redevelopment and high-rise building in the city; 5) Private sector and public sector cooperation in PPP activities, 6) Greater and intensive land use 7) Achieve greater economy in the use of land and other resources	1) Perpetuation of the 'environmental clash' between housing, industry and traffic that can no longer be solved through the traditional methods of separate zoning of incompatible land uses activities and functions in a compact city policy that favours mixed-use development, 2) Lack of financial, human, and technical capacity.to carry out large scale redevelopment, regularisation, densification and new development 3) Traditional preferences of many Tanzanians for single storey detached housing against high rise accommodation, 4) The Green belt may be threatened by unscrupulous administrator's authorising change of land use.



Map 13.2: Alternative Two Approach

13.7.3 Alternative Three: Development of Satellite towns

This alternative approach involves allocation of major economic activities and firms to the existing satellite urban settlements within its impact region namely, Bagamoyo, Kisarawe, Kibaha and Mkuranga, which will be re-planned, expanded and developed as modern and functional urban centres to decongest.

The Dar es Salaam City; this is called "city linking as a strategy for growth". Specifically, Bagamoyo, Kibaha, Mkuranga are slated as industrial satellites of DSM, and Kisarawe as a logistics and tech town. Bagamoyo is also a historic/tourist satellite.

The Tanzania Port Authority recently announced its approval for a $10 billion project to develop a port at Bagamoyo. A parallel highway linking Bagamoyo to the Uhuru Highway going to Zambia will also be built. An integral part of the Bagamoyo project will be the Export Development Zone (EDZ) described in Chapter 3, which will include the construction of an industrial city as well as upgrades to road and railway infrastructure. A master plan for this zone has been completed recently. The total land area is 9,800 hectares composed of 4,560 hectares for industrial; 1,230 hectares for port development; 1000 hectares residential; 38 hectares for commercial; 900 hectares for institutional; 940 hectares for recreational; 465 hectares for open space and 325 hectares set aside as wet areas (source: EPZ Master Plan, COWI 2013).

In addition there is also the Kamal Industrial Estate in Bagamoyo with 279 hectares of serviced industrial land.

In Kibaha, the Strategic Master Plan 2017 shows the availability of the following land for development: 1,450 hectares for light and heavy industry; 66.75 hectares for hotels; 100 hectares already surveyed land for housing and ample land for agricultural activities

In Mkuranga, the Export Processing Zone (Global Industrial Park) is planned over an area of 25 2017 hectares.

Kisarawe will be a Logistics and Tech City that would turn the Tanzania economy into a knowledge-based economy. Agricultural processing will also buttress this activity.

Decision-makers all over the world are realizing the importance of connecting dominant cities, just like Dar es Salaam, with their secondary counterparts to create highly productive and competitive urban clusters.

It is expected that these satellite towns, will help curb the city's current and future sprawl to the suburbs and supplement expansion of the "mother city". Endowed with adequate land, the satellite towns would go a long way in addressing housing shortage problems, which are endemic in Dar es Salaam. They are expected to also create formal and informal employment opportunities. They are expected to reduce growth of informal settlements (slums), stimulate planned development and decongest Dar es Salaam city. To spur growth in these towns it is envisaged that they would embrace the spirit of public private partnerships. The government should sensitize existing landowners about such a move; conduct valuation and ensure payment of compensation, provide resettlement and relocation services, obtain and issue property deeds for all stakeholders.

It is hoped that these satellite towns will address the malaise of congestion of Dar city, provide new schools, hospitals, and housing and create jobs.

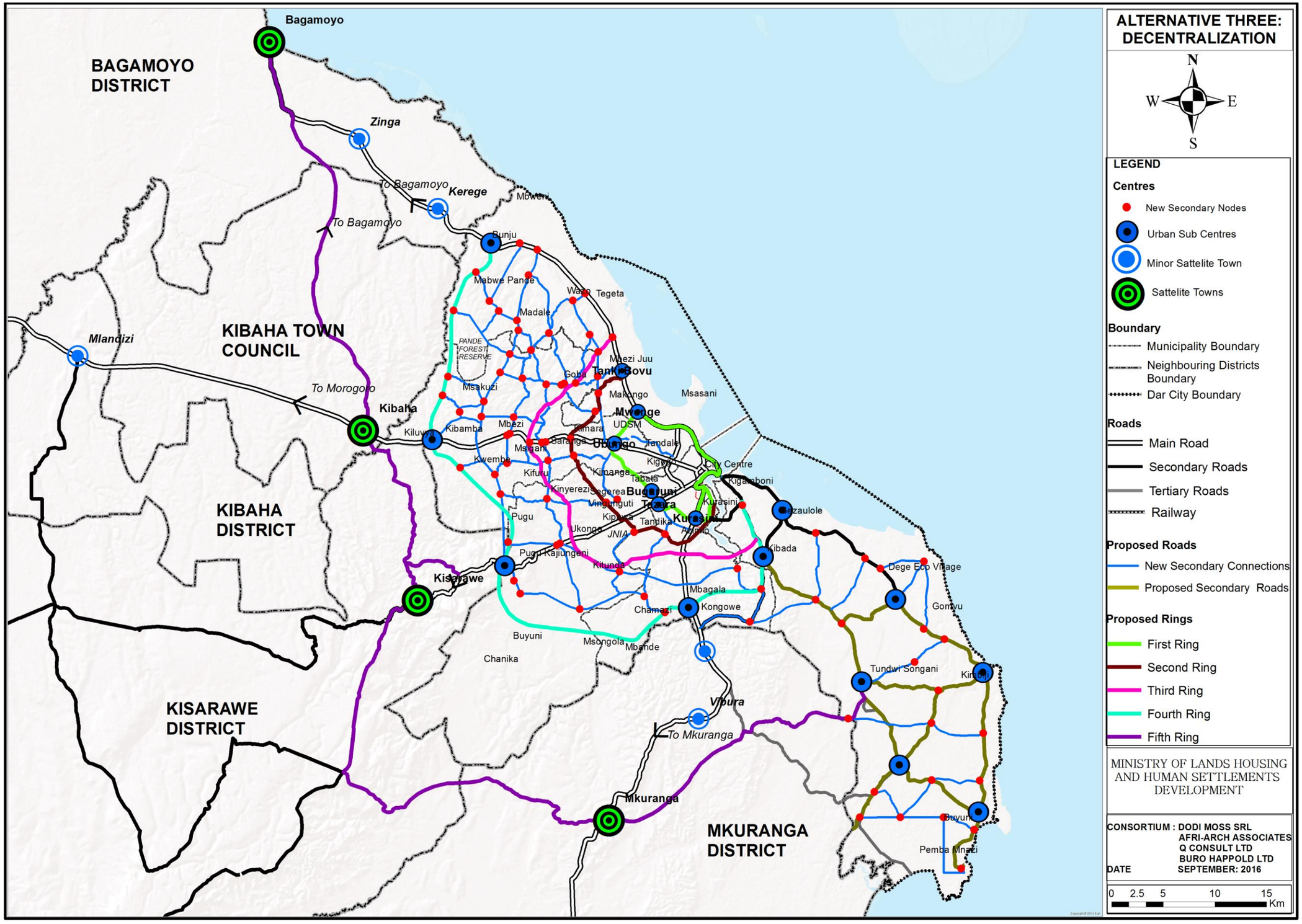
On the negative side, getting these towns to cater for overspill development may have its critics. Much of the concern has to do with resettlement processes and could widen the gap between the rich and the poor. Other concerns are the heavy financial outlay by central and the 5 local governments to expand these towns and lastly accessibility problems by the poor due to the cost of rent in the new housing investments.

However, in spite of these sentiments and aforementioned concerns the satellite cities are bound to succeed. The benefits of satellite cities and towns seem to outweigh the concerns. Many of the criticisms of the satellite cities concept are insurmountable and simply need to be addressed.

Table 13.8: SWOT Analysis of the Satellite Towns Growth Approach

STRENGTHS	**WEAKNESSES**
SATELLITE TOWNS GROWTH APPROACH 1) City-to-city link has clear advantages in increasing opportunities for economic exchange and decongesting Dar where land for city growth is almost exhausted.	**SATELLITE TOWNS GROWTH APPROACH** 1) High financial outlay to re-plan the satellite towns; 2) High costs of compensation to obtain land for expansion of the satellite towns;

2) The satellite cities approach will curb the city's current and future sprawl into the peri-urban areas. 3) Satellite towns endowed with adequate land would go a long way in addressing housing shortage problems 4) Reduce growth of informal settlements 5) The government is already committed to investing in some of these centers like the new port and EPZ in Bagamoyo, water project in Kisarawe, and the private sector too already taking interest in these centers for investment. 6) Potentially Vast land resources in the satellite towns can be released for development **7)** Emerging industrial growth create the potential to capture international markets	3) Low capacity of existing infrastructure to provide adequate and efficient linkages between the satellite tows and Dar es Salaam city;
OPPORTUNITIES	**THREATS**
SATELLITE TOWNS GROWTH APPROACH 1) Linked municipalities could result in better coordinated economic and infrastructure strategies for regional development; 2) With the advent of the hyper-loop, the potential impacts are even greater, allowing for wider spatial opportunities for employment and livelihoods, and the creation of mega-regions; 3) Result in less pollution and congestion in the long run as people move into these satellite towns; 4) Affordable land accessible to all compared to the high costs of land in Dar es Salaam; 5) Stimulate planned development; 6) Access to new port in Bagamoyo will improve regional trade and the economy; 7) Benefit from the pace of development of new technology; **8)** Extending the Dar Rapid Transport services to the satellite towns will reduce commuter travel time and costs; and, 9) Creating a green belt will curb the sprawl of the city, boost food supply and improve nutrition	**SATELLITE TOWNS GROWTH APPROACH** 1) Critics of the satellite towns approach argue that their cost is too high but it can be argued that the cost of urban sprawl is even higher with many hidden costs like traffic congestion, pollution and loss of agricultural land included in the cost/benefit analyses 2) Costly to modernize the existing identified urban centers 3) The shift of the government to Dodoma might result in investors opting to invest in the new capital city rather than in these four satellite towns; 4) Cost of utilities and infrastructure could be prohibitive; and **5)** The four satellite cities may not be able to compete with Dar es Salaam and the other major cities in Tanzania to attract investments.



Map 13.3: Alternative Three Approach

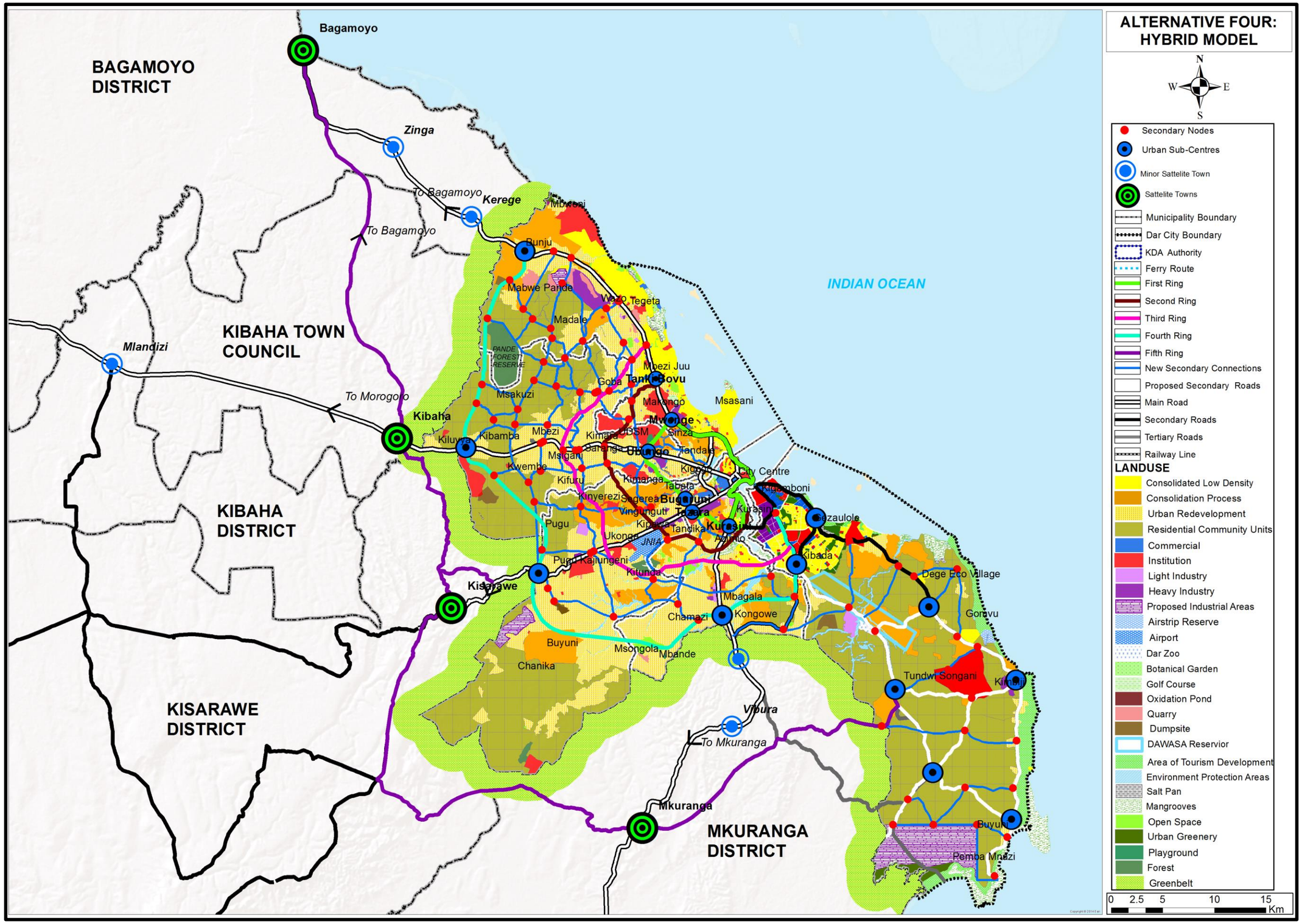
13.7.4 Evaluation of the alternative growth plans

Each of the three alternative growth plans was ranked by subtracting the sum of weaknesses and threats against the sum of the strengths and opportunities. The first alternative plan for concentric growth parent scored a –8 (11-19), while the compact growth plan scored a +6 (15 - 9). Alternative Plan Three for the satellite town approach scored the highest points at +8 (16 - 8).

13.7.5 Alternative Four: A Hybrid Model

The compact growth strategy is not mutually exclusive of any of the two other alternative growth plans. It can be equally implemented alongside the concentric growth strategy and equally so alongside the satellite towns strategy. Therefore, a hybrid model combining the compact with the development of existing Satellite Towns has been selected .The hybrid model is anchored on the following three key strategies:

1) Create a compact city through densification and urban infill;
2) Introduce a concentric Green belt around the city to limit sprawl into peripheral land. It is noted that there are still vast vacant or sparsely developed pockets within the current city fabric, which could yield more with densification and infill. This has succeeded in many developed and Third World mega cities. Here strict planning conditions must be enforced to ensure conservation of agricultural land for the production of food that will feed the city and provide nutrition. The Green Belt should be used for agriculture; city parks, recreational open spaces and camping grounds that are in little supply in the current city;
3) Redistribute growth of Dar es Salaam city to the satellite towns of Bagamoyo, Kibaha, Kisarawe and Mkuramga, which will have to be re-planned and expanded to absorb some of the expected increase in population and economic activities of Dar es Salaam city, consistent with the emerging metropolitan characteristics of the Dar es Salaam City and its impact region. Future plans for the physical and socio-economic development of the city and its administration will thus take a metropolitan perspective. The Dar es Salaam Metropolitan administrative structure and its planning system are proposed in Chapter twelve of this master plan report.



Map 13.4: Alternative Four; Hybrid Model

14. THE PROPOSED DAR ES SALAAM MASTER PLAN

14.1.Key Structural Proposals for the urban structure

The master plan puts in place a series of structural proposals, key of which are the following:

a) Development of new urban sub-centres;
b) Restructuring of the current radial road network and improvement of the transport system;
c) Rehabilitation of parts of the City; and
d) Improvement of the environmental quality of the city.

14.1.1. The New Urban Sub-centres

Dar es Salaam City, like many other metropolises around the world, grew from a central nucleus around the Magogoni area that hosted the main urban functions. In the initial phase of urban development such a model offered the benefit of having a mix of functions, from residential to tertiary functions. It also guaranteed easy access to the entire urban system. Currently, the city centre is undergoing an intense densification process triggered by increasing demands for high-level urban services and functions. These aggravate the existing city problems, such as the constantly heavy and unsustainable traffic congestion in the city. The Master plan conceives a more appropriate new urban system with urban growth centres that are likely to better reflect a metropolis of more than ten million people, as the city is expected to have in the master plan period of implementation. Such urban sub-centres are located along the existing radial and ring roads including the Nyerere and Mandela Road axes, from its intersection of Kilwa Road up to the University of Dar es Salaam and the service centre along Bagamoyo Road. The new urban sub-centres are proposed to be located at Kurasini, TAZARA, Buguruni, Ubungo and Mwenge on Nelson Mandela Road; Tanki Bovu and Bunju on Bagamoyo Road; Kimara and Kibamba on Morogoro road; Chanika on Nyerere road; and Kongowe on Kilwa road. Figure 14.3 illustrates the position of the proposed main urban centres.

These proposals are based upon the following observed qualities, which include:

1. The role of existing and future road network and the development potentiality in creating the new urban sub-centres;

2. Transformation of two existing railway lines to create a metro service, which runs along the old railway tracks from the city centre to Pugu and Buguruni to Ubungo. Introduction of a metro service is proposed in order to improve urban mobility, linking the new urban sub-centres to the city centre;

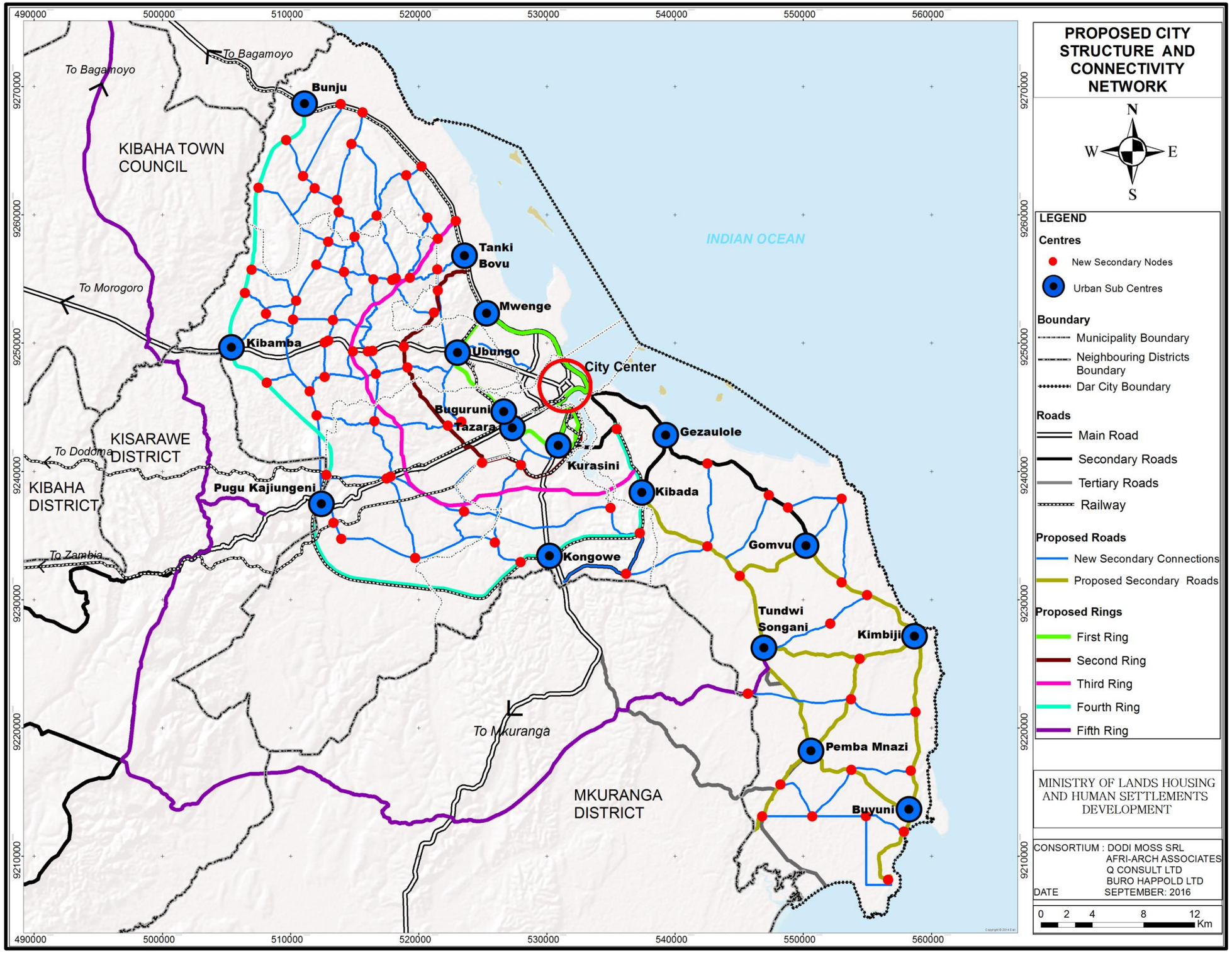
3. The plan of the new ring road system will mark the city limits and help decongest part of the traffic that currently flows through the Mandela road;

4. Presence of important central city functions as the university, the shopping malls along Mandela road, as well as the high level services and production and trade centres along Nyerere Road;

5. Uninterrupted connection of the new urban sub-centres with the city centre; and,

6. The presence along the road axes of buildings, which can be used for provision of directional services, without having to undergo costly remodelling or which can be restored to host new functions or take on more qualified residential functions.

