THE REPUBLIC OF UGANDA

MINISTRY OF LANDS, HOUSING AND URBAN DEVELOPMENT

National Physical Development Plan (NPDP)

Feburary 2nd 2019

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Executive Summary

Uganda's long-awaited first National Physical Development Plan (NPDP), comes from a background of its modern Physical Planning systems, which originated in the construction of trading and administrative centers during the pre-independence period. It is cited in the National Land Use, Urban and other Policies and required by the Physical Planning Act 2010. It has parallels with physical and spatial frameworks which have been prepared an increasing number of countries, national and transnational bodies.

The United Nations Economic Commission for Europe put it simply and clearly that "Spatial planning is concerned with the problem of coordination or integration of the spatial dimension of sectoral policies through a territorially-based strategy". The NPDP gives a strategy to resolve the conflicting sectorial pressures on uses of land, a finite resource of the territory of Uganda, as the population grows, and the country modernizes.

The Uganda NPDP works with the two overall critical variables, the Population and Urbanization Projections and the National Land Use Balance Sheet. It provides a basis for integrating the physical and spatial with the economic and social issues of national development planning. Its core elements are the pattern of human settlements, the land uses and natural resources for economic activity and the infrastructure networks which connect and service them.

In order to facilitate the smooth integration of the physical and spatial, with the social and economic aspects of development planning, the NPDP has been organized around the "Pillars" of Uganda's Vision 2040 and the sequence of five year National Development Plans which are used to govern the country. The NPDP limits itself to the physical components of national development planning, and avails itself

as a tool for consideration of the "spatial' alongside the other economic and social aspects of development planning.

The NPDP uses population and urbanisation growth rate projections for Uganda's primate city Kampala, its principle secondary cities and towns, its "Rurban" and rural areas.

It is based on the projection that the urban population is likely to double from 20% to 40% of the total Uganda population by 2040: Uganda is starting from a base of being less urbanized than many other countries.

In terms of Land Use, the NPDP predicts that the growing populations, even with larger scale, higher yielding and higher productivity farming methods, will put immense pressure on the country's grasslands, forests, protected areas and seasonal wetlands. This is a pressure which is already very evident in the current illegal development of wetlands, the destruction of forests, and the conflicts between pastoralists and crop farmers, throughout the country.

The NPDP breaks down the core elements, the pattern of human settlements, the land uses and natural resources, and the infrastructure networks into sub sections which include:

- A hierarchy of settlements from the primate city, secondary cities down to key towns.
- Principal land uses which comprise Strategic and Secondary Agricultural Zones, Natural Resource Blocks and Protected Areas
- Infrastructure Networks as transport systems and nodes, and utility corridors.

Different combinations of the above were discussed as different "orientations" in eleven regional stakeholder conferences during the preparation of the Plan. They were also discussed by thematic groups of national Ministries, Departments and Agencies. Thus, the regions and MDAs shaped and guided the Plan. Each of the

conferences considered the different options for the basic Planning Concept, the overall Spatial Form, Development Strategy, Population Distribution and Urban Hierarchy for the NPDP. Finally, the outcomes were combined to create the basis of the NPDP.

The components of these different orientations are included as part of the final Plan, because the unpredictable and changing geo-political, economic and environmental circumstances will mean that it will need to be flexible.

The principles behind the different orientations will inform Planners how to adapt to the actual circumstances as they emerge over the next twenty year period.

The basis of the best combination of these orientations which was arrived at as the basis of the NPDP, was as follows:

Spatial Form:

A "polycentric" settlement system, connected by a triangle of expressways, aligned with the physiographical forms of Agricultural Zones and Natural Resources Blocks.

Planning Concept:

The Planning Concept is one of regional growth of urbanized zones and corridors constrained by agricultural and natural resources clusters.

The NPDP is drawn around Strategic Agricultural Zones, as well as the identified bio-regions, recognizing that these are key elements for long-term growth and sustainability. At the same time, the NPDP adopts the connectivity corridors that mark urban development along a national "Triangle" that optimizes the development of infrastructures and expressways based on three main arteries. Here, again, the polycentric settlement system is seen that seeks to limit the expansion of Greater Kampala Metropolitan Area in favor of planned urbanization along the corridors. These follow Secondary Agricultural Zones that become the preferred locations for regional urban growth.

Development Strategy

The National Physical Development Plan combines the spatial content of the pillars of Vision 2040 and the National Development Plans according to its different orientations, into one over-arching framework for the physical development of Uganda.

The idea of regional balanced growth was favored. The concept of the international expressways was superimposed on the highway system. Then the location of urbanization zones has been along these routes and coordinated with the distribution of agricultural clusters. These clusters define the rural areas which are purely for agriculture.