The new urban sub-centres will be important for diversifying and generating new functions, creating employment opportunities and encouraging the upgrading of the existing urban structure. They are also expected to relieve the city centre of its current pressure and congestion by redistributing the traffic flow and making the overall city mobility pattern more efficient. Development of the proposed sub-centres will ensure efficient utilization of under-used areas and lead to upgrading of unplanned informal settlements by procuring lands for the required metropolitan functions of the urban sub-centres.



Map 14.1: Proposed new urban sub-centres and connectivity

14.1.2. Restructuring of the current radial road network and improvement of the transport system;

The Master plan proposes to establish a network of ring roads with metropolitan coverage and lays emphasis on improving for public transport, cycling, pedestrian and, parking facilities to enhance mobility. The first ring road is an outer ring road that commences from the port through Mandela road to Segerea road, Mbezi Mwisho, Mabwepande and ends at Bunju. The proposed new outer ring road will provide access for freight transportation from the Dar es Salaam port to other parts of Tanzania mainland and land locked countries. It will also provide easy access to the proposed areas for urban expansion of the city.

The second ring road runs from the port through the Mandela Road to Ubungo connecting to Sam Nujoma and on to Mwenge. This ring road will accommodate and ease normal vehicular movement in the city by connecting different centres and sub centres. The vast fringe areas lying between the current ring road, Mandela Road, and the proposed new outer ring road, which are currently partially urbanized, are expected to accommodate most of the planned expansion of the existing city over the next few years.

The third ring road starts from Kilwa road through Chang'ombe road, Kigogo road, and Kawawa road where it terminates at the Al Hassan Mwinyi road. A series of radial roads are planned to link these new urban sub centres development to Bagamoyo and Morogoro roads. Enhancing and preserving significant green spaces which have until now not yet been affected by urbanization will be one of the key criteria governing development in these areas.

14.2.Redevelopment of parts of the city and other dilapidated areas

14.2.1. The City Centre

The Master plan intends to improve the urban quality of the city centre. It suggests and favors the adoption of legislative instruments that will be able to re-arrange the existing urban city and to plan its future. The Master plan aims to introduce a qualitative policy, able to balance land use between tertiary, commercial and the dwelling sector, while intensive vertical growth policies should be abandoned in favour of developments that will transform the city centre into an attractive place for tourism as well as for business. A good set of facilities will allow people to live, work, walk, aggregate in a city centre rich in heritage, cultural offerings, diffused open spaces and unique water front developments.

Key attributes for the future city centre will be:

- heritage
- facilities
- mobility and pedestrianisation
- open spaces
- water front
- design guidelines

Based on an extensive and detailed survey[24], the Master plan has identified the main policies that can be improved and the measures that need to be adopted in the city centre, producing a specific Detailed Plan for this part of the metropolitan area[25]. In the following paragraphs is presented a synthesis of the main proposals.

14.2.2. Conservation of cultural heritage

Preserving, maintaining and rehabilitating architectural and urban heritage should be the basis of the new city centre. Conservation and development of existing historical buildings will convert the latter ones into excellences of the urban texture.

An in-depth study has been conducted to document the City Centre territory and the historical signs that contributed to shape the urban morphology.

Landmark buildings, or groups of buildings (such as, rows of Indian houses), which are still recoverable should be protected and renovated in their entire original structure or, at least, in their external walls and facades.

Restored buildings, which could be established to their previous function or, even, to other functions well-matched with the new city centre form will also be preserved.

Listed heritage and protected buildings must be preserved and rehabilitated as per conservation laws (Principles and guidelines for the conservation and management of cultural heritage resources in Tanzania, 2008).

Non-listed heritage: the protected buildings list should be accompanied with a non-protected building list composed of single buildings (or whole units) that, because of their architectural quality or their history, hold relevance for the future cultural development of the historical city centre. The recognition of the value of those buildings which have been of great importance in shaping the urban morphology will emphasize a vision of a diffused architectural quality.

Fine foreshortenings, typical corners and original morphology of some of the streets should be part of the urban heritage to be preserved and restored.

Particular attention could be given to:

- Samora Avenue, which has lost its previous boulevard typology.

[24]For a detailed presentation of the survey documentation and the project proposal about the City Centre, see the Technical Supplements No. 2.6 "The City Centre" and n.2.6.1 "CBD – Cataloging Building".

[25]The proposed Detailed Plan for the City Centre is presented in the Technical Supplement n.2.6. The three project maps are attached also to the Main Report, maps n. 3.5, 3.5.1 and 3.5.2.

- Zanaki Street, one of the first streets in an urban morphology since the German period.
- Indira Ghandi Street that could be given back to its Indian morphology.

The Dar es Salaam city centre has a clear urban morphology characterized by a road network parallel to the water front underlined by valuable architectural examples able to make Dar es Salaam one of the most interesting examples in town planning and architecture in East Africa. As for urban landscape one can find an environment reminding one to the age of the German domination and of the British administration conserved.

Preserving, maintaining and rehabilitating architectural and urban heritage should be the foundation of the new CBD.

To protect the urban quality still present in Dar es Salaam it is necessary to extend the listed buildings with other artifacts as the plan has proposed in the Technical Supplement.

It is proposed to control the emergence of skyscrapers in favour of the original low-rise urban scale of Dar es Salaam.

For this purpose a survey sheet for each building with specific value has been prepared, which explains the suggested operation for its valorisation in detail .[26]

Facilities

High quality commerce and public facilities are expected to contribute to give the city centre a better own identity. These will attract more tourism in the city.

In the meantime, the city centre should be provided with public facilities that would help to coordinate and integrate such an effort. Cultural services which satisfy this purpose are, for example: public libraries, museums, exhibitions, the Botanical Gardens, theatres, cinemas, information points, book shops, music stores, tea/coffee houses, and sports centers.

14.2.3. Mobility and pedestrianisation

To create a good quality environment it is necessary to provide also safe and clear mobility. The Master plan aims to increase urban quality through pedestrian and bicycle routes and through an easy access to public transports.

Motor vehicle pressure has actually reached a traffic jam end-point that creates dangerous situations for pedestrians. The first goal for the city centre should be to reduce it. In the long-term vision, many of the central areas will be for pedestrians only,

Pedestrians will be the massive actors of the city centre. Motor vehicles should be gradually substituted by pedestrians and bicycles. To reach this objective, the city centre must be provided with adequate parking areas located along the city boundary; while for those vehicles that will enter the central areas, proper parking areas along the streets must be provided, that should not interfere with side-walks or with lanes.

To improve the quality of the environment it is also necessary to implement a policy oriented to reduce vehicular traffic and to improve a good management of the mobility. Alternative transport systems should be planned to reach the city centre from the other districts of the metropolitan area. The Master plan suggests the introduction of an urban railway line and promotes integrated actions with the actual project of the DART, which is accepted and included in the Master plan proposal. To facilitate a reduction of the commuting motorized traffic to the city Centre, it will be useful to introduce new parking facilities near the DART lines and to provide shuttle buses to and from the car parks and the main attraction poles of the city centre.

The city centre lacks safe pedestrian ways and services for the city residents. Pedestrian areas and a better network of sidewalks, in combination with the conservation of cultural heritage, would be a good start to the development of new urban activities in the field of cultural and creative economy.

In the short term, pedestrian areas are proposed for part of the CBD and the Kariakoo area. It will be necessary to requalify these areas, providing them with urban furniture and proceeding with the restoration of the existing buildings. The central area would then become more attractive to people from abroad and from other parts of Tanzania.

In parallel it is suggested to improve the use of the bicycle for private mobility in Dar es Salaam and a particular attention must be given to the mobility of handicapped people. The sidewalk network must be completed and qualified for the benefit of handicapped people, introducing ramps. Reserved bicycle routes must be introduced to promote bicycle use.

14.2.4. Open spaces

Dar es Salaam has historically had always large green areas to boarder each part of the city centre. Most of these areas are still present and these are cultural elements strictly connected with the quality of life in Dar es Salaam.

It’s necessary to upgrade these areas and to develop the possibilities of the Dar es Salaam communities to have new places for sport activities and playgrounds for children.

Open spaces, either green zones or urban ones, should be connected to each other into a whole, creating a system of physical relations for urban aggregation.

[26] See Technical Supplement No..2.6.1 “CBD Cataloging Buildings”

The links in between could be walkways redeveloped and improved on existing streets, even, new walkways and bicycle ways designed on new routes.

In the City Centre the Master plan improves the green areas through many detailed project proposals. All the green areas are connected to each other with footpath and cycle routes. Along these routes, protected playground for the youth and services such as toilets are planned.

14.2.5. Waterfront Development

The most representative place in Dar es Salaam is the waterfront, now used only as a road in the main road network of Dar es Salaam.

Waterfront rehabilitation is essential to reach a good urban quality of the city as a whole. Meanwhile, commercial activities, leisure areas and pedestrian routes facing the waterfront would benefit by privileged sightseeing and by the unique quality factor.

As already realized in many international examples in cities on the water, with the waterfront rehabilitation the old buildings, sheds and warehouses not anymore in use for port activities can be converted to cultural/public functions.

The waterfront of Dar es Salaam can in this way become again the “main entrance” and the best place of the city, where in a competitive dialog among the renewed and restored buildings, with appropriate urban furniture, we could obtain a high urban quality able to attract tourism and other economic activities[27].

14.3.Design Guidelines

The guidelines for the City Centre are articulated with reference to the three main neighbourhoods; CBD, Kariakoo and Upanga.

The CBD is an area of preservation, where for each area and building specific criteria of intervention are prescribed. The main categories are:

1) Building Renovation
2) Restoration Type A
3) Restoration Type B

Kariakoo is confirmed as a commercial-residential area, where we want to maintain the original urban texture and where the possibility of renewal depends on the respect of some parameters indicated in the specific part of the Technical Supplement and the Design Guidelines.

[27]On this aim of the Detailed Plan for the City Centre see the Pilot Project resumed in the following §a.7).

Upanga is confirmed as a residential district, where it is possible to improve the housing following the rules indicated in the specific part of the Technical Supplement and Guidelines.

For the new constructions in Kariakoo and Upanga, the Design Guidelines are based not only on the single plot dimension, but it is also obligatory to design a specific Detailed Planning Scheme.

14.3.1. City Centre - Pilot Project: the Waterfront

The Waterfront of Dar es Salaam is characterized from its environmental quality and from the historical buildings, often occupied by functions useful for the metropolis and for the entire country.

The detailed plan scheme for the water front would like to improve the existing qualities, introducing new functions in modern architecture and in the conserved parts of the proto-industrial port warehouses. The waterfront will become the most attractive element of a network, composed by parks and open spaces connected by gentle mobility (pedestrian and cycle) qualified also by the presence of playgrounds and spaces for sports activities. The urban quality will grow with the introduction of a pedestrian area along Sokoine Drive where the access is ensured with the public transports, DART and the Parking and Ride system.

The water front is also part of a cultural "promenade" that has its start in Mosque Road, runs along Mission Street and finishes in the new cultural area where you will find exhibition buildings, concert hall and other leisure functions. This part of the water front is completed with the proposed construction of high buildings for hotels, flats and offices; new landmarks for this part of the town. To create a living space for all the hours of the day, able to satisfy all the components of the society, we will also introduce sports facilities, as for example basket and volleyball fields and a new sports hall for indoor activity.

All these functions are connected by footpaths in green areas, restored and improved with the introduction of urban furniture and public lighting, able to control the area also during the night; a scenography public lighting must be introduced to emphasize the entire water front. In proximity of the Dart connection the construction of some facilities for the passengers, waiting for the public transports, is planned. To facilitate the parking of private cars and to improve the use of the public transport, in Kivukoni front a multi storey garage is planned, integrated with the orography of the waterfront.

Figure 14.1: Waterfront Pilot Project

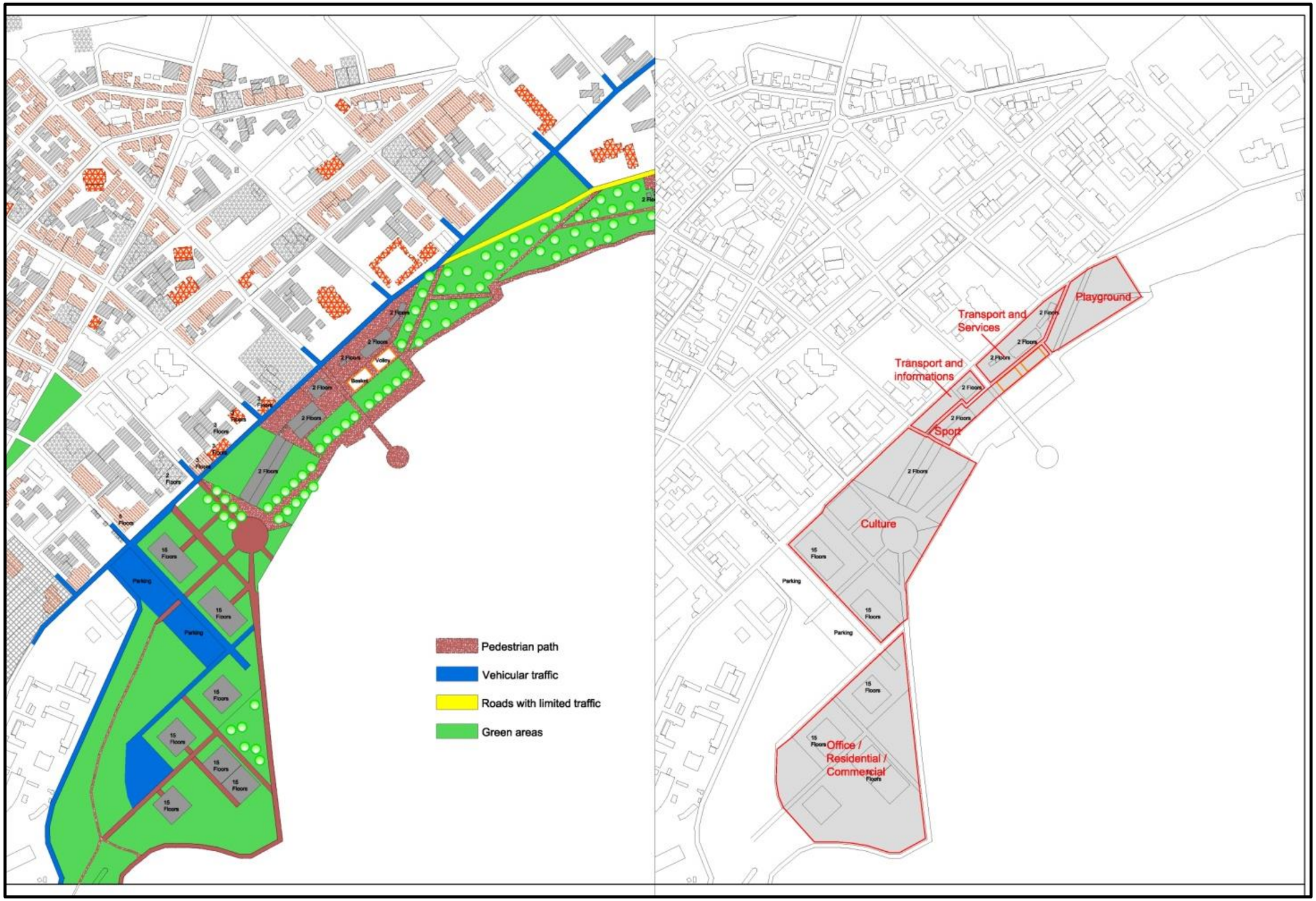


Figure 14.2: Waterfront Pilot Project - Detail of the proposed open space and building use

Plate 14.1: Waterfront Pilot Project - Rendering

14.3.2. Proposed Urban Environmental Quality

The goal in improving the environmental quality of Dar es Salaam city is to transform it into a city inspired by the criteria of green cities to be attained during the twenty years validity period of the Master Plan. In this regard, the master plan proposes to improve access to the environmental areas in Dar es Salaam, taking into consideration the fundamental objectives related to urban sustainability, especially in large cities the size of Dar es Salaam. Sustainability is a key development agenda of all national governments, as sanctioned by the UN conference in Durban and is becoming a key asset of many local governments for planning of large and small cities. The theme of sustainability includes a system of

complex set of actions that go beyond pure territorial choices, playing a fundamental role in the overall social, economic and physical spheres of urban development. The master plan proposals for Dar es Salaam, lay focus on interventions at four levels:

i. Creating the system of green areas: two actions are proposed with respect to existing urban parks that should be preserved, increased and improved; and recommendations for new parks that should be developed, especially along fluvial plains of the many rivers in the city as well as a new system of district or local parks with adequate space to be implemented in the proposed new areas of city expansion;
ii. Protecting the coast line, where possible widening the area under protection;
iii. Reorganizing the entire mobility system including construction of the proposed rail transportation system and the construction of a parking system linked with the BRT and proposed rail routes. The aim is to create predominantly pedestrian areas of restricted vehicular traffic, particularly in the CBD and in the new urban sub-centres;
iv. Defining a system of rules and regulations that encourages and, where possible, imposes all actions aimed at environmental sustainability, such as rules to prescribe minimum provision of green spaces in new residential areas; and introducing a system for rewarding those developments that conform to the criteria for green building.

14.4. The Dar es salaam Master Plan Sectoral Proposals 2016-2036

14.4.1. Proposed Economic Development Strategy (Tourism Industry, Logistics, Trade and Commerce)

Economy and employment strategies

This section outlines recommendations and implementation actions for the Economic Activities and Employment component of the Master plan. It is the result of analysis of data obtained from field surveys as well as industry and stakeholder consultations relating to population and demographics, social infrastructure and quality of life, economic activities and employment. Implementation of the Dar es Salaam City Master plan 2016-2036 will play an important role in directing and supporting the growth of the City's economic activity and employment opportunities.

The growing city will need to accommodate 13.3 million people by 2036, many of them young and economically active. Providing employment and livelihood opportunities is therefore a critical objective for the city. As the city grows and evolves, various sectors of economic activity will grow, shrink and change in their structure. This Master plan must accommodate and provide opportunity for growth amongst those large employment and high economic value sectors, which already characterise the city's economy, the small and medium sized informal businesses that collectively employ the majority of the city's economically active residents, and provide for future innovation and enterprise amongst the existing and future residents of the city.

Four economic objectives have been set for this Master plan to respond to the socio-economic context. These economic objectives are to:

- Support and encourage growth of the existing business base – especially small and informal businesses;
- Create new employment opportunities in a diverse range of sectors;
- Increase the range and quality of public service provision to the population; and
- Ensure an adequate range of supportive infrastructure to enhance economic performance and quality of life.

Tanzania has continued to experience a strong economic growth, with GDP growing over 6percent since 2011/2012. This growth is forecast to continue at 6.5-7.0percent per annum (2012-2014, World Bank). A large percentage of this growth is generated by economic activity located in Dar es Salaam City, the principal commercial centre in Tanzania. The city however, faces many challenges and has to address some critical issues to successfully deliver on both the economic objectives and vision for the city. These unique challenges and the opportunities they present include:

- The informal economy has for long been critical to sustaining the livelihoods of many of the city's residents. It has demonstrated the innovation, entrepreneurship and individual capabilities of many residents where formal opportunities are not numerous or diverse enough to sustain the city's economically active population. By its nature, the informal economy is not planned for or accommodated by any formal planning mechanisms, aside from limited council permit regulations. In order to harness the full benefits of this economic activity both to grow and add value to the economy, including increasing the number of jobs, economic value and ensuring businesses contribute to the city's tax base, there must be some formal planning interventions and support to individuals working in the informal economy;
- There are major sectors with the potential to deliver greater employment in the city but many are currently under-developed. Currently the Port, which is a major economic sector in the city, delivers relatively little direct and indirect employment. Opportunities to spur growth of new businesses related to activities at the Port need to be explored. The Master plan must remain flexible enough to allow innovation and entrepreneurship space for growth that is not currently visible or is yet to emerge;
- Physical provision of social infrastructure, which is the backbone of delivering critical social

services such as health care, education and training and emergency services, is severely underprovided and of poor quality. It is limited in both its physical location and availability and by the quality and number of available skilled staff and support resources;

- Infrastructure is also insufficient and the utilities unreliable. Provision of affordable, accessible and reliable public transport is critical to all types of economic and livelihood activities. Likewise access to water for production, irrigation and personal use is important to all economic activities. Currently provision of this type of 'hard infrastructure' is sporadic, unreliable and at times costly. Coordinated investment and prioritisation is critical to improving the provision of this infrastructure and utilities; and
- Across all public services, the size of the investment required exceeds by far, the available resources. Provision of water, electricity and basic health services remains a challenge. The Master plan provides a coordinating base for all agencies to work collaboratively towards planned investment with the resources they have available, rather than in the current sporadic and uncoordinated manner of investment, which is often wasteful of resources.

Ensuring equitable access to these opportunities is a crosscutting issue in any plan for economic growth. Where existing resources are limited, it is important to consider the distribution of these resources. The Master plan proposes policies and strategies across the entire city including informal residences and businesses, and supports the work undertaken to improve the living standards in these areas such as the Community Infrastructure Upgrading Programme (CIUP).

Employment

Dar es Salaam's economy is characterised by a number of different types of employment. The principal categories of employment are:

i. Informal employment – defined as a "subset of household enterprises or unincorporated enterprises owned by households". This definition excludes agriculture but includes urban agriculture (2006).
ii. Formal employment – defined as private enterprise and public sector employment.

Informal Employment and Home-Based Enterprises

More than 50percent of all households representing about 27percent of the economically active population (2006) in the city are engaged in informal sector activities. This figure has fallen since 2001 when more than 60percent of households were engaged in informal employment. Informal employment is an important source of livelihood opportunity for many residents of the city, and will continue to be so in the foreseeable future. Although most types of informal enterprise are outside of the official taxation and regulation processes, they contribute significantly to the economy by providing employment opportunities, as well as making goods and services to under-served markets such as in informal residential areas. Principal sectors of employment include small-scale retail and subsistence, small-scale fabrication and commercial urban agriculture

Formal Employment

The formal sector employment comprises a small part of the total employment, but it is growing, rising from 8.0percent of the total employment in 2005/06 to 13.1 percent in 2015/2016 (NBS, 2016). Formal employment is provided in a number of sectors, ranging from low skilled retail to highly skilled banking corporations. The Master plan therefore:

i. Recommends appropriate planning legislation that recognises the importance of informal enterprise work space such as home-work spaces and the provision of decentralised commercial and industrial areas, whilst protecting residents from noisy, dangerous or environmentally unfriendly production facilities and activities;
ii. Supports the allocation of spaces for roadside sellers and market places that are accessible and which maximise sales opportunities for vendors without endangering vendors or pedestrians or interfering with the flow of traffic;
iii. Provides for urban agriculture in formal land use planning and zoning;
iv. Attaches great importance to the safety for females and young adults to travel to their place of business and whilst working through the provision of affordable and accessible regulated public transport; and
v. Identifies and provides suitably located and available land for the growth of private sector businesses.

14.3.2. Proposed Social Facilities

Tanzania must have a good infrastructure for social services provision, which is inclusive of women and people with different abilities. Adequate comprehensive social services provision in a city has multiple advantages to the residents and business units in that it reduces the cost of living and doing business in the city as well as increasing efficiency of the economy. Dar es Salaam would emerge as a more competitive city as a result of investment in social services and economic infrastructure, which cannot be made by the private sector, as the cost of doing so is prohibitive. Provision of general primary health care and universal education is difficult for the private sector. Local governments and at times central government, therefore have a responsibility to invest in social services as a strategy to attract investment and create more opportunities in the city. A healthy and well-educated city workforce would attract more

opportunities than in a situation where the general level of education is low or where efforts by the employer are required to promoting health condition of the workers before they can be employed. Bold investments must be introduced in the areas of social and economic services in order to influence the cost of living and doing business in the city.

Competitive social services in a city include having in place adequate schools at all levels, health services that are compatible with the population, good water supply services, convenient transport services and a good network of other municipal services including urban cleaning and sanitation management as well as city beautification. Other social services that are important in a city include safety and security, support to the homeless, the poor and those who are physically challenged so that they can be employable and useful in a city. Dar es Salaam City will be a lovable city and a lot more if it can offer social services including recreational and urban aesthetic (the visual appearance) in an inclusive manner. These are fundamental issues that contribute immensely to making cities not only economically competitive but also lovable and attractive to different stakeholders. Dar es Salaam City is currently facing many challenges in this area and considerable effort is required to address the quality and quantity of social services available to inhabitants of the City.

Proposal for Social Services

The population in each of the municipalities of the city is relatively big and compares favourably with population of selected regions in Tanzania28. The present size of the population and that projected in the immediate future demands a decentralized and clearly articulated system of service provisions. Some government Departments are already treating the three Municipalities as regions [Police, TANESCO and TRA to mention but a few). The five municipalities have multiple electoral constituents, namely: Ilala, Ukonga, and Segerea in Ilala Municipality; Kinondoni and Kawe in Kinondoni Municipality; Ubungo and Kibamba in Ubungo Municipality, Kigamboni in Kigamboni municipality and Temeke in Temeke Municipality.

Considering the population trends, its distribution over wide areas, congestion in existing infrastructure and the population growth in the metropolitan area, the five municipalities need to reorganize the manner in which they provide social services to fit in with the present situation and anticipated changes in the future. In each municipality, it is proposed to establish urban districts or zones around which to organise provision of social services. The current electoral constituents could be a starting point. In the Existing city, and particularly in the informal part of the town, this programme can be implemented following the process of urban renewal[29] and reinforcing the strategy of upgrading along the main roads in these neighbourhoods.

In the future expansion areas of the city, the spatial reference for the location of the social services infrastructure will be the proposed new Urban Centres, which will serve each planned Urban Unit[30.] The proposal is that social service provision should now be decentralized and provided on the basis of population in different centres.

In each urban centre provision of district level social services should be constituted and provided. This includes setting aside spaces for college, secondary and primary school establishments as well as hospitals and health centres. At an Urban sub-centre level, the ward level social services should be provided on the basis of population[31].

It is also proposed that the municipalities set aside land for the development of the new urban sub-centres and prepare designs to guide land use developments in accordance with the proposed strategies of social service provision[32]. These proposals will move social services closer to the people. The strategy will not only match with the new propositions of developing new urban centres in each municipality but also address challenges of congestion in the present facilities, decongest national and referral institutions and increase efficiency in service delivery.

Location of Key Social Services

In order to provide social services efficiently and decongest the city centre, there is a need to decentralise social and economic service provision to each municipality. The new urban sub-centres would yield a number of benefits, which include the ability to integrate multiple development strategies and support from different service units in a reasonable distance. The following main services should be located in each centrality:

- District level hospital;
- A college or Vocational Education and Training Centre
- Civic Centre;
- Wholesale markets; and

[28]The population of one municipality may very well compare with the population or Lindi, Coast or Singida regions. This implies that there is some overstretching of facilities in the municipalities that need a redress.

[29] See the Technical Supplement 3 “The Informal City”.

[30] See chapter 3, section3.9.1 of this Report.

[31]See the standards presented in the Technical Supplement n.2. “Social Services provision”.

[32]See the Pilot Project of the Urban Centrality, chapter 3 section3.7.4

- A resident magistrate's Court and a Police Station.

It is also proposed that municipalities prepare comprehensive education infrastructure development plans and allocate adequate and appropriate land sites. Each urban unit (community) of the newly planned areas should have 4 primary schools (1 in each neighbourhood) and one secondary school. Every two urban units must develop a common high school. These strategies have the advantage of reducing commuting distances for students as they will be studying within their wards and residential zones. Table 10.3 presents data about the projections and scenarios.

Water Supply - Bridging the Gap between Potable Water Demand and Supply in 2036

Current demands per capita vary from between 30 and 90 l/p/d in unplanned settlements to 140 l/p/day in the City centre. The existing installed treatment plant capacity is 330,000 m3/day across Upper and Lower Ruvu River and Mtoni sources (DAWASA, 2016). With an expected population growth of 375, 000 people per year from 2014 to 2036 and a representative average demand per person of 90l/p/d the demand can be estimated to rise to 1,245,350 m^3/day. (DAWASA, 2016)

The water and sanitation improvement plan, which was published in January 2011 by the Ministry of Water, states a range of upgrade projects with funding from 2011 to 2013. These include the expansion of the upper and lower Ruvu water treatment plants; construction of Kimbiji and Mpera boreholes; construction of the Kidunda dam; water network expansion and improvement of supervision and service delivery. The interventions are expected to cumulatively increase the supply to 686 million litres p/d, which will equate approximately to the estimate demand required in 2024. Hence in order to meet the 1,245,350 m^3/day demand estimated for 2036, an additional 559,350 m^3/day of treated water must be made available.

Considering that the Kimbiji underground water aquifer is located in the Kigamboni area which planned for fututure expansion of the city, the proposed landuse plan allocates a sufficient buffer zone around the proposed water wells to avoid contamination from domestic and other sources of water pollution.

Of the water that is supplied from the source, 57percent is currently classified as non-revenue water (EWURA, 2010, p. 59). Hence if the existing systems were to continue to be used and without any investment in reducing losses, the additional water resource required would increase significantly. In order to supply the 1,245,350 m3/day required (despite 57percent losses) 2, 184,800 m^3/day would actually need to be produced. An additional treated water resource of 1,238,350 m^3/day in addition to the planned upgrade to 686,000 m^3/day would need to be installed too. Therefore, in order to avoid unnecessary investment and wastage of water resources, all effort should in the short term, focus on significantly reducing the amount of water lost. This requires investing in upgrading programmes, commissioning studies to detail the extent of the infrastructure and application of leakage detection technologies.

It is also recommended that potable water storage tanks with a capacity equivalent of (1-2 days demand, 4,800 m^3/urban units) be installed as part of the future city. These can be developed as centralised and modular tanks, or in a set of decentralised tanks. Both options can be designed to correspond with the planned development phasing to minimise upfront capital investment. They can either be underground, typically 3m deep with a (10 x 10) m buffer zone to allow access, or alternatively elevated which provide the additional benefit of enabling gravity flow.

Waste Water Management

Conveyance of the Increased Waste Water Flows in 2036

With a population expected to rise to 11.9 million by 2036, demands for wastewater disposal capacity will increase proportionally. According to the Strategic Sanitation Plan for Dar es Salaam current sewage production is between 360,000-400,000m^3 and day. With a potable water demand expected to rise to 1,245,350 m3/day, the volume of wastewater which will need to be treated and discharged will rise up to 1,058,550 - 1,072,380 m3/day. The existing sewage network capacity is estimated to be around 38,000 m3/day; less than 10percent of the current demand and less than 3.6percent of the expected demand for 2036. An investment in network extension and reinforcement is critical to preventing an escalation of health issues associated to poor sanitation and to avoiding aggravation of ground water pollution.

DAWASCO are planning to extend the network over the next 20 years focusing mainly on the city centre. The existing network should be upgraded and extended in coordination with on-going highways improvement plans and utility provision programmes so as to maximise efficiencies from co-location of service and trenching and minimize public works and disturbance. Areas where densification of population is planned provide cost efficient opportunities for network expansion and should be in focus, in the short term. Examples are the Sinza, Mwananyamala, Makumbusho and Kijitonyama areas, in which the population is expected to grow by 195percent - 273percent over the next 20 years.

The DAWASCO plan also allows for 3 additional waste-water treatment plants. Proposed plant locations have been selected based on a set of criteria, which include topography and proximity to possible effluent discharge points. These appear to align relatively well with the new satellite areas proposals. WWTP1 outside the CBD requires a large area as it will be vital to the treatment of the CBD's wastewater. It is planned within the protected area surrounding the CBD, which is also a flood plain.

Plants must be designed and specified to take into consideration potential impacts of odour, level of contamination of incoming wastewater and effluent quality specifications, associated pumping requirement and local availability of power, and vulnerability to flood risks. Odour control, for example could be addressed by designating adequate buffer zones, covering the tanks or injecting oxygen into them. The DAWASA /DAWASCO plan also includes outlets to enable reuse of treated effluent for irrigation purposes which is endorsed and in line with international best practice.

The CIUP has also proposed decentralized sanitation solutions in unplanned and unserviced areas where remoteness and lower density development may make it less feasible to extend and connect to existing and proposed networks. There is potential for reinforcing the decentralised systems in these areas through more effective method of latrine emptying and clear regulation of this service; designation of areas for wastewater disposal and improved facilities such as composting latrines.

In order to cater for future needs of the city, the installation of decentralized localized sewage treatment plants should also take consideration of planned improvements in the supply of potable water. Decentralized sewage treatment plants could be modular and phased to match development occupation. Furthermore a decentralized approach to wastewater management would have the added benefit of eliminating the need for lengthy large-scale trunk infrastructure. However, decentralized wastewater treatment will also require some degree of local operation and plant management. The most suitable approach will depend upon the local government preferences in terms of plant management, maintenance and operation approaches.

Managing Storm Water by 2036

The CIUP programme is upgrading and extending drainage infrastructure in upgraded settlements. If growth were to continue exponentially without any regulations of typology of development or drainage infrastructure upgrading programmes; overland flows would be expected to similarly increase alongside risks of flooding. Network extension programmes are also conducted regularly by TANROADS as part of road upgrading programmes however; these stand-alone projects do not appear to be part of a comprehensive citywide drainage strategy. The responsibility for flooding is shared between TANROADS, local communities, the City Council and the Wami-Ruvu Basin authority with critical meteorological data being provided by the Tanzania Meteorological Agency and private owners of rain gauges.

Significant reduction in the exposure to flood risk and improvements to the management of storm water could be achieved by consolidating the roles and responsibilities and allocating the responsibility for flood risk management and protection to one authority. Land development regulations must also be detailed and enforced more effectively and should specify required percentages of natural draining areas The requirement for new or upgraded drainage infrastructure associated to any new development should be considered as part of the planning approval process, and development should not be allowed to progress without an accompanying plan for surface water management and safe discharge.

Solid waste management

The plan proposes a number of sanitary landfills in each of the five municipalities in the city except for Temeke, which is anticipated to share a landfill with Kigamboni.

Kigamboni and Temeke Municipalities: The plan proposes a sanitary landfill in Kisarawe II ward in Lingato sunward to be developed as previously proposed by Temeke `municipal Council and currently (2012) it is at the stage of Feasibility Study for its completion. This project covers 500 acre of land.

Ilala Municipality: The plan proposes effective upgrading of the existing Pugu dumpsite to a sustainable sanitary landfill. Location of the site is in Pugu Ward, Pugu Kinyamwezi locality.

Ubungo Municipality: The plan proposes a new sanitary landfill at Kisopwa near the Mlonganzila University

Kinondoni Municipality: The plan proposes a new sanitary landfill in Mabwepande ward near Mpiji River. This had been proposed at the time of plan preparation (2012). The implementation will integrate the Sanitary Landfill with a Compost Processing Plant.

Specific proposals to improve solid waste management in Dar es Salaam are:

Re-designing the solid waste management system in the city

This is to decentralize service delivery and day-to-day solid waste management responsibilities to the ward level of administration. The following actions should be taken to enhance efficiency in managing solid waste at that level:

i. Establish permanent waste collection points and transfer stations
ii. Encourage solid waste sorting at source where waste should be placed in labelled or colour coded waste-bins, by for example separating between biodegradable materials, metal, glass, paper, plastic wastes;
iii. Timely removal of waste from the collection sites and transfer stations to dumpsites; and

iv. Impose heavy fines and other penalties should be imposed on those who do not comply with proper waste management guidelines.

Streamlining responsibilities of the municipal councils

This is to focus on providing technical support to the wards by taking the following actions:

i. Establish, develop appropriate sanitation systems that operate properly, are well maintained and regularly monitored to ensure that the waste management services are available throughout the city at satisfactory levels;
ii. Ensure that waste recycling activities are established, formalized and rationalized;
iii. Undertake environmental education and public awareness at all levels of the society about the proper waste handling and general cleanness of the city;
iv. Engage NGOs, CBOs and the private sector in the delivery of waste management services and enforcement of relevant laws and bye-laws;
v. Undertake investment in the development of waste management infrastructure, establish sanitary landfill, acquire adequate and appropriate equipment and refuse collection trucks; and
vi. Design and implement sustainable beach management programmes including beach cleaning.

Sanitation

The Ministry of Water and Irrigation in their 'Special programme for improvement of water supply and sewerage services in Dar es Salaam 2011-2013' specified 'expansion of the sewerage system' as one of the action plans of the programme. Planned extension of network was expected to cover most parts of the City Centre. The programme also lined for an increase in sewerage connections from 24,000 to 50,000 by 2015 increasing capacity from 38 to 68 million litres per day. Three additional sewage treatment plants were proposed.

Power and Energy

- Improve the quality and reliability of energy services

TANESCO should give priority to improving its transmission and distribution sub –networks, as well as the HVDC networks. The power supply company should also establish and revisit the areas highlighted in the City as part of the ESMAP and DTRP projects to ensure that networks within Dar es Salaam City are strengthened to enable the future generation capacity to be resilient.

- Connecting households, schools, health centres and businesses

14.3.3. Proposed Commercial Land Use

Retail and Wholesale Trade

Retail and wholesale trade is the largest employing sector in the city, employing 31.2percent of the total labour force (ILFS, 2016). A substantial component of this sector is informal in nature. According to the 2005 business survey 60percent of businesses in the sector were small scale, and independent operators.

The sector predominantly serves the local market with household consumables. Growth will continue in this sector as the population increases. However, without growth in the economic value of other sectors it is likely to remain low-value in terms of income level as the general income level remains low in the city.

Growth within this sector could be larger if regional and international markets can be accessed either through sales to tourists and visitors or through growth in exports to other markets. The retail and wholesale trade sector will benefit from the growth of other sectors including manufacturing, port related activities and tourism. The key sub-sectors within the retail and the wholesale trade are likely to include the following:

- Food & Beverages
- Clothing
- Footwear
- Furniture
- Household, Lighting & Hardware

Recycled Human Waste: Human waste that is rich in nutrients is currently discharged in such high concentrations that it poisons the environment. It can instead be recycled to produce methane fuel pellets and fertilizers. Grey water can be filtered through natural systems on site and be re-used for irrigation of urban landscapes or to restock local aquifers. Experimental sewerage treatment schemes that discharge their waste below industrial forestry have been shown both to increase the growth rate of the forests, woods and parks and to restock local aquifers with purified water. Clean water is recognised as the critical resource of the coming millennium, and Dar es Salaam must develop systems that maximise the efficiency in the use of the waste.

Second hand motor vehicles

These activities are generally located informally along busy roads and transport routes, as well as within market areas. Small-scale vendors sell directly to traffic on major transport routes. There is little

provision of formal trading areas, and previous attempts to locate vendors within purpose-built areas failed because vendors prefer to locate closer to consumers as they travel to and from their residence and place of employment, as well as preferring the flexibility to move locations.

The Master plan therefore:

- Supports the activities of vendors allowing for pedestrianized areas suitable to trading, areas for trading along main transport routes and at public transport terminals;
- Supports the development of local markets within the informal settlements and in the future satellite centres, proximate to formal employment areas and highly pedestrianized areas; and
- Promotes development of Port related activities and the manufacturing sector in the proposed Master plan realising that it will enhance the growth of locally produced goods for the regional and global markets.

Further policy recommendations:

- Increasing the value-added in this sector and in the size of the market requires appropriate skills development and capability. Programmes to assist the export of goods to regional areas and international markets should be developed; and
- Informal traders should be supported through capacity building programmes, providing supportive policy and services such as simplified business registration programmes.
- The environmental chapter outlines a number of recommendations to address issues of environmental pollution and mitigate land use conflicts; and
- The transportation chapter provides further detail on the plans for improving connectivity to the port and regional transport networks.

The Construction Sector

Data from the socio-economic surveys indicate that the construction sector accounts for 55 percent of all employment in Dar es Salaam city (CRB, 2016). With the population of the city expected to more than double in the next 20 years, the construction industry is likely to grow exponentially due to the demand for housing and new infrastructure development in the proposed areas of expansion of the city. Its role in providing employment will increase proportionately.

The Master plan therefore:

- Encourages investment in infrastructure, residential developments and new industries that will increase the need for construction
- Provides industrial space suited to construction storage facilities
- Through supporting the formalisation of informal residential areas more permanent and complex building structures will be encouraged requiring specialist construction skills i.e. multi-story dwellings.

Further policy recommendations:

Developing tailored and accessible skills and capacity building programmes for the construction and related specializations, such as plumbing.

Commercial / Business Services

The Master plan:

- Allows for home-based enterprise;
- Provides for vendors to be located on busy transportation routes; and
- Provides a variety of commercial and industrial space for new sectors to locate in.

Further policy recommendation:

This swill provide supportive business environment for small and informal enterprises as outlined above in the employment section.

14.3.4. Proposed Port-Related Activities

Port-related activities are amongst Dar es Salaam City's strongest opportunity sectors. The Tanzanian Port Authority is actively managing and seeking to expand the port and associated activities. Implementation of the Authority's Master Plan will enhance the role of the port in the city's economy and increase the variety of commercial opportunities available. Further supportive investment is required to activate investment in related commercial activities.

Provision of supporting infrastructure and land for inland container depots is underway. The key Port related economic activities that should be targeted by the authorities for direct investment and to facilitate private investment include:

- Supporting transport services;
- Storage and warehousing;
- Logistics and freight services;
- Transport agencies; and
- Freight transport.

The Master plan therefore:

- Reserves land for expansion of the Port facilities, including supporting implementation of the Master plan developed by the Tanzania Port Authority;
- Identifies critical transport connections to improve the connectivity of the Port to regional and international markets;
- Supports the construction of inland container depots; and
- Avails commercial and industrial land for supporting economic activities such as those identified above.

Further policy recommendations:

The Master plan recommends promoting and facilitating investments in port associated services in partnership with the private sector so as to unlock opportunities that the port presents. This should be led by the Tanzania investment Centre (TIC) with support from the Tanzania Ports Authority (TPA).

Logistics and Related Production Activities

The harbour is an important strategic development facility for Dar es Salaam City and the country. Its structural and functional reorganization is therefore an essential aspect of the master plan proposals The Port Authority has already prepared development programmes that will constitute an important component in the implementation of the master plan. Modern ports do not only base their success on the traditional port functions of loading, offloading and handling of goods, but mostly on their transformation into specialized centres of logistics. This transformation involves, among other things, creating adequate space in areas adjacent to the docks, in which to perform all operations that logistical activities require. Logistical activities add considerable value to the ports, because they facilitate the handling of goods by providing specialized service, which often lead to development of freight zones, free port zones, and related industrial zones around ports. For this reason, the Master plan reaffirms the proposals of the Port Authority Master Plan and identifies one area of large dimensions, adequately equipped, supplied with sufficient energy and directly connected with the port, the railway system and the main road infrastructure, where to locate these activities starting with logistics and extending to a wide range of manufacturing sectors. In addition, the logistical activities must be supported by a specific "culture of logistics" that can be developed within the city's universities. This policy area can have a strong positive economic impact, as well as strong effects on the urban structure of the city. The reorganization of the port areas, including the marine passenger service areas, will require a complete redesign of the entire waterfront and the areas behind it. This is recommended to be the main driving force for the redesign and urban requalification in the medium term.

14.3.5. Proposed Tourism and Recreation

Tourism is a key sector for Tanzania. Despite being a key transit route to regional tourist attractors such as the Serengeti and Zanzibar, Dar es Salaam City however, benefits very little from tourism and is not considered a main tourist destination by visitors. Developing an attractive tourist and recreation offer is a key challenge for the city. This sector could service local, regional and international visitors. Tourism is a broad sector and comprises a number of visitor-related specializations alongside some general industries that support specialised tourism activity. In combination, these sectors form a local tourism offer. The key tourism economic activities include:

- Hotels and accommodation;
- Restaurants and bars;
- Travel agencies and tour operators services;
- Tourist guides services;
- Visitor attractions;
- Museums, galleries and other cultural activities; and
- Retail.