All meaningful protected areas and water systems have been integrated into the final solution. The water system includes permanent wetlands, and the River Nile / Kyoga water system "bio-region", but the seasonal wetlands are excluded from protection. In addition, the National Resources Blocks are protected.

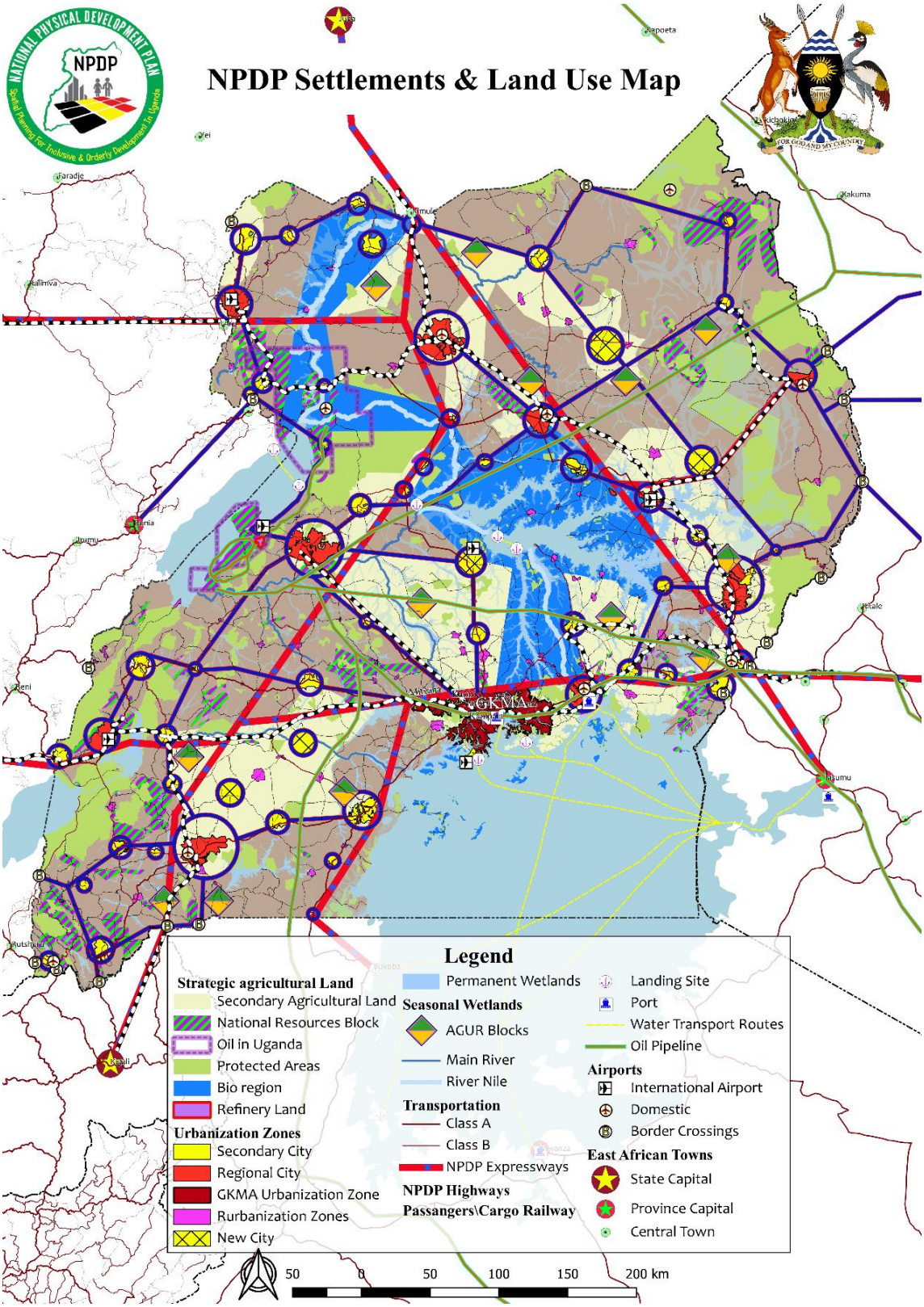

Figure 1: NPDP Map showing the principal elements of the Plan

Implementation

A central objective of the NPDP is **to give the physical aspect of planning development a more central role within Government policy-making. It will help to coordinate and align national projects in urbanization, infrastructure, transportation, and wealth creating sectors.**

The proposed method of achieving the above objective is to ensure that Ministries Departments and Agencies (MDAs) of Government, whose activities are the main determinants of the physical planning of the country, agree to, and jointly carry out, their projects according to the Plan.