There is a core set of generic requirements that all sectors need for growth. These will include a strong skills base generally, a good business support environment and training structures, effective transport networks with minimal congestion, as well as a strong business community that supports development of local supply chains and procurement opportunities.

The Master plan therefore:

- Advocates the conservation and allocation of natural resources for tourism and recreation, including development of:
    i. Oyster bay shoreline and beach;
    ii. Kigamboni shoreline and beach;
    iii. Kunduchi shoreline and beach; and,
    iv. Pemba Mnazi area in the south of Dar es Salaam;
- Preserves historical and cultural monuments, such as the CBD historical buildings;
- Proposes natural environment improvements - outlined in the Environment section; and
- Facilitates transport connectivity including public transport - outlined in the Transportation section.

Further policy recommendations:

Developing a tourism strategy for Dar es Salaam to coordinate public and private tourism investments, particularly for the tourist areas allocated in Kigamboni and Pemba Mnazi.

14.3.6. Proposed Infrastructural Facilities

Supporting Social and Physical Infrastructure

The provision of appropriate hard infrastructure like roads and utilities, and social infrastructure like schools and health facilities are critical to improving the quality of life and local economic attractiveness of Dar es Salaam for business and skilled residents. Table 10.4 indicates the type of additional infrastructure to be provided to support growth and development of the city.

Table 14.1: Additional implementation infrastructure.

Direct future growth towards the South in Kigamboni: In line with compaction going on, a parallel process of accommodating new population and other developments in the area south of Kigamboni city all the way to the city boundary where there is still vast undeveloped land to accommodate new residential, institutional, commercial and industrial development. The area can house much of the required development up to 2026.

It is envisaged that preservation of inbuilt land to the north and west through the creation of a Green Belt will enhance nature and provide opportunities for urban agriculture and recreation in the form of city parks.

Services and Directional Activities

Dar es Salaam City is a national commercial hub and a centre for international communication linkages. One of the strategic factors for the development of the future metropolitan city is its directional vocation and its role as a service centre for all high-level economic, cultural and administrative activities that reside in or refer to the city. This will be realized through the creation of proper location of services, easy accessibility and communications, higher quality of life and physical environment that makes it attractive for international and local companies to locate in the city.

14.3.7. Proposed Tourism and Heritage

Tourism

Tourism is the sole industry that continues to grow across the globe and although tourism has suffered occasional setbacks, the potential for further growth remains strong. Dar es Salaam City possesses enormous tourist opportunities: a constant and considerable flow of tourists enjoy the overall quality of the country from the coast to its inner territory, seeking a variety of pursuits, which include sightseeing, safaris, trekking, mountain climbing and seaside holidays.

The objective is to turn the city into a tourist destination in its own right. This would supplement, maintain and strengthen its focus as a distribution point for other destinations in Tanzania mainland and Zanzibar. Dar es Salaam City should create attractions for transiting visitors to stay, even if only for one night, to visit and experience the cultural, environmental and commercial attractions in the city. This requires a well-conceived urban development plan that opens up spaces for development of tourist attractions.

To bring this to reality, strategies to enhance the tourism opportunities of Dar es Salaam focus on three factors; services and facilities, the requalification of tourist places in the historic town and the development of the coastal tourist attractions near the city. The first action is urban renewal, as the key factor in attracting tourists. The other two aspects can be addressed by coordinating operators of the sector to develop a realistic Tourism Development Plan of the city incorporating the proposed Tourist Development Zone in the south of the metropolitan area.

Supporting infrastructure	Requirement
Transportation	• Efficient and affordable public transport; • Increased road capacity (to match decentralised City structure); • Management of freight network; • Integration with strategic national road network; • Support Port Master plan; • In-land container depots (adjacent to strategic transport connections); • 24/7 port operations; • Improved pedestrian and cycling facilities; and • Controlled provision for vendor activity on transport routes.
Utilities (Water and Energy)	• Provide safe, accessible and affordable water; • Provide affordable energy supply; and • Provide clear spatial planning (i.e. The Master plan) for infrastructure, to coordinate investment and expansion.
Communications	• Development of trunk communications and utility routes along major roads.
Social infrastructure	• Provision of appropriately located & sufficient schools, health facilities, emergency services.
Green space and recreation	• Provision of appropriately located & sufficient green space, recreation areas and facilities.

Culture and Education

The world economy today is knowledge driven. Knowledge will determine the future positioning of countries and cities. A competitive gap exists between countries that invest heavily in education, training and research and those that do not have sufficient resources to invest in these activities or to overcome historical disadvantages. Some of these countries however have sufficient basis of cultural tradition and political attitude to incrementally activate policies and cultural standards to join the on-going process of knowledge growth and contribute to the international community.

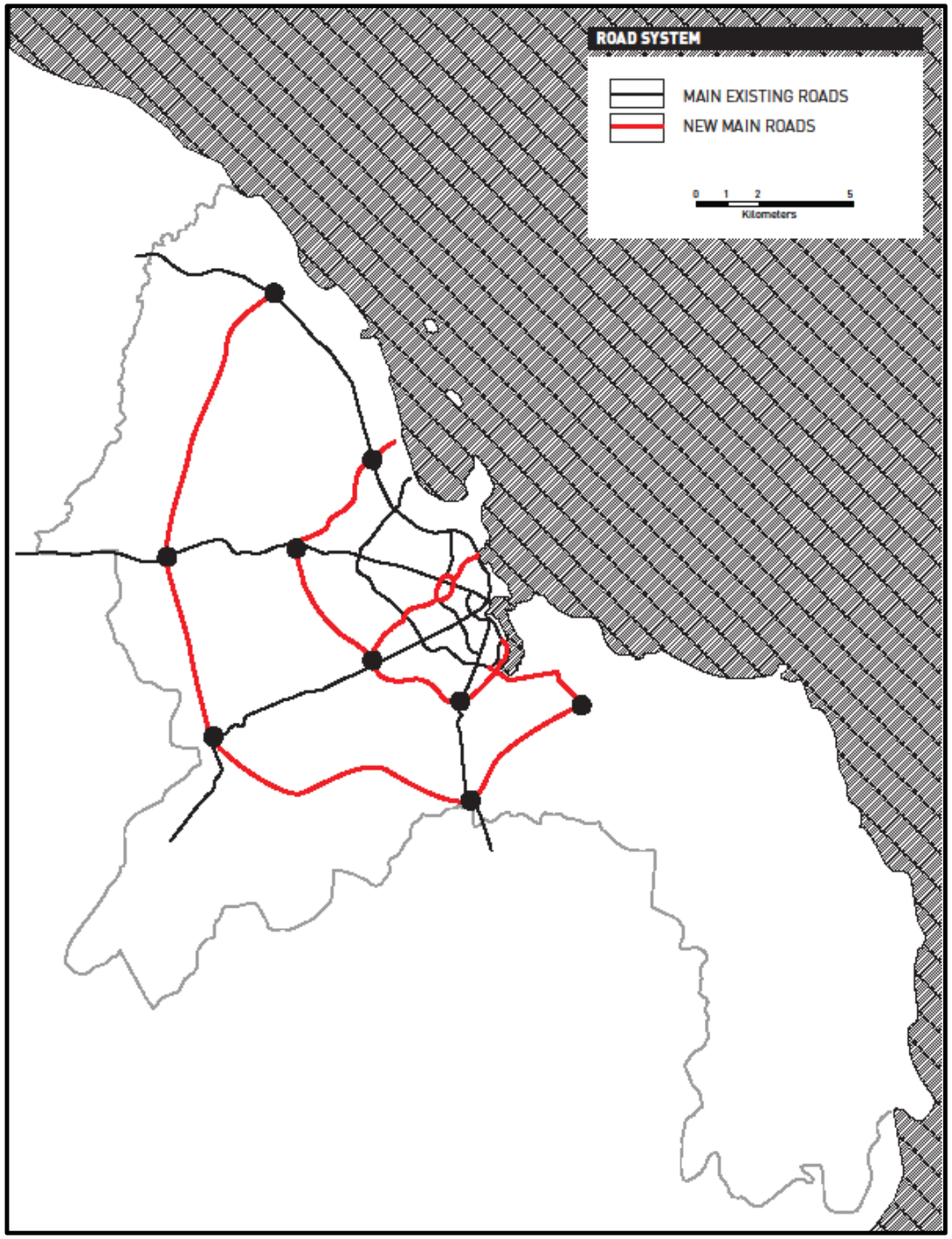
The presence in Dar es Salaam City of prestigious universities creates opportunities to implement policies of cultural progress with beneficial spin-off effects on the whole city and country. Physical and non-physical structures alike can be created around the universities. These may include business incubators; scientific and technological parks; international network relations; and institutions for cultural production in a wide range of fields. Alongside the university institutions, there are the museums, public libraries, theatres and other facilities that can help develop the cultural environment and play an important role in enhancing the culture of the city.

14.3.8. Proposed Transport Plan

The New Road System

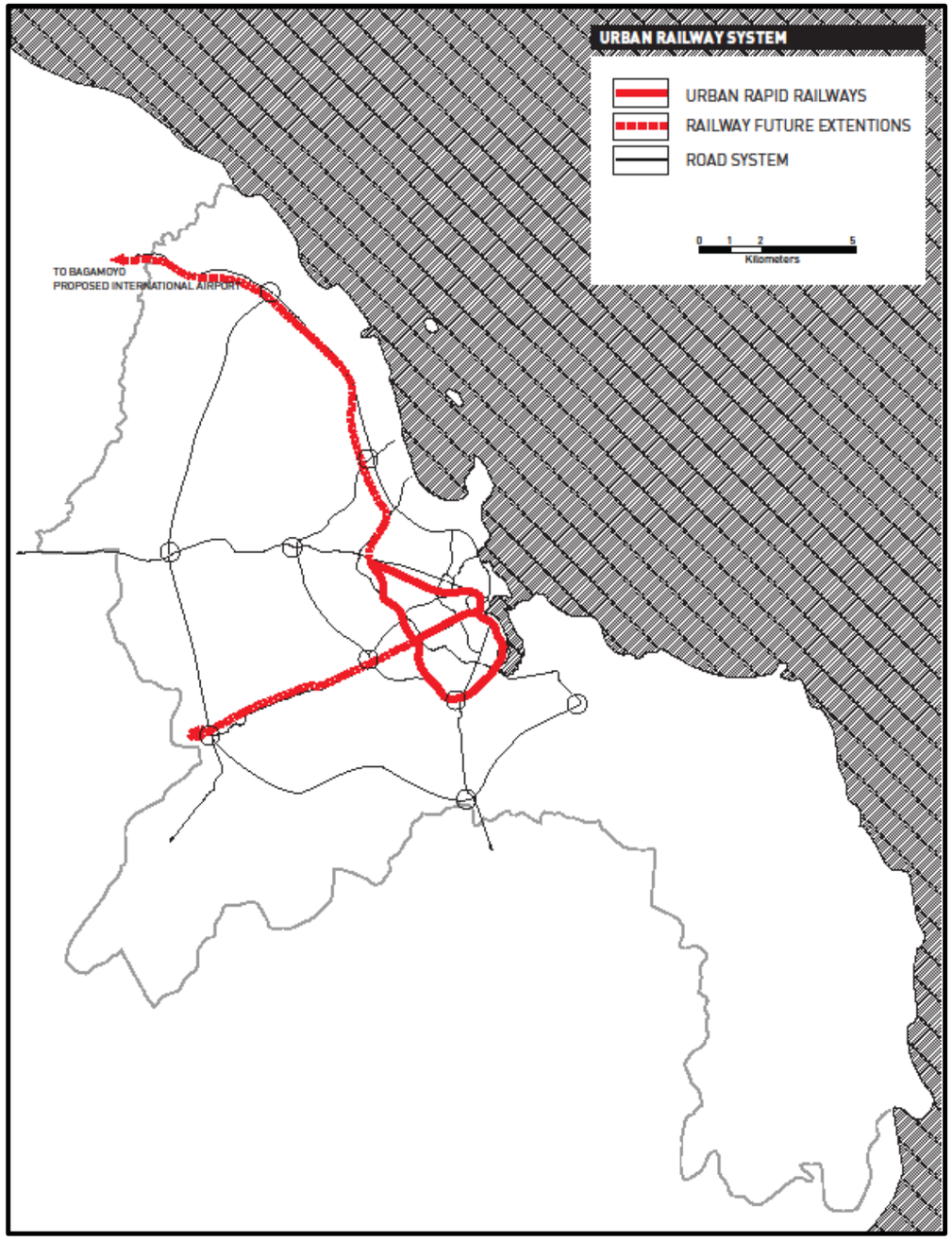
The Master plan proposes improvement of the overall network of roads in the city, and also envisages the main intervention on the road system by creating a new ring road, from the Port traversing along the existing rail tract to intersect a number of radial roads namely Nyerere Road, and Morogoro Road through to Bagamoyo Road. The new axis will serve to:

1. Provide quick access from existing radial roads to the new urban areas proposed for expansion of the city, reflecting the city's transformations and shaping the vast and scattered areas of informal settlements that contour the city;
2. Reduce connecting and through-traffic flows, in particular the traffic coming from the Port and that, which is generated by induced industrial activities, on the current ring road, the Nelson Mandela Road, which the Master plan proposes to transform into a new urban function as one of the main axes of the new urban sub-centres; and
3. Develop the infrastructure to support future expansion within a development scenario that does not conceive expansion occurring exclusively along existing radial arteries. Rather it facilitates urbanization to be more compatible with spatial morphologies, setting out the desired urban functions along a north-south direction as shown in Figure 10.7.

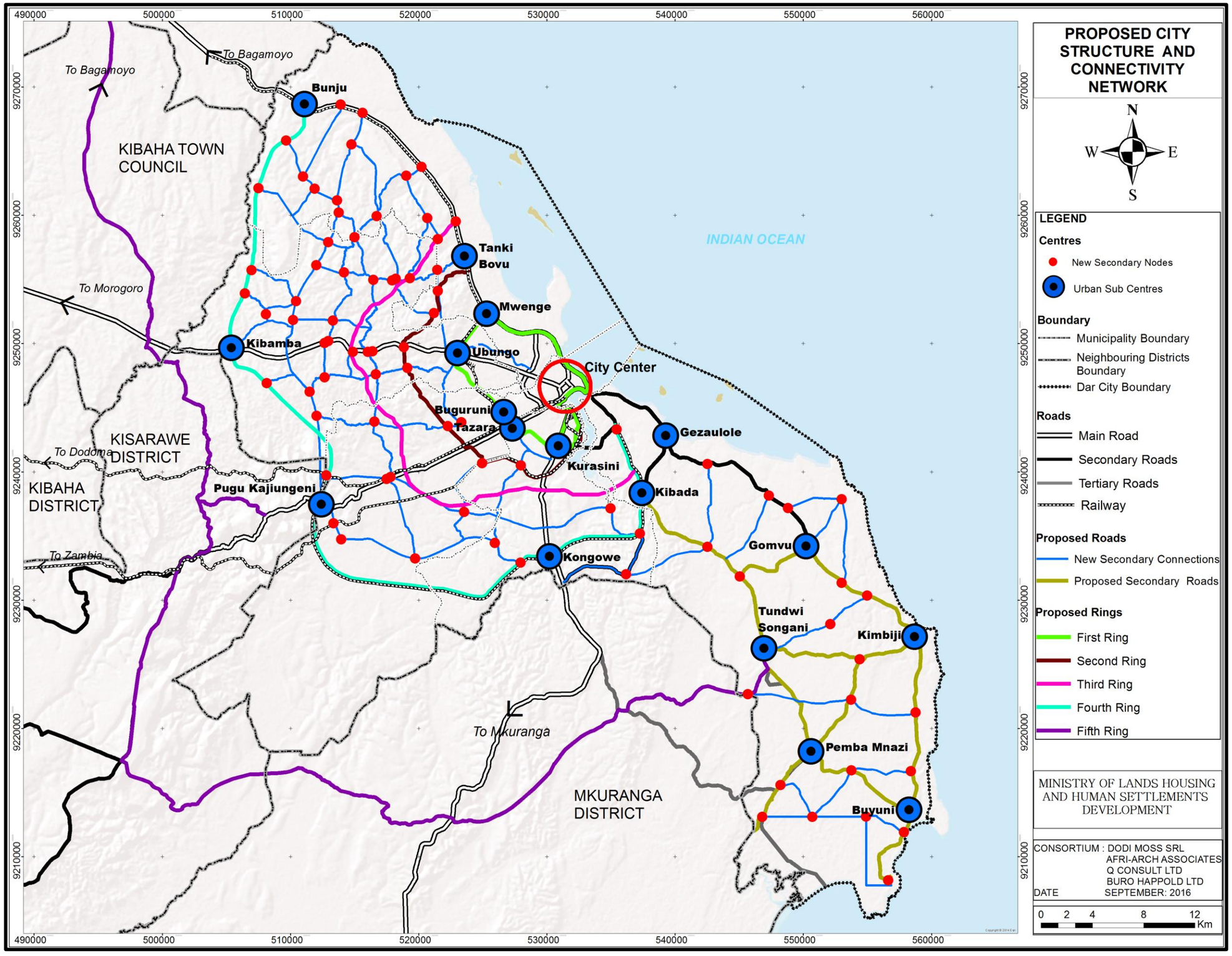


Map 14.2: Proposed road system

Within the urban fabric of Dar es Salaam City, there exists a great opportunity to reuse the existing railway lines that run parallel to Mandela Road and Nyerere Road to build a high capacity fast rail mobility system. This would have an overwhelmingly positive effect on the mobility of the entire central city areas, reducing automobile traffic and speeding up the movement along the two strategic directions for the city both at present and in the future. At the same time the construction of two metropolitan surface rail lines would play an important role in the process of upgrading and development of all areas affected by the new infrastructures. Figure 14.2 shows the proposed urban railway system.



Map 14.3: Urban railway system

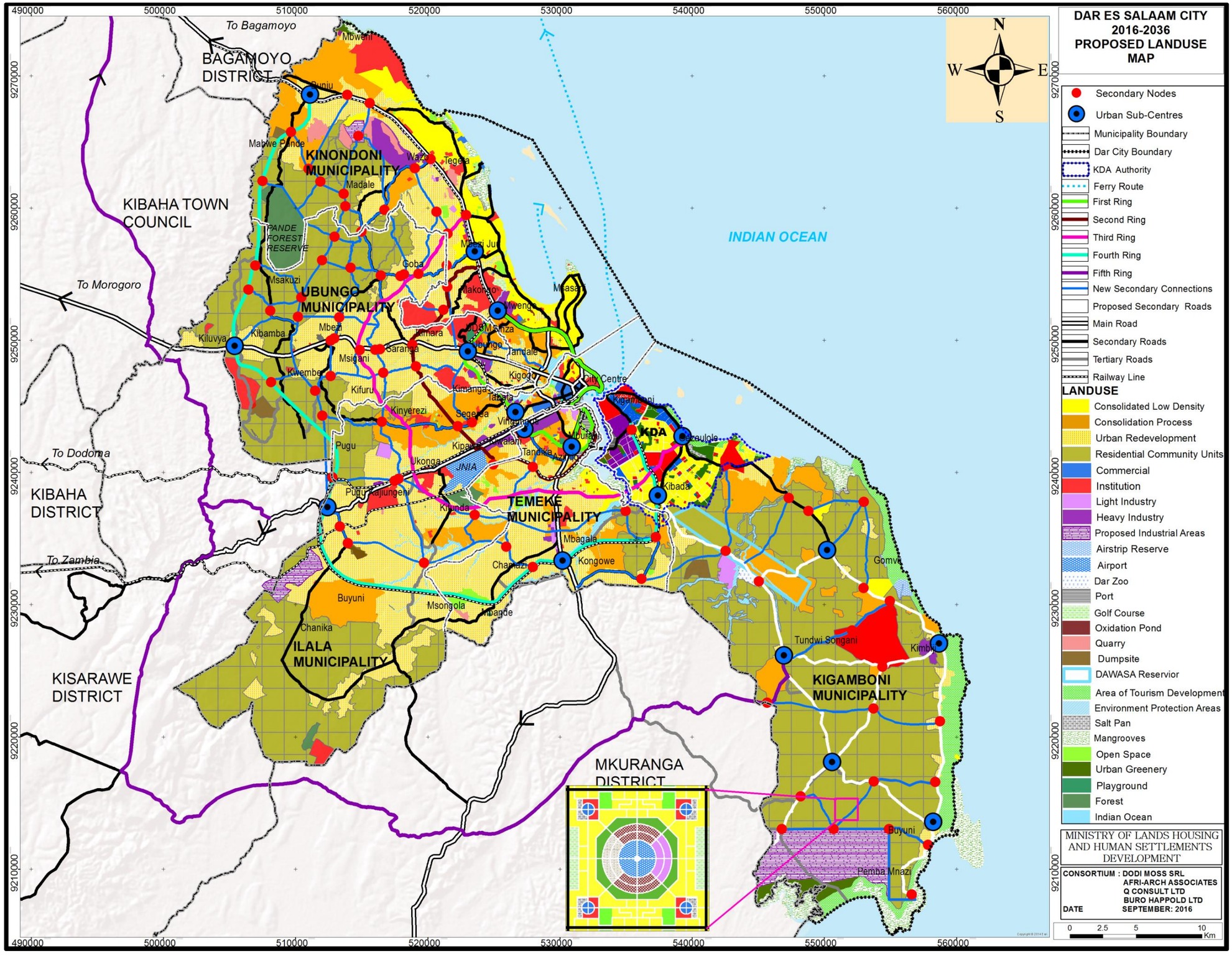


Map 14.4: Proposed Roads Connectivity

S/N	Type	Land use	Area in Hectares	Percentage
1.	Residential	Consolidated Low Density	5416.60	3.29%
		Consolidation Process	9544.25	5.79%
		Urban Redevelopment	29255.91	17.75%
		Residential Community Unit	79220.40	48.07%
	Sub-Total		123437.16	74.89%
2.	Commercial	Service Trade	22.36	0.01%
		Commercial	1123.87	0.68%
	Sub-Total		1146.23	0.70%
3.	Institutions	Institutional Facilities	3394.68	2.06%
		Military	3431.41	2.08%
	Sub-Total		6826.09	4.14%
4.	Industrial	Light Industry	448.06	0.27%
		Warehouse	58.58	0.04%
		Heavy Industry	1977.88	1.20%
		Proposed Industry	816.41	0.50%
	Subsequent Plan	Pembamnazi Industrial Park	1006.00	0.61%
	Sub-Total		4306.93	2.61%
5.	Transport	Airport termini	795.12	0.48%
		Parking	8.27	0.01%
		Bus termini	45.25	0.03%
		Railway Termini	45.61	0.03%
		Harbour/ Port	428.38	0.26%
	Sub-Total		1365.14	0.83%
6.	Social Utilities	Cemetery	67.84	0.04%
		DAWASA protected area	1973.75	1.20%
		Oxidation pond	49.71	0.03%
		Solid waste landfills	764.75	0.46%
	Sub-Total		2856.04	1.73%

S/N	Type	Land use	Area in Hectares	Percentage
7.	Recreational	Play ground	128.84	0.08%
		Area of tourism development	2429.83	1.47%
		Botanical garden	58.32	0.04%
		Golf course	113.16	0.07%
		Open spaces	573.86	0.35%
		Zoo	148.11	0.09%
	Sub-Total		3452.12	2.09%
8.	Urban Agriculture	Bee Keeping	8.72	0.01%
		Dairy Farm	12.21	0.01%
	Sub-Total		20.93	0.01%
9.	Environmental Conservation	Mangrove	5498.69	3.34%
		Creek	3014.36	1.83%
		Salt Pan	131.64	0.08%
		Forest	2004.13	1.22%
	Sub-Total		10648.82	6.46%
10.	Mining	Quarry	718.92	0.44%
11.	Previous and Subsequent Plans	Kigamboni Master Plan	6758.00	4.10%
		Kurasini Master Plan	710.40	0.43%
	Sub-Total		7468.40	4.53%
12.	Net Total Area for Land uses		162246.50	98.44%
13.	Circulation and Infrastructure		2573.28	1.56%
GRAND TOTAL			164819.78	100.00%

- **Land use = 162246.4975**
- **Dar es Salaam Mainland Area = 164,819.781 hectares**
- **Dar es Salaam Mainland Plus Wetlands = 183,032.579264 hectares**



Map 14.5 Proposed Land use Ma

14.5. Proposed Development Guidelines

14.3.9. A. Design guidelines for the existing city

Guideline 1.0: Protection of the historical centre and intervention categories

The city centre has high order level of services of the city. It is characterised by its completed morphology and good quality buildings of technical and historical features.

Commercial areas (C_1) - The building activities are: renovate buildings while maintaining heights, revealing cultural values and improving the legibility of the buildings' original designs. Institutional Areas (I_1), Mixed Use 1(M_1), Residential Use 1 (R_1) and Transportation Facilities (T) - the building activities are: Renovate, Restore Type A and B, and maintain the heights of the buildings. The Waterfront (W) development plan will conform to the Harbour Front Port detailed plan.

Guideline 2.0: Building Renovation

This includes interventions with the aim of transforming a building in order to obtain morphology partially or entirely different from the original one without exceeding the Town Planning Standards. The demolition and reconstruction of the entire structure, even if identical in terms of shape, volume and area, is considered as Building Renovation.

Restoration type A and Type B

This includes all the buildings composing quality urban elements useful to understanding the history of the City of Dar es Salaam. The listed buildings must be restored under the "Guidelines for Conservation of Historic Buildings and Structures in Tanzania.

Restoration type A shall involve:

- Restoration of the facade;
- The philological re-building parts of broken or demolished building;
- The conservation of the typological and functional schemes; and
- The conservation of the open spaces directly related to the building.

Restoration type B shall involve:

- Restoration and reintroduction of the facade and removal of the illegal and incoherent add ones;
- Maintenance of the original formal structure of the roof, floor and all the other elements useful to maintaining or renewing the integrity of the morphology; and
- Changing of the functional plan and introduction of new technologies are allowed.

Guideline 3.0: Consolidated Low Density Areas

These are parts of the City, mainly residential, characterised by a morphological structure and architectural structures of good quality, with buildings rarely higher than two or three floors, surrounded by private property gardens.

In areas belonging to this category, all operations of accommodation and transformation of buildings are permitted, provided that they do not alter their height and do not increase the plot coverage by more than 20percent. All developments should meet the Town Planning and Space Standards defined in the Urban Planning Act and Building Standards.

In pocket areas of informal buildings within these consolidated parts of the city, all types of intervention are allowed to improve upgrading or urban renewal of the informal areas and adapt them to the surrounding areas, in line with the National Human Settlement Development Policy.

Guideline 4.0: Areas in the Consolidation process

These are the parts of the city, predominantly residential, characterised by a consolidated urban structure, with low quality settlements and a low building density.

In the areas that belong to this category, all operations of accommodation and transformation of buildings are permitted, (including demolition and reconstruction), provided that new buildings do not exceed the height of five floors above ground level. All developments should meet the Town Planning and Space Standards defined in the Urban Planning Act and Building Standards.

In these parts, all measures are planned to provide them with adequate roads, other necessary infrastructure networks (water, sewerage system, and electricity), adequate space for community facilities and green areas.

Guideline 5.0: Urban redevelopment areas

These are the parts of the city, mainly residential, characterised by the low quality of settlements, low building density and the lack of any urban structure.

In these parts of the city the replacement of existing buildings with more appropriate ones, that do not exceed the height of three storeys, is to be carried out. All developments should meet the planning and building standards as defined in the Town Planning and Space Standards

In these parts all measures are planned to provide them with adequate roads, the necessary infrastructure networks (water, sewerage system, and electricity), adequate space for urban facilities and green areas.

Guideline 6.0: Peri-urban redevelopment areas

These are the parts located in the periphery of the existing city, recently urbanized that have reached a medium-high degree of densification and are still in a process of rapid transformation.

These parts are allowed operations of densification through the replacement of existing buildings, as well as consolidation, to provide them with adequate infrastructure and services. In these areas the replacement of the existing buildings with more appropriate ones, which do not exceed the height of three storeys is allowed. All future urban developments should meet the planning and building standards.

In case of implementation of interventions as a result of detailed planning schemes, heights of buildings and urban standards may be modified.

Guideline 7.0: Light industry, commerce and offices

These are the parts, in which the settlement of mixed economic activities is planned - from light productive activities, compatible with the urban context, to commercial activities and services.

In these parts all urban transformation and construction projects that are necessary to achieve the intended use are allowed. All developments should meet the planning and building standards.

Guideline 8.0: New sub-centres

In these parts all urban transformation and construction projects that are necessary to convert these areas in new metropolitan sub-centres, similar to what at present is the city centre are allowed.

All developments should meet the minimum planning and building standards.

Guideline 9.0: Commercial and Offices

These are the parts in which a new settlement of predominantly services, commercial activities and facilities, designed to serve the urban or neighbourhood area is foreseen.

In these parts all urban transformation and construction projects that are necessary to achieve the intended use of the area are allowed. All developments should meet the minimum planning and building standards.

Along the main roads, there is a band of a maximum width of 120 meters from the road axis; in which settlements - as referred to in this guidelines may always be realized.

14.3.10. B. Design guidelines for the future city

Guideline 10.0: New satellite centres

The Plan indicates planning instruments presently in force: the new satellite centres with the function of urban polarities, within which residential, services, and commercial functions will be located. These centres are identified with a specific symbol on the maps at 1:20,000 scales.

The new satellite centres, will be subject to specific detailed planning schemes, explaining in detail the procedures for settlement and the different land uses to accommodate the projected population.

Guideline 11.0: New Residential community

The future city is articulated through Urban Units of 50,000 inhabitants.

The Urban Unit for each inhabitant should be planned on the basis of the following parameters:

- 25 Sq. m. gross residential area per person; and
- 15 Sq. m. areas for urban space standards (health care, cultural, educational, recreational and green areas).

The planning parameters within the Unit will be as follows:

- Maximum plot coverage: 40percent;
- Factory and workshop land: 20 hectares;
- Areas for office and commercial activities: 5 percent of the residential areas;
- Areas for streets, squares and parking facilities: 10 percent of the total surface as mentioned in the following Article 14.4; and
- Areas for parks and green areas: 15 hectares – this quantity can also be realised outside of the perimeter of each Urban Unit.

The size of each Urban Unit shall be equal to 250,000 hectares.

Types of dwellings within the Urban Unit will consist of the following:

- Two/three storey buildings: 60 percent;
- Five to ten storey buildings: 25percent; and
- Towers (ten or more storey buildings): 15percent.

The rules defined in the new residential community and types of dwellings are indicative and not prescriptive. They will have to be verified in their concrete implementation according to the different territorial areas in which they are applied.

The Urban Units will be implemented through Detailed Planning Schemes.

Guideline 12.0: New urban sub-centres

Within each Urban Unit, an Urban Centrality is planned where the main services for the Unit will be built. In these areas most of the facilities should be located to create a pedestrian friendly environment. The facilities to be located shall include: educational buildings, the decentralized administrative services, health and social facilities. Others are shopping areas, cultural and civic centres, part of the buildings for office space, public parks and urban green areas, sports facilities, central parking areas and interchange parking stations.

The size of the planned Urban Sub-centres will be about 50,000 hectares.

The functions within the Urban Sub-centres will be made up as follows:

FUNCTIONS	PERCENT	RANGE PERCENT
Green areas and sports facilities	40	30-50
Areas for educational facilities	25	20-30
Areas for administrative services, cultural and civic centres, health and social facilities and other	25	20-30
Streets and parking facilities	10	

The rules for the Urban Sub-centres are indicative, (not prescriptive). They will have to be verified in their concrete implementation according to the different areas in which they are applied.

The Urban Sub-centres will be implemented through Detailed Planning Schemes.

14.3.11. C. Design guidelines for other land use zones

Guideline 13.0: Institutional areas

These are the parts for the location of service facilities of a predominantly urban or metropolitan character. These are:

- Educational facilities;
- Services of public interest, such as religious, cultural, health care, facilities or public services (post office, civic centre, decentralized municipal services), areas and urban spaces for street trading, and others, including the utility substations;
- Areas for urban green, sport facilities, public gardens, urban parks; and
- Facilities of higher scale such as universities, institutes, theatres, cultural centres, hospital buildings and others.

In these areas all urban transformation and construction projects that are necessary to achieve the intended uses of the area are allowed.

All developments should meet the minimum planning and building standards and guidelines.

Guideline 14.0: Playgrounds and Open Spaces

These are the areas reserved for public green space and playgrounds. They include intended areas for public gardens and parks, green spaces for the neighbourhood and green facilities for sports and recreational purpose, green areas necessary for the valorisation and protection of the historic urban morphology. In these areas existing trees and urban furnishings are maintained, the necessary reforestation and reparation is guaranteed, and, more generally, the system of green areas is developed, with the related services and any sporting facilities, open air or covered.

Permanent structures for public use related to cultural and recreational activities are allowed. Within these areas it is not allowed to construct buildings not related to recreational and sporting activities.

Guideline 15.0: Peri-Urban Areas/Urban Agriculture

These are the areas within and outside the urban perimeter, characterised by a strong prevalence of agricultural or potentially agricultural areas and low residential density.

In these areas, all possible transformations of agricultural nature are allowed, including the construction of residential and / or service buildings, related to the agricultural activity. In the case of dispersed settlements, the new residential buildings not exceeding the density of one new dwelling per hectare.

The Municipalities may decide to establish a perimeter around existing settlements following approval of the Master plan, to which the area are earmarked for urban redevelopment.

Guideline 16.0: Forests and Natural Parks

These are the parts of the city characterised predominantly by wooded areas and a not-anthropic natural environment.

These areas should be strictly safeguarded through maintenance and conservation and no building of any type is allowed.

Guideline 17.0: Environmental Protection

The plan identifies natural areas, along the waterways, coasts, and others that need environmental protection. In these areas only interventions aimed at their re-naturalization and recreational use with footpaths and tree growing are allowed.

Within these areas new buildings are prohibited. Existing buildings within their perimeter should preferably be transferred and in any case their extension not allowed.

The entire urban coastline, going north from the metropolitan boundaries with the Bagamoyo District, and south to the town of Somangira, is included in these areas. Along the coast, the protection and care of the environmental values is planned and a compliance zone of at least a 100 metres range from the coastline, of non-buildable area is foreseen, with the exception of playgrounds and open spaces. Existing buildings within this range cannot be extended and, if they are demolished, they cannot be rebuilt. Furthermore the National Environmental Management Act 2004 section 52(I) the Act is responsible to protect all land declared under any other written law to be environmentally sensitive area or hazardous land.

Guideline18.0: Area of Tourism Development

This area is part of the city of great extension with a particular location for tourism, destined to become a Territorial Tourist Park.

This area will be subjected to a special Detailed Planning Scheme that indicates the kind of settlement, forms of protection and compatible uses. In the preparation of the Special Planning Scheme the boundaries identified by the 1/20,000 scale maps where necessary may be changed.

Guideline 19.0: Industry

These are the parts reserved for new or existing industrial activities.

In these areas, new establishments can be realized only after the creation of all infrastructures – sewerage, water, power, and roads, necessary to avoid negative environmental impacts. All developments should meet the minimum planning and building standards.

Guideline 20.0: Airport

Airport areas are governed by the plans drawn up by the competent authority.

Guideline 21.0: Harbour

Harbour areas are governed by the plans drawn up by the competent authority.

Guideline 22.0: Technological Facilities and Networks

These are the areas in which all technological systems serving the city will be located and shall be realized subject to an Environmental Impact Assessment.

Guideline 23.0: Military Areas

The military areas are governed by the rules determined by the competent authority.

In case of surrender of these areas, the Municipality in which they are located will dictate their future use, without this constituting an amendment to the Master plan.

Guideline 24.0: Areas Reserved For Mobility

These are the areas designated for roads, public transport, bicycles, pedestrians, parking and service facilities to mobility, such as service stations, bus stations. The Plan identifies the existing railway network and the railway network to be improved.

The Plan identifies some specific locations for “park and ride” facilities. In all other areas of the city, parking surfaces must be guaranteed for each main land use, corresponding to:

- 1 parking place for each residential dwelling;
- 1 sq. m for every 5 sq. m. of building surface for other uses.

14.3.12. D. Town planning and space standards

Guideline 25.0: Planning Standards

The implementation process of the Master plan is governed by the following planning standards:

Surface/Land for primary urbanization works (S1)

This surface is the sum of the areas used for roads directly serving the settlements, areas for parking and any other area reserved for infrastructure, as well as areas for green spaces around such infrastructure. The S1 surface is expressed in sq. m.

Surface for secondary urbanization works (S2)

This surface is represented by the sum of the areas for the system of services institutional areas and thus includes the areas allocated to educational services, social infrastructure, green spaces, gardens and parks, as well as to games, sports, and the areas for parking facilities to serve the city. The S2 surface is expressed in sq. m.

Minimum area of intervention (minimum plot size)

This is the minimum surface area specifically required by the rules of the area, regarding the minimum plot size for any direct construction project.

The minimum plot size for the different areas is articulated as follows:

- Areas for Consolidated low density: 1,000 sq. m;
- Areas for Consolidation process: 600 sq. m; and
- Areas for Urban redevelopment: 400 sq. m.

In other areas there is no prescription of a minimum plot size.

Guideline 26.0: Building Standards

The implementation process of the Master plan is governed by the following building standards:

Number of Storeys:

This parameter is defined as the number of habitable storeys (even if partial), that is: the number of floor plans that contribute to the usable floor surface.

Building Height:

The building height is defined as the average height of the various building fronts expressed in meters/number of storeys. (Technical elements such as pylons for power lines, water towers and telecommunication equipment, chimneys, elevators, particular technical facilities, are excluded from height limits).

Plot Coverage:

The plot coverage - expressed in percentage of the square meters the horizontal projection of the outer limits of the buildings, excluding open balconies. The surface of the protruding volumes (bow-windows and any cantilevers) is always counted. Arcades and porticoes, even when completely open, are also counted. Underground surfaces are not counted.

Plot Ratio:

The maximum plot ratio is defined as the maximum allowable ratio, between the plot coverage and the surface of the building lot expressed in percentage.

The maximum plot ratio for the different areas is articulated as follows:

- Consolidated low density: 2.0;
- Consolidation process: 4.0;
- Urban redevelopment: 4.0;
- Substitution/redevelopment of high density: 2.0;
- Light industry 1.0.
- Commerce and offices: 4.0;
- Commercial, offices: 4.0;
- Institutional: 1.0; and
- Industry: 1.0.

Guideline 27.0: Distances on Set backs

The minimum distances (set-backs) that must be observed for the construction of buildings are as follows:

Distance from streets:

- 5m. for buildings with a height equal to or less than 3 storeys; and
- 8m. for buildings with a height superior to 3 storeys.
- Distance from other properties: 4.00 m

Distance between buildings:

- 8m. between windowed walls of buildings with a height equal to or less than 3 storeys; and
- 10m. between windowed walls of buildings taller than 3 storeys.

In case of agreement between owners, buildings can be realigned in adherence to prevailing scheme.

The calculation of the distances is made from the outer limits of the building as defined in guideline No. 26.0 on "plot coverage".

In the case of Detailed Planning Schemes the minimum distances shall not be waived subject to planning approval.

Guideline 28.0: Urbanization Works

For the implementation of the Master plan, the primary urbanization works are the networks needed to support the various settlements and individual property units. The secondary urbanization works correspond to the social services, at district and urban scale.

The general urbanization works for the implementation of the Master plan, are represented by the networks and other works of public interest that serve the entire urban system.

14.3.13. E. CITY CENTRE

Guideline 29.0: Land Use Policy

The City Centre is characterised by the following land use classes (Refer to figure 6.1):

Residential

- Residential I
- Residential II
- Residential III

Commercial

- Commercial I
- Commercial II

Mixed use

- Mixed Use I
- Mixed Use II
- Mixed Use III

Institutional

- Institutional I
- Institutional II
- Institutional III

Transportation Facilities

Parks and Open Spaces

Waterfront

30.1 Residential 1

Guideline 30.0: The City Centre

The building activities are: Building Renovation, Restoration Type A, and Restoration Type B. The buildings are to maintain their heights.

Mixed Use Area 1

Mixed uses in the Inner Centre are maintained. The building activities are: Building Renovation, Restoration Type A, and Restoration Type B. The buildings maintain their height.

Commercial Area 1

Commercial Area in the Inner Centre is maintained. The building activities are: Building Renovation, Restoration Type A, and Restoration Type B. The buildings maintain their height.

Guideline 31.0: Upanga Area

Residential 2

Upanga Residential area can be classified into two types of development of building activity:

- Medium transformational capacity (Residential Area between United Nation Road and the Coast Line) - The brutal surface of each building can be improved by 20percent without any change of the alignments along the front road, maximum height 8 floors.
- Low transformational capacity (Residential Area between United Nation Road and the Msimbazi River) – The gross area of each building can be improved by 20percent without any change of the alignments along the front road, maximum height 5 floors.

Each Building Renovation above mentioned must respect:

- The building alignments along the front road; and
- Minimum distance of 3 metres from the road for public uses (sidewalks and green area)

  In the area not occupied by buildings it is necessary to allocate the parking and green standards of 1 park per 1 Unit Residential.

The Master plan recommends and adopts the detail plan proposed in the junction area between Malik Road and United Nations (Area 2).

Mixed Use 2

Upanga has mixed use of residential, commercial and institutional areas.

- Medium transformational capacity - The gross area of each building can be improved by the 20percent without any change of the alignments along the front road, and maximum height 8 floors.
- Low transformational capacity – The gross area of each building can be improved by 20percent without any change of the alignments along the front road, maximum height 5 floors.

In each Building Renovation mentioned above the following must be respected:

- The building alignments along the front road;
- Minimum 3 meters distance from the roads for public uses (sidewalks and green area); and
- In the area not occupied by building it is necessary to allocate parking and green standards as below listed:
  - 1 park lot per 100 m^2 Offices
  - 1 park per 1 Unit Residential

Commercial 2

The introduction of the commercial area along the Morogoro Road helps to decongest the commercial activity in the central area. The DART bus stops and the right quantity of parking places in the area make a real functional connection among the three districts. This part is developed using a new detailed scheme (Area 2). The maximum building height is 20 floors.

Guideline 32.0: Kariakoo

Residential 3

The residential areas in Kariakoo are confirmed and developing them in a medium transformational capacity is recommended. The gross area of each building can be improved up to 20percent without any change of the alignments along the front road. For this increase the needed parking standards must be ensured. In a plot with a surface bigger than 1,500 square metres, the building renovation can be:

- Building with less than 4 floors – maximum Plot Coverage 60percent;
- Building with 5 - 9 floors - maximum Plot Coverage 50percent; and
- Building with 10 and above floors - maximum Plot Coverage 30percent.

Each Building Renovation mentioned above must respect:

- **The building alignments along the front road; and**
- **Minimum distance of 3 meters from the roads for public uses (sidewalks and green area).**
- **In the area not occupied by buildings, it is necessary to allocate the parking and green standards of 1 park per 1 Unit Residential.**

For the area between Kariakoo, Jangwani and Twiga Streets, the Master plan suggests a detail scheme (Area 6-7).