They are:

- The Office of the Prime Minister
- The Ministry of Finance and Economic Planning
  - The National Planning Authority
    - The Uganda Bureau of Statistics
  - The Uganda Investment Authority
- The Ministry of Water and Environment
    - The National Water and Sewage Corporation (NWSC)
    - The National Forestry Authority
  - The Climate Change Unit
- The Ministry of Local Government
- The Ministry of Education and Sport
  - Skilling Uganda
- The Ministry of Science and Technology
- The Ministry of Health
- The Ministry of Justice

The Ministry of Trade, Industry and Cooperatives

The Ministry of Agriculture, Animal Industries and Fisheries

The Ministry of Energy and Mineral Development

Uganda Electricity Generation Company Limited

Uganda Electricity Transmission Company Limited

Uganda Electricity Distribution Companies

The Petroleum Authority of Uganda

The Ministry of Tourism, Wildlife and Antiquities

Uganda Tourism Board

Uganda Wildlife Authority

The Ministry of Lands Housing and Urban Development

The Ministry of Works and Transport

The Uganda National Roads Agency

Uganda Railways Corporation

Civil Aviation Authority The Marine Regulatory Authority

The Ministry of ICT

The Uganda Communications Corporation

The NPDP will first be implemented during the preparation of the next National Development Plan. Through the National Planning Authority, the above Ministries will be requested to include the updated physical and spatial factors for which they are the "custodians", and which form the NPDP, in their Sector Development Plans for NDPIII.

Specific projects of national importance have been identified in the NPDP, for the twenty year period of the Plan. By sharing them in the preparation of the National Development Plan III (NDP III), they can be aligned with, and incorporated into, the

national planning program and budgeting process. Sector Physical and Spatial proposals will be reviewed during the NDP III preparation period jointly by the NPA and MoLHUD, according to the principles of the NPDP. Hence, either the MDAs' Plans, or the NPDP, will be altered during NDPIII and every five years thereafter, to iron out any anomalies and agree on the best way forward.

As each National Development Plan is implemented, the check for compliance of projects by NPA and the OPM Delivery Unit, can include a cross check for "spatial" compliance with the NPDP.

The Physical Planning system, as defined in the Physical Planning Act 2010, works at different levels from the national down to the detailed local level, and covers the whole country. By being integrated with Economic Development Planning, it will assist with the dissemination of the NDPs down to Local Government levels. The NPDP therefore also contains an overall plan and program for capacitating the Physical Planning System to be effective across the whole country, as it develops.

The above processes have been made possible with the arrival of (digital) Geographical Information Systems (GIS). The process of updating and sharing data will be greatly facilitated by the Uganda Spatial Development Framework (UGSDF), which will ensure that core data sets are freely available and that a common frame of reference for GIS data is used.

In conclusion, Uganda's first National Physical Development Plan is a system and a guide, to how to deal with the conflicting pressures on land use in this rapidly growing and modernizing country. Its success depends on the willingness of the key participating agencies to use it and make it work, and for the Government to

capacitate the agencies who have prepared it to their full strength, for the benefit of the long term sustainable and orderly development of Uganda.

Table of Acronyms

AAGR	Average Annual Growth Rate
AGR	Annual Growth Rate
AGUR	Agricultural-Urban
AUR	Annual Urbanisation Rate
BFP	Budget Framework Paper
CAA	Civil Aviation Authority
CNDPF	Comprehensive National Development Planning Framework
CEDP	Competitiveness and Enterprise Development Project
CAR	Central African Republic
DRC	Democratic Republic of the Congo
DPPUD	Department of Physical Planning and Urban Development
EACOP	East African Crude Oil Pipeline
EAC	East African Community
ESDP	European Spatial Development Perspective
ESPON	European Spatial Planning Observatory Network
ECOWAS	Economic Community of West African States
GIS	Geographical Information Systems
GKMA	Greater Kampala Metropolitan Area
GDP	Gross Domestic Product
GP	Growth Poles
ICT	Information and Communication Technology
LSSP	Land Sector Strategic Plans
MDA	Ministries Departments and Agencies
MoLHUD	Ministry of Lands, Housing and Urban Development
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTEF	Medium Term expenditure Framework
MDF	Multilateral Debt Fund
MZO	Ministerial Zonal Offices
MOTWA	Ministry of Tourism, Wildlife and Antiquities
MoWE	Ministry of Water and Environment
MEMD	Ministry of Energy and Mineral Development
MICT	Ministry of Information and Communication and Technology