Mixed use 3

The mixed use is confirmed and the Master plan recommends a medium development strictly related to the proportional space standards in figure 6.1. The gross area of each building can be improved by 20percent without any change of the alignments along the front road. In a plot with a surface bigger than 1,500 square meters, the Building Renovation has to be:

- Building with less than 4 floors – maximum Plot Coverage 60percent;
- Building with 5 - 9 floors - maximum Plot Coverage 50percent; and
- Building with 10 and above floors - maximum Plot Coverage 30percent.

Each Building Renovation mentioned above must respect:

- The building alignments along the front road;
- Minimum distance from the roads 3 meters for public uses (sidewalks and green area); and
- In the area not occupied by building it is necessary to allocate the parking and green standards as below listed:
  - 1 park lot per 200 m^2 Commercial; and
  - 1 park per 1 Unit Residential.

Guideline 33: Institutional

Institutional 1

These functions must adhere to the Master plan and follow the needs of the community institutions. The building activities are: Building Renovation, Restoration Type A, and Restoration Type B. The buildings are to maintain their height.

Institutional 2

This area is characterised by the presence of diplomatic representatives, military headquarters, education, sport, religious and health facilities. These functions are confirmed and their development must follow the needs of the community institutions.

Institutional 3

These uses are confirmed and the Master plan recommends the creation of a park able to connect the institutions. Their development must follow the needs of the community institutions.

Guideline 34.0: Transportation Facilities

Its development depends on the project coming from the Tanzania Railways Corporation .The development is also related to the new park & ride network and the proposed shuttle bus connecting the main attraction pole in the Inner Centre. The building height must follow the necessity of the railway transportation facilities.

Guideline 35.0: Park & Open Spaces

The conservation policy is strictly applied in the park & open spaces. In the Inner City the most important historical gardens and parks must be valorised with the introduction of cycle routes and footpaths connecting all the other open spaces proposed.

Guideline 36.0: Waterfront

The improvement of the urban quality is the target of the detail plan. This will be achieved with a valorisation of the natural and cultural heritage creating in the meanwhile pedestrian areas to vitalise the area.

Guideline 37.0: New detailed schemes

These are schemes intended to open up new areas for various land use such as in a new neighbourhood.

Guideline 38.0: Urban Renewal Schemes

These are plans that take into consideration decisions and actions taken in order to put back into a worthwhile state, existing urban areas, which have become physically, functionally and/or socio-economically obsolete. It is associated with a wide range of interventions in the urban fabric mainly through redevelopment and conservation actions.

Guideline 39.0: Redevelopment of Saturated Informal Areas

The following redevelopment guidelines are a result of the pertinent issues arising from the urban element tools employed in the analysis of Saturated Informal Settlements:

Introduce planning standards of; plot coverage at 50percent, plot ratio of 2.0 building 4 storeys, front setbacks at 3.0metres, Rear Setbacks not more than 5 metres and sides-setbacks at 1.5metres;

Settlement identities and sense of belonging value should be maintained.

Relocation of residents should be minimal.

Extremely small (below 150sq.m) land parcels will be merged in order to provide better planning for service and infrastructure provision after negotiations with the owners and community;

There will be no walls allowed to demarcate plot boundaries in order to pool land to create communal spaces for block recreation and parking activities;

Retain existing public spaces where necessary, and upgrade them through landscaping; Hazard areas to be reclaimed and protected from further degeneration.

Guideline 40.0: Regularization Schemes

These are complementary plans to restructure land tenure arrangements and provide basic infrastructure services to informally developed settlements. Regularization schemes aim at securing public land with a view to providing community facilities and infrastructure services.

Guideline 41.0: Detailed Plan

In the City Centre are planned some new detailed schemes for new areas, urban renewal and regularization. The town planning space standards for each Detailed Scheme are outlined in the following table:

Table 14.2: Town planning and space standards for detailed schemes

Detailed schemes s/n.	Area size (square meters)	Maximum plot coverage (percent)	Maximum height (floors)	Maximum plot ratio	Min building lines and setbacks	Parking requirement	Land use
1	100,000	40	8	4	H1+H2/2 min.10m	Offices 1 parking lot per 100m^2 Residential 1 per unit Commercial 1 per 200 m^2	Institutional Residential Education Shops
2	94000	30	20	9	H1+H2/2 min.10m	Offices 1 parking lot per 100m^2 Commercial 1 per 200 m^2	Institutional Office Commercial
3	104000	30	12	6	H1+H2/2 min.10m	Offices 1 parking lot per 100m^2 Residential 1 per unit Commercial 1 per 200 m^2	Institutional Office Commercial Residential
4	33200	50	4	2	H1+H2/2 min.8m	Residential 1 per unit	Residential
5	92000	30	15	7	H1+H2/2 min.10m	Offices 1 parking lot per 100m^2 Residential 1 per unit Commercial 1 per 200 m^2	Office Commercial Residential
6	88000	30	15	7	H1+H2/2 min.10m	Commercial 1 per 200 m^2 Offices 1 parking lot per 100m^2	Commercial Office
7	130000	30	15	7	H1+H2/2 min.10m	Commercial 1 per 200 m^2 Offices 1 parking lot per 100m^2	Commercial Office
8	73000	30	15	7	H1+H2/2 min.10m	Residential 1 per unit	Residential
9	101000	30	15	7	H1+H2/2 min.10m	Residential 1 per unit	Residential
10	90000	50	6	3	H1+H2/2 min.8m	Residential 1 per unit Commercial 1 per 200 m^2 Offices 1 parking lot per 100m^2	Commercial Institutional Residential
11	38000	50	4	2	H1+H2/2 min.8m	Commercial 1 per 200 m^2	Urban facilities Commercial

14.4.Land use policy proposed in the City Centre

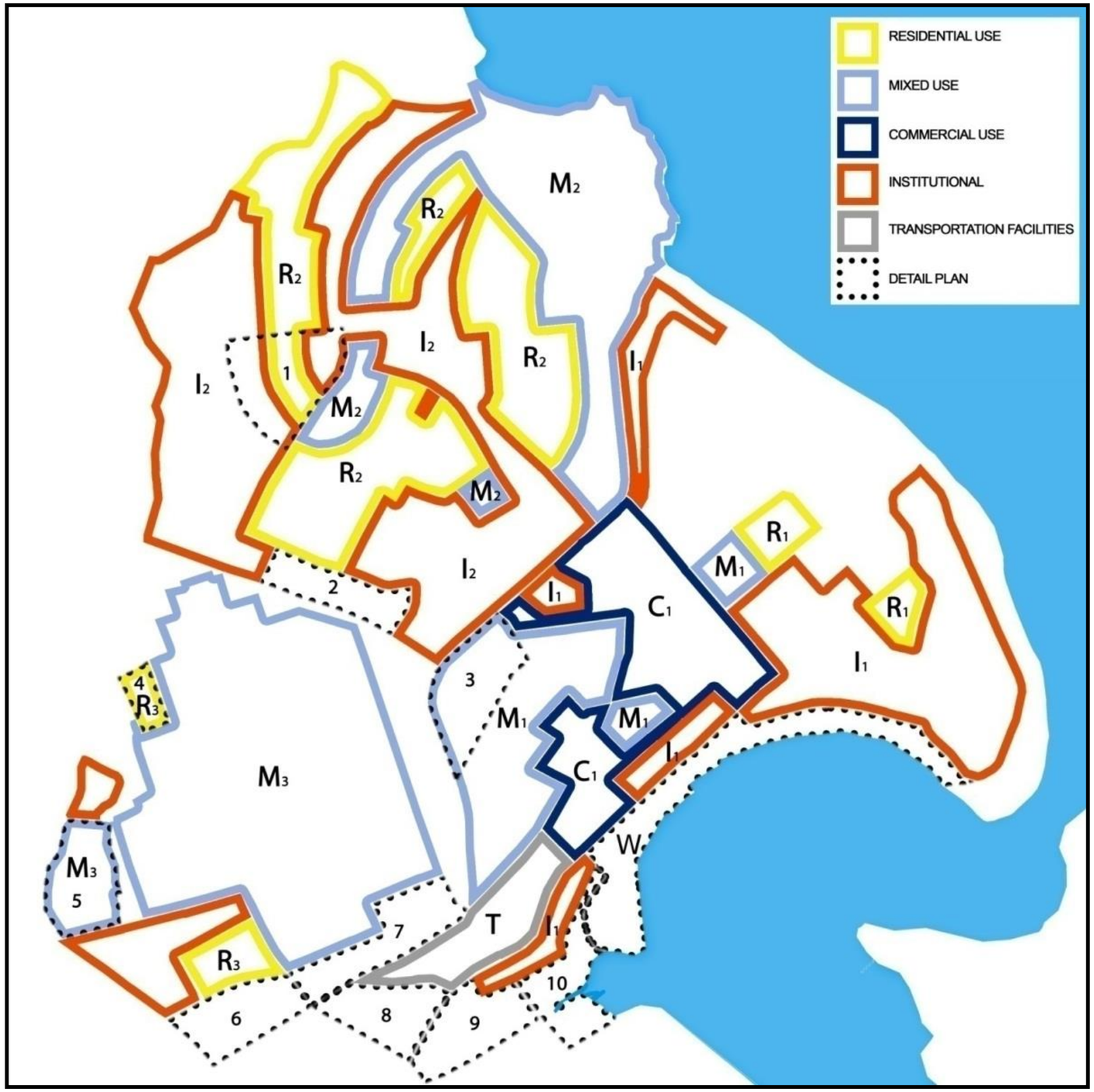


Figure 14.3: Land use policy proposed in the City Centre

15. PLAN IMPLEMENTATION, COSTING AND DEVELOPMENT PHASING

15.1. Basis of the proposals on Implementation of the Master Plan

A Master plan is a general planning tool that applies to a wide variety of practical realities and constantly changing circumstances. While it must address all the structural elements that characterize the future city, it must rely on subsequent planning instruments of a more detailed nature for the urban design of how large-scale concrete decisions will be implemented. Additionally, the future planned expansion will have to adapt to situations that change very rapidly and that can be summarised in three prevailing settlement cases:

1) Areas in which new settlements will be developed in areas substantially free of existing settlements;
2) Areas in which new settlements will be placed that are already significantly affected by scattered settlements; and
3) Those in which new settlements will be placed in consolidating settlements.

A number of supporting implementation actions are required to capture the opportunities outlined for each of these sectors outside of the remit of this Master plan. These include addressing policies and regulation of informal retailers and the provision of skills and training programmes. These are outlined in the Technical Supplement – Socio-Economic Baseline and Economic Strategy.

Implementation of the Master plan offers many opportunities and raises some critical issues. The time horizon of 20 years will require particular attention, the necessary tools to ensure its successful implementation and the achievement of the objectives outlined. Therefore, it is necessary to envisage the possibility that these changes will require modifications and adaptations of the Plan to evolving circumstances while "in progress". For this reason, the Master Plan provides two implementation methods that allow for the flexibility to intervene with the necessary adjustments over time. The first concerns the timeframe for implementing the plan, the second relates to the procedures already indicated in the guidelines33, through which the Plan will be implemented.

The Master plan, which is an instrument to guide physical development, is not the only tool used to address all the complex issues of urban development. The urban development process involves the interplay of a many issues of demographic, social, economic and cultural nature with matters of policy and governance, as well as physical issues that must be addressed through a comprehensive system of coordinated specific policies. Such co-ordination pertains more to the techniques of strategic planning, rather than to those of urban planning.

The Master plan, however, plays the vital role of creating the framework for these different policies to be realised, and provide the physical orientation for development to take place and specify the locational aspects of development projects and services factors. The rules and provisions of the Master plan must therefore identify the design and procedures to guide development, but at the same time; they must be adaptable enough through modifications to respond to practical realities of the local situation.

The phased implementation facilitates this adaptability, ensuring also that the provision contained in the Master plan and in its guidelines will be realised according to two procedures of direct intervention, through works that are immediately feasible according to the rules of the Plan, and the subordinate interventions. Through the preparation of detailed implementation plans and sector or area plans, which define in an appropriate, scale the provisions of the Master Plan.

Except in a few cases where it is explicitly stated that a planning instrument of detail is required, as in the case of the area of the Tourism Park, or in some areas of the City Centre, the guidelines give the political / administrative authorities that will manage the Master Plan, the opportunity to decide whether and which more detailed plans to promote. In any case, while the implementation of the Master plan within the areas that have been defined, as "the Existing City" will be prevailingly through direct intervention - all future expansion will be governed mainly through the preparation of detailed plans of a subordinate degree.

The Residential Communities, representing the quantitative module in which the future urban expansion has been organized, are an organisational model to calculate the number of inhabitants and land use standards. They represent the spatial organisation of settlement and form a basis for the delivery of second level of facilities in the hierarchy of social services. The transition from the residential community designed by the Master Plan to their concrete implementation will be achieved through more detailed implementation plans, which will be prepared on the basis of the physical context in which they are situated and realized in accordance with the effective demand for expansion and the economic and planning capacity of the city.

15.2. The Proposed Master plan Implementation Framework

This section of the report describes recommendations on the proposed institutional arrangement considered most appropriate for implementation of the master plan. These recommendations are based on the following considerations:

1) A detailed analysis of the factors that led to poor implementation of previous Master Plans of Dar es Salaam city;
2) A critical review of the existing institutional framework, which is fragmented; and
3) Reference to international best practices in the management of mega cities, of which Dar es Salaam is destined to become during the 20-year planning period of this master plan.

Implementation of the 1949, 1968 and 1979 master plans for Dar es Salaam was, to say the least, poor due to inadequate financing and other governance constraints including the abolition of local governments in Tanzania from 1972 to 1984; inappropriate institutional frameworks; grossly inadequate development control; corruption and many other reasons. Previous recommendations to establish a section in the Town Planning Division of the then Ministry of Lands, Housing and Human Settlements Development (MLHSD) to oversee planning of the city in 1968, and that for setting up a Utilities Coordinating Committee in 1979 were not implemented. The Dar es Salaam City Commission merged economic and physical planning functions into one department to strengthen coordination and formed thematic 'Working Groups' to enhance participatory implementation of the Dar es Salaam Strategic Urban Development Plan (SUDP) but these innovations were not sustained.

Four key sets of recommendations are made to improve the institutional structure for more effective implementation of the Dar es Salaam Master plan: creating a metropolitan regional authority, restructuring of the Dar es salaam LGAs to create focus on improving conditions in the unplanned settlements and to enhance monitoring of the master plan implementation; and, enhancing public participation in planning and plan implementation. It is also proposed to strengthen the regulatory framework for urban planning.

11.1.11. 15.2.1. Establishment of the Proposed Dar es Salaam Metropolitan Authority

It is proposed to establish a Dar es Salaam Metropolitan Authority (DMA) to manage the city through municipal and district councils with responsibilities and powers to prepare comprehensive and integrated development plans incorporating the plans of the municipal councils; ensure that land uses in the City and metropolitan area follow designated plans; and deal with all trans-boundary issues. The metropolitan authority will coordinate the activities of all utility agencies operating in the Dar es Salaam Metropolitan region. The organogram of the proposed new administrative set up for the metropolitan region is shown in Figure119. The metropolitan authority will report to the President's office, Regional Administration and Local Government on all local governance matters and to respective sector ministries with respect to the operations of the utility agencies.

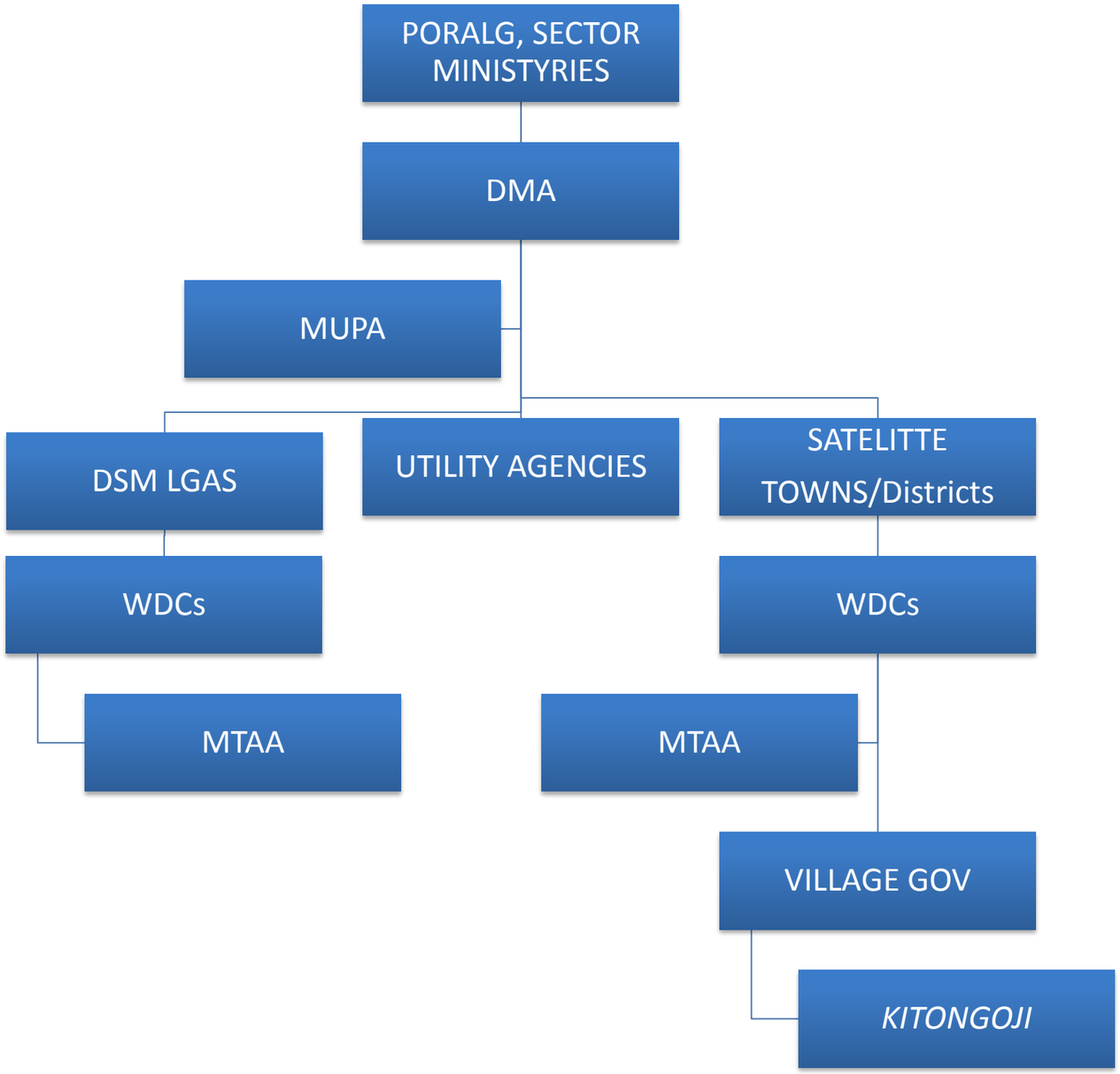


Figure 15.1: Organogram of the proposed: Metropolitan structure

15.2.1 The proposed Metropolitan Urban Planning Authority

Establish a Metropolitan Urban Planning Authority (MUPA) within the DMA, comprising a chairperson, and not more than five other members qualified and experienced in urban planning, civil engineering, architecture, environment, public health or land survey with powers to formulate the Master Plan for Dar es Salaam city and the entire metropolitan region, and to address all trans-boundary planning issues; coordinate planning, execution and management of citywide and the metropolitan regional transportation, infrastructure and utilities projects in conjunction with other relevant bodies; oversee and monitor execution of the Metropolitan Development Plan; and, adopt the municipal and town structure plans for approval;

A municipal or district council aggrieved by a decision of the Metropolitan Authority should have the right of appeal to the Minister. The population of 500,000 persons comprising 20 communities is recommended for each municipality in the city, to ease administration and facilitate efficient delivery of public services

15.2.2 Institutional roles and responsibilities

Many actors from across the public, private civil society sectors and community members will participate in implementing the Master Plan. The roles and responsibilities of key among them are listed below:

1) The Ministry of Lands, Housing and Human Settlements Development:

The Ministry of Lands, Housing and Human Settlements Development is the key organ of government charged with the responsibility to manage land and human settlements. Its main responsibilities are to:

- Formulate policies and make legislations and regulations on human settlements planning;
- Issue specific technical guidelines and standards to regulate the detailed planning and implementation of the Master plan taking consideration of the proposed development guidelines planning activities in Tanzania;
- Provide advice to the government and the public on matters pertaining to human settlements planning and development;
- Provide technical support to Local Government Authorities and other planning authorities in Tanzania;
- Coordinate all human settlement planning and development activities in Tanzania
- Approve planning schemes and ensure that they are implemented;
- To organise and manage public hearing on proposed human settlement plans prior to approval
- Conduct research and disseminate information on best practices in human settlements planning and development; and
- Provide public education concerning the planning and development of human settlements in Tanzania.

2) President's Office, Regional Administration and Local Government:

The President's Office, Regional Administration and Local Government is the key organ of the government that administers the local government system in Tanzania. Its role and responsibilities are to:

- Review the Local Government (Urban Authorities Act) 2008 mutatis mutandis to enable the establishment of the proposed Dar es Salaam Metropolitan Authority and the Metropolitan Planning Authority;
- Approve and facilitate the proposed restructuring of the Dar es Salaam local government Authorities to create the Dar es salaam Metropolitan Authority, the Metropolitan Planning Authority, the proposed Informal Settlements Planning Unit and the proposed Master plan Implementation & Monitoring Unit;
- Coordinate and supervise implementation of sector policy and service delivery plans and programmes in the Dar es Salaam Metropolitan Authority
- Champion the process for reviewing the local government financing mechanism within the government to expand the resource base and financial capacity of local governments
- Inter-mediate between and manage the communication between the Municipal Councils of Dar es Salaam, the Dar es Salaam Metropolitan Authority and other organs of the government to ensure coordinated approach to the implementation of the Master plan by all public organs;
- Closely supervise and monitor planning and budgeting of the proposed Dar es salaam Metropolitan Authority and the Municipal councils of Dar es Salaam to ensure mainstreaming of the implementation of the Dare es Salaam Master pan;
- Expedite approval of the byelaws of the proposed Dar es salaam Metropolitan Authority and the Dar es Salaam municipal councils to enable them enforce the legal requirements of the Dar es Salaam master Plan;
- Provide administrative, management and legal advice and support to the proposed Dar es salaam Metropolitan Authority and the Municipal Councils on the management and implementation of the Dar es Salaam Master plan; and
- Allocate and reallocate staff to the Local Government Authorities.

3) The proposed Dar s Salaam metropolitan Authority:

Once established, proposed Dar es Salaam Metropolitan Authority will have the role and responsibilities to:

- Manage the Dar es Salaam Metropolitan Region through municipal and district councils
- Prepare comprehensive and integrated development plans incorporating the plans of the municipal and district councils;
- Ensure that land uses in the city and metropolitan area comply with the provisions of the Dar es salaam Master Plan.

- Address all trans-boundary issues.
- Coordinate the activities of the municipal and district councils and all utility agencies operating in the Dar es Salaam Metropolitan region.
- Support and facilitate the overall performance of the municipal and district authorities in the Dar es Salaam metropolitan region.

4) **Local Dar es Salaam Municipal councils:**

Local Government Authorities are the Planning Authorities of their areas of jurisdiction. Their role and responsibilities of the Dar es Salaam municipal councils are to:

- Implement the Master Plan upon its approval by the Director of Rural and Urban Planning;
- Prepare detailed planning schemes and adopt planning schemes that will be prepared by landowners in the city in conformity with the provisions of the Dar es salaam Master Plan;
- Implement all government policies and comply with technical standards of the sector ministries for service delivery in their areas of jurisdiction;
- Grant planning consent, issue building permits and exercise development control in their areas of jurisdiction in accordance with provisions of the master plan, especially the guideline;
- Take local initiatives to assign priority to address informal settlements on a day-to-day basis.
- Not to grant any permits to conduct of any social, economic and cultural activities in any public or private spaces if such activity is not conforming to the provisions of the master plan or if it is offensive or causes public nuisance;
- Pass and enforce byelaws of the council to ensure compliance of all residents with the provisions of the master plan;
- Integrate the capital works programme of the master plan into the municipal annual development plans and budgets;
- Manage public participation and involve all stakeholders during preparation of detailed plans and in implementing the master plan; and
- Provide public information and education to municipal residents about the provisions of the Master Plan.

5) **The role of other Actors**

Other public institutions including the sector ministries, regional Secretariat and utility agencies, will continue with their traditional roles and responsibilities of policy, coordination and delivery of public services through the coordination of the Dar es Salaam Metropolitan Authority. The private sector and civil society including communities in the metropolitan region will be encourage to take a more active role in the preparation and implementation of the Dar es Salaam Master Plan, subsequent development plans and detailed planning and implementation. In addition to articulating their needs during the planning and implementation process these non-state actors will be encouraged to contribute technical and material resources to the planning and plan implementation processes.

11.1.12. 15.2.3. Restructuring of the Dar es Salaam Local Government Authorities

It is proposed to establish an informal settlements unit in the urban council level supported by a fund and budget line for infrastructure and service delivery in the informal settlements. The unit will be dealing with informal settlements regularisation and redevelopment on a day-to-day basis.

11.1.13. 15.2.4. Enhancing participatory planning

Successful implementation of a master plan requires commitment of all organizations, individuals and the LGAs. Active involvement of communities and partnership agreements between key public, civic and private sector actors are instrumental in meeting planning goals but city authorities have to undertake the following:

1) Design and execute an Information, Education and Communication (IEC) programme to build capacity of individuals and communities to participate in the preparation and implementation of the master plan;
2) Obtain consensus of all stakeholders in developing social, economic, environmental and service delivery programmes and projects; and, encourage residents, the mass media and activists to utilize the master plan as a tool with which to challenges the LGAs to address planning issues perceived as detrimental to the city;

11.1.14. 15.2.5. The role and capacity of the urban wards/ and Mitaa

It is proposed to assign clear planning responsibilities to the Ward Executive Committee to enhance public participation and strengthen development control. This will require allocating appropriately qualified staff to the wards and *Mitaa*, as well as training of the Ward and *Mtaa* leaders to equip them with basic knowledge and understanding of their new roles in affecting development control in their areas of jurisdiction.

11.1.15. 15.2.6. Improved Development Control, Monitoring and Plan Review

It is proposed to establish a monitoring unit equipped with modern data processing facilities to monitor implementation of the master plan, approved development plans and land use plans in the city. The list of action points, milestones and targets for various land use, infrastructure and social development plans

that are contained in the master plan report should facilitate monitoring and ensure its timely implementation:

1) Involve professional associations of engineers, architects and planners in enforcing development conditions; and
2) Consolidate approval of building permits in the Dar es Salaam MUPA to ensure consistency and compliance with approved plans including the Dar es Salaam Master plan;
3) Encourage a more active role for Master Developers and Estate Developers who comply with development conditions and work along specific schedules, which facilitate development control and supervision; and, apply strict phasing of new development zones to discourage haphazard development and enhance coordination between land use and infrastructure development.

15.3. Development Phasing and Capital Improvement First Phase 10 years (2016 – 2021)

11.1.16. 15.3.1. Phase I (2016-2021)

In the first 5 years the population is projected to grow by 1.5 million inhabitants. Phase I development will concentrate the densification of the existing city inside the new ring around the present city. It is reasonable to estimate that given the present situation of availability of vacant and underused spaces, the densification process could accommodate 1 million more inhabitants. The sparsely developed areas inside or near the new ring can accommodate 2.5 million inhabitants, of whom 500,000 are expected to settle in this zone during the first five years.

11.1.17. 15.3.2. Second Phase (2021 – 2031)

In the second phase from 2021 to 2031, the population of the city is projected to increase by about 4.0 million people. In the Metropolitan context, 600,000 people will be accommodated in the Kigamboni Master Plan area, 1.5 will be accommodated in the area inside the new ring roads and about 1.5 million out of these new inhabitants will find place in areas south of Kigamboni. Considering the new international infrastructures being planned for Bagamoyo and industrial development projects in the four satellite towns, about 400,000 of the population during this period will be accommodated in Bagamoyo, Kibaha, Kisarawe and Mkuranga townships. At the end of the second phase the forecast and plans could be changed in coordination with the new urban realities of that period. The Master plan underlines the necessity to plan and to manage the right infrastructure for the mobility along the north, west and south directions.

11.1.18. 15.3.3. Phase III (2031-2036)

The population of Dar es Salaam is projected to increase by about 2.5 million people in the last five years of the plan of whom 1.0 million are expected to find accommodation in the areas of expansion of the city between the two new ring roads, 1.0 million in the area south of the Kigamboni Master Plan and 500,000 in the four satellite towns of Bagamoyo, Kibaha, Kisarawe and Mkuranga.

Considering the above-mentioned forecast, the Master plan proposes a detailed articulation of the future urban development of the metropolitan area. The city between the two rings, which is named as the "Future City", has a total surface of 38,000 ha. About 7,000 ha of this zone are already occupied by prevailing consolidated residential settlements. Taking into account that each community unit of 24,000 inhabitants will occupy an area of 278 hectares, to establish 1.5 million of inhabitants for the first 10 years within the two ring roads, 17,400 hectares composed of 12,000, hectares for dwellings and 7,400 hectares for other functions (community level facilities, commercial and industrial areas, hospitals, universities, metropolitan services and arterial roads) are needed. In Summary, the total surface area of the zone between the two rings will be used as follows:

1) 7,000 ha already occupied, where a process of urban renewal could be implemented;
2) 17, 500 hectares of new urbanization for residential use and related social infrastructure, for about 1, 500,000 inhabitants in Phase I;
3) 7,400 ha of new urbanization for metropolitan facilities, services and infrastructures in Phase I;
4) 800 ha for airport areas and related logistic;
5) 250 ha for industrial areas;
6) 4,500 ha for forest and other environmental protected areas; and
7) The remaining 1,000 ha are for parks, agriculture, open spaces and environmental reserve for possible future urban growth.

To summarize, the Master plan has planned to settle the 7.5 million new inhabitants for the next 20 years in the following areas:

1) 1 Million of inhabitants in the existing City and in the already urbanized areas of the future City, through a policy of densification;
2) 600,000 of inhabitants in the Kigamboni master plan Area;
3) 2.5 Millions of inhabitants in the Urban Units that will structure the future City in the area between the two rings;
4) 0.9 Millions of inhabitants will be established in Bagamoyo, Kibaha, Kisarawe and Mkuranga, Townships, and
5) 2.5 million of inhabitants in the South, beyond the Kigamboni Master Plan area.

11.1.19. 15.3.4. Phases of the Implementation of the Proposed Master Plan

The Master plan envisages a growth of the city of about 7.4 million people acknowledges the expansion of the city in a radial direction and proposes a future organisation based on new urban sub-centres, infill and densification of the existing city, new residential communities in the areas of expansion of the city and in the satellite towns. The forecasts and current growth trends of the metropolitan area and neighbouring cities indicate that the city will continue to grow in a western direction, but also in a north and south direction, along the coast.

On the one hand, the strengthening of the Bagamoyo corridor, with the prevision of a new airport, a new port and a new industrial zone of large dimensions, assumes that the area of Bagamoyo will also have a considerable residential development (not yet quantified, but that could be of several hundreds of thousands of people). On the other hand, the area of Kigamboni is already designed to accommodate six hundred thousand inhabitants – this figure may still grow. The forecasts for these two areas are factors whose actual developments and impacts on the provisions of the City Master plan cannot yet be grasped.

A waiting period of about 15 years will be necessary for the verification of the dimension of these developments; in particular, taking into account the time for decision-making, design and construction necessary to give shape to the predictions. For this reason, it is necessary to establish a temporal threshold of 15 years within which to monitor the implementation of the Master plan and to assess whether or not the settlements of Kigamboni and Bagamoyo have moved the axis of growth of the city in such a way as to make it necessary to introduce significant changes to the current forecasts of the Master plan.

The First Phase

For the first time, the period of 15 years is divided into two phases, one of 5 years and a subsequent period of 10 years. During the first phase, lasting for five years, policies of the Master plan will be initiated to structure the future development of the city and experiment and define the procedures for the implementation of the Plan. At this stage it is expected that, from now on, the normal management activities of the existing City and the urban transformations will be oriented towards the realisation of major new projects introduced by the Plan, providing for the start of work on:

1) The redevelopment of the City Centre, in particular through the preparation and implementation of the project for the Waterfront and, continuing the policies already undertaken by the DART project through the reorganisation of the traffic system with the introduction of at least one park and ride facility, and through the implementation of a service structure (for culture and leisure purposes) of metropolitan character;
2) The main road arterials that define and reorganise the existing City, namely the new ring road which stats from the port and then connect all the radial roads up to Bagamoyo Road;
3) Some interventions of urban densification and redevelopment will be launched in parts of the informal city, particularly the degraded and lacking urban structures. These areas will be chosen from among those that have been identified in the maps of the Master plan: it is expected that these interventions may affect about 150,000 inhabitants;
4) The realisation of basic services (such as education, health, and leisure) within the redeveloped residential areas;
5) The accommodation of green areas within the existing city and in particular the rehabilitation and transformation into urban park of the bed of the Msimbazi Creek;
6) The redevelopment of the whole existing system of technology networks, energy and sanitary networks;
7) The first interventions of urban expansion, following a logic of concentration of interventions and opposing the on-going dispersion and growth without quality. It is expected that, by using the reference parameter of the Community Unit, the creation of an expansion can be initiated corresponding to the settlement of about 900,000 inhabitants, to be located mainly along the axis of Morogoro Road and the axis of Bagamoyo Road;
8) Identification and protection of the territorial and environmental areas to be safeguarded within the boundaries of the future city in order to ensure their preservation from improper settlements that might arise during the period of implementation of the Plan; and
9) The design of the Territorial Tourism Park.

The Second Phase

The second phase has a period of ten years and will be the one in which to realise:

The completion of the major infrastructure of the future metropolitan city, in particular the outer ring road axis;

The new production areas;

The new urban and metropolitan sub-centres; and

The continuation of the policies of requalification and expansion laid down in the Master plan.

At the end of the second phase, the city should have increased by approximately 4.8 million inhabitants.

The Third Phase

A further five years will start after making a comprehensive reassessment of the choices of the Master plan, in relation to demographic developments, economic and territorial changes that will have taken place then. This phase will be either the one that will bring to a conclusion of the policies started, or the one that will implement the new policies that, over time, will have become necessary. It will also be the phase of the drafting process of a new Master plan for 2033/2053.

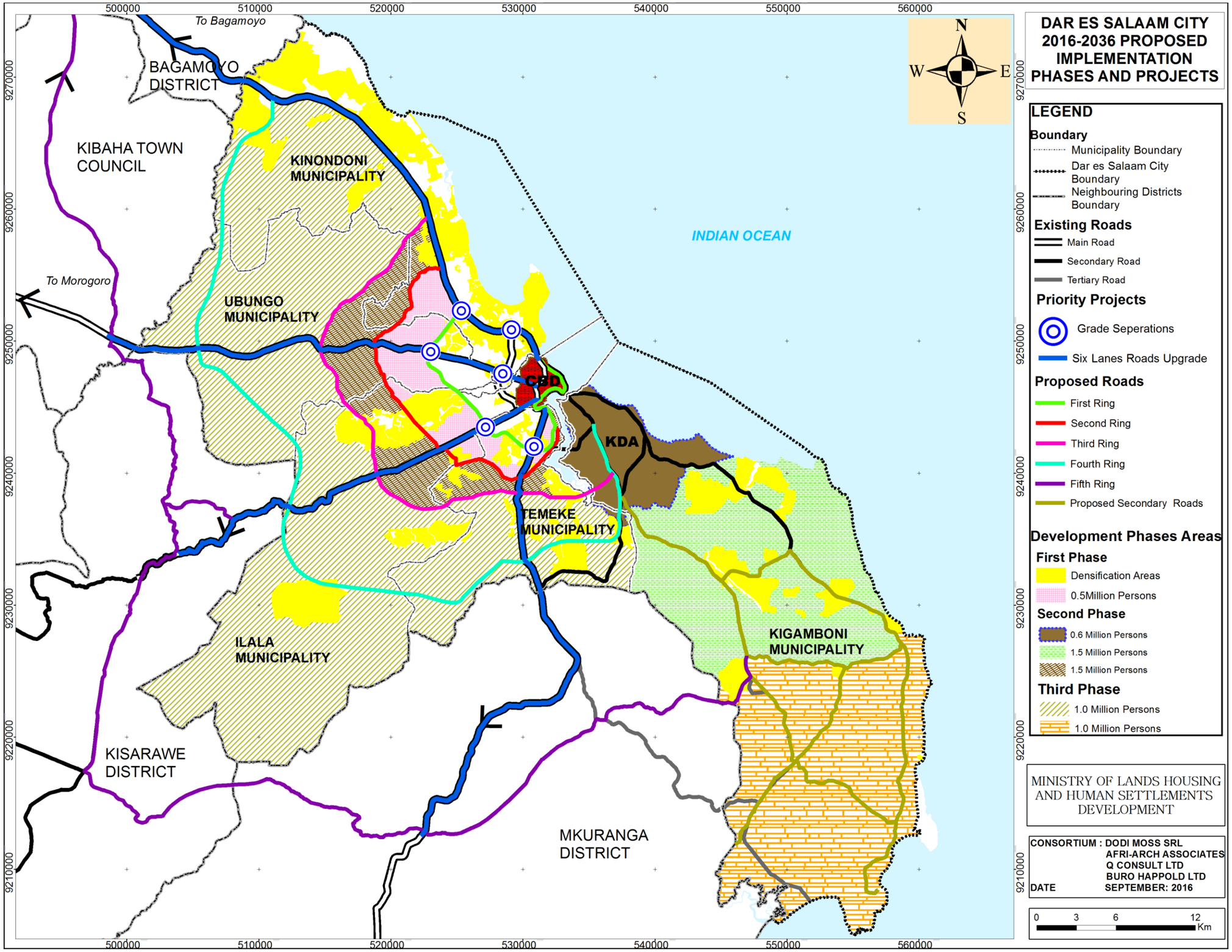


Figure 15.2:Proposed Implementation Phases

15.4. The proposed plan implementation phasing programme

15.4.1. Road Network

Below are the interventions and prioritized areas on the road network. Costs of implementation were estimated using reference values obtained by JICA from the Kilwa Road Widening Project and provided in the Dar es Salaam Transport Policy and System Development Master Plan published in 2008. All values were corrected to Tanzanian inflation and are presented in 2016 US dollars. Using information from the Tanzanian National Bureau of Statistics, the Consumer Price Index was 166.19 as of 2016.

Costing such a complex programme of works yields indicative figures, and the sum of the parts (the individual packages submitted to tender) will vary from the aggregate sums offered below when coasted individually. This is due to fluctuations in the price of cement for concrete and of oil for asphalt, on the availability of materials, machinery and manpower, and also on delays of construction works. The costs estimates shown in Table 5.3 do not include the cost of land or compulsory purchase.

The cost of the following road works is indicated below:

In the medium term – 10 years:

1. Adding two lanes to the radial roads – Bagamoyo, Morogoro, Julius Nyerere and Kilwa
2. Building an outer ring road
3. Building six grade-separated junctions
4. Upgrading the existing **secondary network with two-lane roads**

In the long term – 20 years:

- Updating the secondary network to four lanes in the future city

Each of the stages above and the evolution of the road network can be seen in maps prepared separately.

The estimated cost of grade-separated junctions represents a significant proportion of the proposed road works. As with each of the elements contained in this proposal, the type, design and mode of procurement of each are to be subject to detailed feasibility studies. The costs indicated below should therefore be considered indicative.

Table 15.1: Estimated construction costs of road works

Type	Price in USD Million /km	Length in kilometers	Price in USD Million	Cost in TZS Million
Phase I projects				
6-Lane Primary Road	10.31	28.05	289.24	632,787.70
2 lane Primary road Upgrade	6.32	17.19	108.69	86,5792.90
Grade Separation Junctions	354.48	4	1417.93	3,102,090.54
Total			1815.86	3,972,665.87
Phase II Projects				
6-Lane Primary Road	10.31	54.76	564.60	1,235,207.98
2 lane Primary road Upgrade	6.32	59.46	395.74	865,792.90
2 lane Secondary Road	6.52	222.00	1447.59	3,166,990.12
Grade Separation Junctions	354.48	4	1418.41	3,103,129.91
Total			3826.34	8,371,120.91
Phase III Projects				
2 Lane Secondary Road	6.52	221.9	1446.94	3,165,561.39
Total			1446.94	3,165,561.39
Cost Summary				
Phase I			1816.30	3,973,620.33
Phase II			3826.34	8,371,120.91
Phase III			1446.94	3,165,561.39
Grand Total			7089.58	15,510,302.63

15.4.2. Electricity

The interventions below are those that form part of the physical priority action plan. They consist of potential additions to the transmission and distribution networks. The proposed 33/11kV substations would be located at each new satellite node of the city and the 11kV/low voltage substations would be located at each secondary node of the city. The length of required transmission lines would extend from each 33/11kV substation to the 11kV/low voltage substations. This estimate only takes into account the 11kV transmission lines.

For the purposes of this costing exercise, the substations to be used as primary substations are to have a limit capacity of 32MVA, based on E.ON Network Design Principles (2006). The total costs of the proposed physical infrastructure can be found in the table 12.10

Table 15.2: Estimated costs of priority electricity projects

Item	Units	Unit Cost in USD 33/11	2016 Cost (US$)
Primary 33/11 kV substations (32 MVA)	5	25,537,100	127,685,500
Secondary substations (1 MVA)	43	798,000	34,314,000
Distribution lines	395 km	32,100	12,679,500
Total			174,679,000

The costs thus obtained were verified against benchmarks provided by the World Bank's ROCKS database.

11.1.20. 15.4.3. Water, drainage and Sewerage pipe networks - Initial Cost Estimates

Key works pertinent to water proposed in this Master plan are shown in Table 15.4:

Table 15.3: Estimated costs of Water Supply, Drainage and Sewerage Pipelines along Major Roads

Type	Rates (US $) / Unit size	Source	Description	Cost in USD	Cost (TZS Million)
Potable, foul and drainage along 6-Lane primary roads	2,4 56US$ /m x 3 = 7,368 US$	Table B unit costs for water and sanitation projects (pipe-mains upper quartile)	28,053 m	206,694,711.6	452,198,422,250.02
Potable, foul and drainage along 4-lane primary road	558.7 US$ /m x 3 = 1676 US$	Table B unit costs for water and sanitation (pipes midsize diameter upper quartile)	54,758 m	91,781,766.7	200,796,477,915.59
Potable, foul and drainage along +2-lane primary road upgrade (included to make allowance for some of upgrade to existing roads which will be required)	155.2 US$/m x 3 = 466 US$	Table B unit costs for water and sanitation projects (pipe-small diameter upper quartile)	76,654 m	35,689,556.9	957,204,485,413.18
Potable, foul and drainage along 2-Lane secondary roads	155.2 US$/m x 3 = 456 US$	Table B unit costs for water and sanitation projects (pipe-small diameter upper quartile)	221,999 m	103,361,154.8	226,129,400,025.25
TOTAL				**437,527,190**	**1,836,328,785,604**

Table 15.4: Additional water and sanitation works

Type	/Unit size	Unit Cost (USD Million	Cost (USD Million)	Cost (TZS Million)
Water Treatment Plant	NA		NA	NA
Water storage tanks	1 day resilience in 10 Units 50m x 50m x 3m tanks for 638,833m3 storage, OR 2 days resilience: 10 Units 72m x 72m x 3m tanks for 1,538,822m3 storage,	67,500 1,267.5	675,000 1,260,750	1,476,738,000 2,758,218,420
Sewerage treatment plant and pumping station	1 with extension of the piped sewer network	80.5	80.5	176,114.68

15.4.4. Action plan for the city centre

The interventions below are those that form part of the physical priority action plan for the city centre. They consist of the improvement of the Waterfront, the creation of pedestrian areas, the creation of the open spaces net and for public buildings.

Table 15.5: City Centre: costs estimates in US Dollars.

Cost items	Dimensions	Dimensions ml	Unit Cost $/	Unit Cost $/ml	Total Cost in $
Value of the areas	0	/	/	/	/
Value of the buildings	60,000	/	1,700	/	102,000,00
Value of new pedestrian area	64,000	/	200	/	12,800,000
Value of major networks	/	3,100	/	60	186,000
Value of road network	/	3,100	/	1,162	3,602,200
Open air parking places	9,000	/	120	/	1,080,000
Value of green accommodation	100,000	/	30	/	3,000,000
Total					122,668,200

$= US Dollar

In estimates of the implementation phases it has been assumed that in the first five years of validity of the Master plan will involve the Waterfront and part of the pedestrian areas.

The estimation of this first step is about 30,000,000 US $ focused along Mosque road and Sokoine Drive from Mission street to Kivukoni front.

The next period will see the completion of the waterfront with some public buildings, the park & ride in Kivukoni road and other green accommodation and the extension of the pedestrian area in Kariakoo. The estimation of this second step is about 60,000,000 US Dollars. The next ten years will see the completion of all the other parts planned. The estimate cost is about 32,668,200 US Dollars.

15.5. Potential Sources of Funding

The Dar es Salaam LGAs can generate considerably more revenue and use the proceeds to finance implementation of the Master plan if appropriate financial tools are applied. The following measures are therefore proposed to enhance the financial capacity of the Dar es Salaam LGAs to enable them finance implementation of the master plan:

1) Broaden the own source revenue base of the LGAs and reinstate property tax to the LGA
2) Introducing central government transfers for human settlement, housing and urban development activities would however,
3) Enhance the capacity of urban authorities to invest in infrastructure facilities in a more sustainable manner. The following other measures are proposed:
4) Ensure LGA budgets are linked to local physical development

5) Promote Public Private Partnerships (PPPs) in public service delivery and infrastructure construction to overcome shortage of resources in the LGAs;
6) Link development control and zoning regulations with revenue generation
7) Apply appropriate economic instruments of permit fees and penalties to generate additional local revenue
8) Ring-fence the revenue collected from land rent and property tax and allocate it to finance implementation of the master plan and infrastructure projects;
9) Introduce appropriate value capture instruments including betterment taxes so that for property owners can contribute towards financing of urban infrastructure from the increase in value of their properties resulting from public expenditure to improved infrastructure;
10) Expedite the process of introducing a municipal bond markets to enable urban authorities obtain funds to finance the construction, maintenance and improvement of long term, infrastructure and strengthening credit quality of the LGAs to avoid defaults that undercut investor confidence in municipal bonds and build contingent liabilities against any potential defaults;
11) Introduce formal mechanisms for intergovernmental consultation and negotiation on national policy and fiscal matters affecting LGAs;
12) Introduce market-based land use zoning regulations; and,
13) Leverage informal settlement redevelopment with private sector resources and organize informal settlement residents around community housing development associations.

15.5.1. Improving the regulatory framework for planning:

1) Amend the Urban Authorities Act No. 8 of 1982 and the Urban Planning Act No.8 of 2007 to remove overlapping ministerial powers; and, amend the Land Act No. 4 of 1999 to reintroduce the principle of eminent domain in order to facilitate access to land for public uses;
2) Review the Government Executive Agencies Act to enhance coordination of activities of utility and other public service delivery agencies with city authorities and ensure compliance with the Decentralization by Devolution (D-by-D) policy;

BIBLIOGRAPHY

Bank, W. (2011). *Road Costs Knowledge System (ROCKS).*

Dash, Soumendra K. 2012 Innovative ways of financing Urban Local Bodies (ULBS) – An Indian experience. LEDNA.

Japan International Cooperation Agency. (2008). *Dar es Salaam Transport Policy and System Development Master Plan.* Dar es Salaam: Dar es Salaam City Council.

Kombe, W. J, (date unspecified) institutionalising the concept of environmental planning and management: successes and challenges in Dar es Salaam.Kreibich, Volker and Kombe, Wilbard *(2000): Informal Land Management in Tanzania. SPRING Research Series 29, Dortmund.*

Kyessi, A. (2002): *Community Participation in Urban Infrastructure Provision. Servicing Informal Settlements In Dar es Salaam.* Spring Series, Dortmund

Nijboer, M. (2010). *The Contribution of Natural Gas Vehicles to Sustainable Transport.* Paris: International Energy Agency.

Nyumayo, A. S. C., 1997Urban Financing and budgeting in Tanzania. Unpublished Report.

Okpala, D. 2009Regional Overview of the Status of Urban Planning and Planning Practice in Anglophone (Sub-Saharan) African Countries. Regional study prepared for Revisiting Urban Planning: Global Report on Human Settlements 2009.

Orca Exploration. (2009, September). *Songo Songo Gas Field - Increasing Reserves & Expanding Gas Distribution.*

Sarzin, Z., & Raich, U. (2012). *Financing the Urban Expansion in Tanzania.* The World Bank.

URT, 1996 The National Land Policy.

URT, 1999 The Land Act No.4.

URT, 2000 The National Human Settlements Development Policy.

URT, 2002 National Environmental Management Policy.

URT, 2004 Environmental Management Act.

URT, 2007The Urban Planning Act, No. 7.

REFERENCES

CPCS Transcom International Limited. (n.d.). *Dar es Salaam Waterfront Development Project - Conceptual Design.* Dar es Salaam: Tanzania Ports Authority.

Crouzier, O. (2008). *Interest for Transbay transportation: success key factors for the development of this transportation mode, passenger boats (actual design and recent impacts of reglementation on design).* www.codatu.org: CODATU.

Dalkilometersann, H., & Brannigan, C. (2010). Transport and Climate Change: Module 5e. *A Sourcebook for Policy-makers in Developing Cities*.

Japan International Cooperation Agency. (2008). *Dar es Salaam Transport Policy and System Development Master Plan.* Dar es Salaam: Dar es Salaam City Council.

Japan International Cooperation Agency. (2009). *The Research on the Cross-Border Transport Infrastructure: Phase 3, Final Report.* JICA.

Japan International Cooperation Agency. (2012). *Summary Result of Traffic Surveys.* Dar es Salaam: JICA.

Japan International CooperationAgency. (2012). *CBD Traffic Improvement Plan.* Dar es Salaam: JICA.

Kamen, P., & Christopher, B. D. (2011). Urban Passenger-Only Ferry Systems: Issues, Opportunities and Technologies. *Sustainabilty in the Maritime Industry: A collection of relevant papers.* Society of Naval Architects and Marine Engineers.

Logit, I. (2009). *Dar Rapid Transit Project.* Dar es Salaam: Prime Minister's Office for Regional Administration and Local Government.

Marshall Macklin Monaghan Limited. (1979). *Dar es Salaam Master Plan.* Toronto: Marshall Macklin Monaghan Limited.

Ministry of Communications and Transport, United Republic of Tanzania. (2003). National Transport Policy. Dar es Salaam.

Ministry of Finance and planning, United Republic of Tanzania. (2016). National five year Development Plan 2-16/17 – 2020/21. Dar es salaam.

Ministry of Infrastructure Development, United Republic of Tanzania. (2010). *Pre-Feasibility Study upon Dar es Salaam Urban Transport Authority.* Dar es Salaam: Ministry of Infrastructure Development.

Nelson\Nygaard Consulting Associates, Institute for Transportation & Development Policy. (2006). *Bus Rapid Transit for Dar es Salaam - City Centre Street Typology.* San Francisco: Nelson\Nygaard Consulting Associates.

Nelson\Nygaard Consulting Associates. (2006). *Bus Rapid Transit for Dar es Salaam - Parking Management Final Draft Report.* San Francisco: Nelson\Nygaard Consulting Associates.

Roads Fund. (2010). *Roads Fund Board: Corporate Information, What it is and What it does.* Online: Roads Fund.

Royal Haskoning, inter-consult, Ardhi University. (2009). *Tanzania Ports Master Plan.* Dar es Salaam: Tanzania Ports Authority.

Royal Haskoning. (2008). *Congestion Assessment Study DSM Port.* Dar es Salaam: Tanzania Ports Authority.

Royal Haskoning. (2008). *Transport System Inter face Challenges at DSM Port - Draft report.* Dar es Salaam: Tanzania Ports Authority.

Tanzania Airports Authority. (n.d.). Retrieved January 28, 2013, from Statistics For Julis Nyerere Int. Airport

Tanzania Ports Authority. (2008). *Transport System Inter face Challenges at DSM Port - 2nd JISR Paper.* Dar es Salaam: Tanzania Ports Authority.

Tanzania Ports Authority. (2009). *Annual Report and Accounts 2009.* Dar es Salaam: Tanzania Ports Authority.

The East African. (2011, December 18). Retrieved January 28, 2013, from The East African

UN Habitat. (2009). *Tanzania: Dar es Salaam City Profile.* Nairobi: UNON.

UNU-WIDER 2014 The performance of the manufacturing sector in Tanzania

WIDER 2014) Challenges and the way forward. WIDER Working Paper 2014/085. United Nations university (UNU), The World Institute for Development Economics Research (WIDER) May 2014 https://www.wider.unu.edu/sites/default/files/wp2014-085.pdf

World Bank. (2005). *Non-motorised Transport in African Cities - Lessons from Experience in Kenya and Tanzania SSATP Working Paper No 80.* World Bank, Sub-Saharan Africa Transport Policy Program. World Bank.

APPENDIX

Appendix One: **Planning Standard**

Settlement Catchment

Settlement	**Residence Population**
Neighborhood	6,000
Community	24,000

Appendix Two: Infill Capacity

Ward Name	Population 2012	Population 2016	Population 2036	2016 Density
Azimio	76832	94749	94749	388.0
Buguruni	70585	87045	87045	249.4
Bunju	60236	74283	184149	21.3
Buza	55082	67927	168393	117.1
Chamazi	63650	78493	194586	22. 6
Chang'ombe	19302	23803	59009	73. 7
Chanika	73414	90534	224436	11.7
Charambe	101933	125704	311622	169.0
Gerezani	7276	8973	22244	103.3
Goba	56899	70168	173947	14.7
Gongolamboto	57312	70677	175210	56. 7
Hananasifu	37115	45770	113465	241.2
Ilala	31083	38332	95025	159. 3
Jangwani	17647	21762	53949	335.3
Kariakoo	13780	16993	42127	405.8
Kawe	67115	82766	205179	53.9
Keko	35163	43363	107498	308.5
Kibada	8585	10587	26245	9.5
Kibamba	28885	35621	88305	18.6
Kiburugwa	78911	97313	241241	245. 9
Kigamboni	30496	37608	93230	82. 8
Kigogo	57613	71048	176130	368. 7
Kijichi	69195	85331	211538	78.6
Kijitonyama	58132	71688	177717	180.9
Kilakala	44949	55431	137415	358.9
Kimanga	78557	96876	240159	102.9
Kimara	76577	94435	234105	63.1
Kimbiji	6411	7906	19599	1.4
Kinondoni	21239	26192	64930	136.4
Kinyerezi	38366	47313	117290	22.8
Kipawa	74180	91479	226778	57.8
Kisarawe II	8306	10243	25392	0.7
Kisutu	8308	10245	25399	233.9
Kitunda	57132	70455	174660	40.0
Kivukoni	6742	8314	20611	32.8
Kivule	72032	88830	220211	45.4
Kiwalani	82292	101482	251577	222. 5
Kunduchi	75016	92510	229333	34.6
Kurasini	26193	32301	80075	59. 4
Kwembe	43912	54152	134244	8.1
Mabibo	85735	105728	262103	278. 8
Mabwepande	42669	52619	130444	8.5
Magomeni	24400	30090	74594	273.5
Majohe	90825	112005	277663	18.0

Makangarawe	53291	65718	162917	273.7
Makongo	43796	54009	133890	29.5
Makuburi	57408	70796	175503	91.8
Makumbusho	68093	83972	208169	477. 8
Makurumla	63352	78126	193675	499. 7
Manzese	70507	86949	215549	469.2
Mbagala	52582	64844	160750	192.3
Mbagala Kuu	74774	92211	228593	139.4
Mbezi	81646	100686	249602	19.5
Mbezi Juu	41340	50980	126382	57.0
Mburahati	34123	42080	104318	373.6
Mbweni	13766	16976	42084	7.9
Mchafukoge	10688	13180	32675	116.9
Mchikichini	25510	31459	77987	184.6
Mianzini	100649	124120	307697	127.2
Miburani	44290	54618	135400	139.1
Mikocheni	32947	40630	100723	53.2
Mjimwema	27789	34269	84954	15.6
Msasani	48920	60328	149555	53.0
Msigani	55111	67963	168481	45.9
Msongola	24461	30165	74780	4.4
Mtoni	59378	73225	181526	186.2
Mwananyamala	50560	62351	154568	248.7
Mzimuni	21486	26497	65685	214.9
Ndugumbi	36841	45432	112628	341.8
Pemba Mnazi	9672	11928	29569	0.6
Pugu	49422	60947	151089	20.8
Sandali	52660	64940	160988	248.2
Saranga	104127	128409	318329	51.3
Segerea	83315	102744	254704	105.2
Sinza	40546	50001	123954	148.1
Somangila	19283	23780	58951	2.4
Tabata	74742	92172	228496	205.2
Tandale	54781	67556	167472	576.2
Tandika	49491	61032	151300	354.2
Temeke	26047	32121	79629	108.7
Toangoma	44578	54974	136281	13.5
Tungi	23380	28832	71476	47.7
Ubungo	56015	69078	171245	66.5
Ukonga	80034	98698	244674	98.55
Upanga Magharibi	13476	16619	41198	84.05
Upanga Mashariki	11167	13771	34139	94.35
Vijibweni	29010	35775	88687	29.25
Vingunguti	106946	131886	326947	290.85
Wazo	25460	31397	77834	5.8
Yombo Vituka	76999	94955	235396	138.7
TOTAL				

Appendix Three: Projected requirements for community facilities

Basis of calculation

According to the 2012 National Population and Housing Census, 13.3 percent of the population of Dar es Salaam constitutes the primary school population and 8.0 percent constitutes the secondary school population.[34] These proportions are used to calculate the number of pupils in each ward and then derive the number of schools that will be required in 2036 for each ward on the basis of 945 pupils per primary school and 640 per secondary school. For health facilities, a dispensary is provided for each neighbourhood population of 6,000, a health centre for each residential community of 24,000 populations and a hospital for 25,000 – 120,000 population as stipulated in the urban space and planning Standards.

[34] Source: https://tanzania.go.tz/egov_uploads/documents/Descriptive_tables_Tanzania_Mainland_sw.pdf

Ward	Requirements for Education Facilities						Requirements for health Facilities					
	Pre-Primary Schools		Primary Schools		Secondary Schools		Dispensaries		Health Centres		Hospitals	
	2016 Existing	2036 Demand	2016 Existing	2036 Demand	2016 Existing	2036 Demand	2016 Existing	2036 Demand	2016 Existing	2036 Demand	2016 Existing	2036 Demand
Azimio	23	63	8	13	14	16	8	19	2	4	1	1
Buguruni	21	58	7	11	13	15	7	17	1	2	1	1
Bunju	18	49	6	10	11	13	6	15	1	2	1	3
Buza	16	44	6	10	10	12	6	15	1	2	1	1
Chamazi	19	52	7	11	12	14	6	15	1	2	1	2
Chang'ombe	6	16	2	3	4	5	2	5	0	0	0	1
Chanika	13	36	5	8	8	9	4	10	1	2	0	5
Charambe	30	82	11	18	19	22	10	24	2	4	1	1
Gerezani	2	5	1	2	1	1	1	2	0	1	0	1
Goba	13	36	5	8	8	9	4	10	1	2	0	3
Gongolamboto	17	47	6	10	10	12	6	15	1	2	1	1
Hananasifu	11	30	4	7	7	8	4	10	1	2	0	1
Ilala	9	25	3	5	6	7	3	7	1	2	0	1
Jangwani	5	14	2	3	3	3	2	5	0	1	0	1
Kariakoo	4	11	1	2	3	3	1	2	0	1	0	1
Kawe	20	55	7	11	12	14	7	17	1	2	1	1
Keko	10	27	4	7	6	7	4	10	1	2	0	1
Kibada	3	8	1	2	2	2	1	2	0	1	0	1
Kibamba	8	22	3	5	5	6	3	7	1	2	0	1
Kiburugwa	23	63	8	13	14	16	8	19	2	4	1	1
Kigamboni	9	25	3	5	6	7	3	7	1	2	0	1
Kigogo	17	47	6	10	11	13	6	15	1	2	1	1
Kijichi	20	55	7	11	13	15	7	17	1	2	1	1
Kijitonyama	17	47	6	10	11	13	6	15	1	2	1	1
Kilakala	13	36	5	8	8	9	4	10	1	2	0	1
Kimanga	23	63	8	13	14	16	8	19	2	4	1	1
Kimara	22	60	8	13	14	16	8	19	2	4	1	1
Kimbiji	2	5	1	2	1	1	1	2	0	1	0	4
Kinondoni	6	16	2	3	4	5	2	5	0	1	0	1
Kinyerezi	11	30	4	7	7	8	4	10	1	2	0	2
Kipawa	22	60	8	13	14	16	7	17	1	2	1	1
Kisarawe II	2	5	1	2	2	2	1	2	0	1	0	10
Kisutu	2	5	1	2	2	2	1	2	0	1	0	1
Kitunda	17	47	6	10	10	12	6	15	1	2	1	2
Kivukoni	2	5	1	2	1	1	1	2	0	1	0	1
Kivule	21	58	8	13	13	15	7	17	1	2	1	2
Kiwalani	24	66	9	15	15	17	8	19	2	4	1	1
Kunduchi	22	60	8	13	14	16	8	19	2	4	1	3
Kurasini	8	22	3	5	5	6	3	7	1	2	0	1
Kwembe	17	47	6	10	10	12	6	15	1	2	1	5
Mabibo	25	68	9	15	16	19	9	22	2	4	1	1
Mabwepande	7	19	3	5	5	6	3	7	1	2	0	5
Magomeni	7	19	3	5	4	5	2	5	0	1	0	1

Majohe	24	66	9	15	15	17	8	19	2	4	1	4
Makangarawe	16	44	6	10	10	12	5	12	1	2	1	1
Makongo	13	36	5	8	8	9	4	10	1	2	0	2
Makuburi	17	47	6	10	11	13	6	15	1	2	1	1
Makumbusho	20	55	7	11	12	14	7	17	1	2	1	1
Makurumla	19	52	7	11	12	14	6	15	1	2	1	1
Manzese	21	58	7	11	13	15	7	17	1	2	1	1
Mbagala	15	41	6	10	10	12	5	12	1	2	1	1
Mbagala Kuu	22	60	8	13	14	16	7	17	1	2	1	1
Mbezi	22	60	8	13	13	15	7	17	1	2	1	4
Mbezi Juu	12	33	4	7	8	9	4	10	1	2	0	1
Mburahati	10	27	4	7	6	7	3	7	1	2	0	1
Mbweni	4	11	1	2	3	3	1	2	0	1	0	2
Mchafukoge	3	8	1	2	2	2	1	2	0	1	0	1
Mchikichini	7	19	3	5	5	6	3	7	1	2	0	1
Mianzini	30	82	11	18	18	21	10	24	2	4	1	1
Miburani	13	36	5	8	8	9	4	10	1	2	0	1
Mikocheni	10	27	3	5	6	7	3	7	1	2	0	1
Mjimwema	8	22	3	5	5	6	3	7	1	2	0	2
Msasani	14	38	5	8	9	10	5	12	1	2	0	1
Msigani	16	44	6	10	10	12	6	15	1	2	1	1
Msongola	7	19	3	5	4	5	2	5	0	1	0	4
Mtoni	17	47	6	10	11	13	6	15	1	2	1	1
Mwananyamala	15	41	5	8	9	10	5	12	1	2	1	1
Mzimuni	6	16	2	3	4	5	2	5	0	1	0	1
Ndugumbi	11	30	4	7	7	8	4	10	1	2	0	1
Pemba Mnazi	3	8	1	2	2	2	1	2	0	1	0	2
Pugu	14	38	5	8	9	10	5	12	1	2	0	2
Sandali	15	41	6	10	10	12	5	12	1	2	1	1
Saranga	31	85	11	18	19	22	10	24	2	4	1	2
Segerea	24	66	9	15	15	17	8	19	2	4	1	2
Sinza	12	33	4	7	7	8	4	10	1	2	0	2
Somangila	6	16	2	3	4	5	2	5	0	1	0	7
Tabata	22	60	8	13	14	16	7	17	1	2	1	1
Tandale	16	44	6	10	10	12	5	12	1	2	1	1
Tandika	15	41	5	8	9	10	5	12	1	2	0	1
Temeke	8	22	3	5	5	6	3	7	1	2	0	1
Toangoma	13	36	5	8	8	9	4	10	1	2	0	3
Tungi	7	19	2	3	4	5	2	5	0	1	0	1
Ubungo	16	44	6	10	10	12	6	15	1	2	1	1
Ukonga	23	63	8	13	15	17	8	19	2	4	1	1
Upanga Magharibi	4	11	1	2	2	2	1	2	0	1	0	1
Upanga Mashariki	3	8	1	2	2	2	1	2	0	1	0	1
Vijibweni	9	25	3	5	5	6	3	7	1	2	0	1
Vingunguti	31	85	11	18	20	23	11	27	2	4	1	1
Wazo	27	74	10	16	17	20	9	22	2	4	1	4
Yombo Vituka	23	63	8	13	14	16	8	19	2	4	1	1

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