MoLG	Ministry of Local Government
MDI	Micro Deposit Taking Institutions Act
MEMD	Ministry of Energy & Mineral Development
MFIs	Micro Finance Institutions
MFPED	Ministry of Finance, Planning & Economic Development
MGLSD	Ministry of Gender, Labour & Social Development
MIS	Management Information Systems
MJCA	Ministry of Justice & Constitutional Affairs
MoES	Ministry of Education & Sports
MoFA	Ministry of Foreign Affairs
MoH	Ministry of Health
MOU	Memorandum of Understanding MP Member of Parliament
MSMES	Micro, Small & Medium Scale Enterprises
MTCS	Medium Term Competitiveness Strategy
MTTI	Ministry of Tourism, Trade & Industry
MWH	Ministry of Works, Housing & Communications
MWLE	Ministry of Water, Lands & Environment
NAADS	National Agricultural Advisory Services
NARO	National Agricultural Research Organisation
NARS	National Agricultural Research System
NEMA	National Environment Management Authority
NEPAD	New Partnership for Africa's Development
OPM	Office of the Prime Minister
PA	Protected Area
PPUMIS	Physical Planning and Urban Management Information System
SAZ	Strategic Agricultural Zones
SGR	Mombasa-Nairobi Standard Gauge Railway
SAL	Secondary Agricultural Lands
SLAAC	Systematic Land Adjudication and Certification
UGSDF	Uganda Spatial Development Framework
UGSF	Uganda Spatial Development Framework
UGSDI	Uganda Spatial Data Infrastructure
UNRA	Uganda National Road Authority
URC	Uganda Railways Cooperation

UBoS Uganda Bureau of Statistics

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1. Introduction

1.1 Origins of Physical Planning in Uganda

The origin of modern Physical Planning in Uganda lies in the 'construction blueprints' under the ordinances for governing emerging towns during the colonial administration. The first plans for Kampala were produced in the colonial era, such as that of 1930 for Nakasero Hill, Kampala, and in 1947 for Kampala Extension, all bearing the stamp of the colonial policy of segregation.

The Town and Country Planning Act 1951 was the first Physical Planning legislation, revised in 1964. Further Plans for Kampala were prepared from the 1950s, and in 1972. In 1994 the World Bank funded the Kampala City Structure Plan, only 15% of which had been implemented by 2012 when it was revised and a Greater Kampala Plan, was outlined.

Between the early 1970s and the 1990s the status of Physical Planning itself and these earlier systems waned in the face of the scale of unplanned urbanization, informal settlement and slum growth that followed. But after the turmoil between 1971-86, a new phase of re-organization of Physical Planning in Uganda began, including the training of Physical Planners at Entebbe and subsequently the establishment of the Physical Planning degree at Makerere University in 2004.

At around the same time, the process of decentralization was inaugurated by The Local Government Act, which repealed the Urban Authorities Act of 1964. The Act gave more powers to the local Authorities to manage the development of Urban Councils, Municipalities and the Kampala City Council. The Act provides for the administrative structure of Local Governments and focuses on urban-scale provision of services, but is silent on urban land use, physical development issues and enforcement of development control.

Physical Planning in Uganda has come a long way since the early 1990s, but **the lack of a national level physical plan** remained to be sorted out. Development projects, particularly in infrastructure and services, were still hampered by lack of a clear, planned overall physical framework at national level. The National Physical Development Plan (NPDP) was therefore needed, which conforms with the Uganda Vision 2040, and is integrated with the National Development Plans, to provide a framework for development of land uses. This will avoid duplication, match infrastructure investment, population and settlement growth with economic development locations and with environmental protection and conservation.

1.2 National Physical Development Planning in its broad policy, legal and institutional context

The need for Land Use Planning has its rightful place as a major component of Land Policy in the Land Sector Strategic Plans (LSSP). One of the objectives of LSSP1, was to prepare the National Land Use Policy 2007, which led to the passing of the Physical Planning Act 2010, with two major changes. Firstly, the whole of the country was now a Planning Area (whereas before, Physical Planning had applied only to the gazetted towns). Secondly, the Act identified the different types of plan as: National Physical Development Plan, Regional Physical Development Plans, District Physical Development Plans, Urban Physical Development Plans and Local Physical Development Plans. All Plans should conform to the National Physical Development Plan and the Physical Development Plan made by the higher authority.

The preparation of a National Physical Development Plan was seen as a key part of the establishment of an effective Land Use Planning system, one which should also

boost the systematic preparation of Physical Plans at other levels for the whole country.

The National Land Policy (revised 2014) is also a key part of the setting for physical planning, which determines its relationship with land tenure issues and systems.

Another important policy context of the National Physical Development Plan is the National Urban Policy. The Policy targets the need for urban systems specifically, including the need to guide urbanization trends in rural areas, and for strategies that move towards consolidation of holdings for commercial agriculture, and towards an industrial economy.

The Comprehensive National Development Planning Framework (CNDPF), which was approved by the Cabinet in 2012, is also a very key part of the policy and institutional context of the NPDP. The CNDPF lays down five and ten year planning cycles on which the annual plans of Ministries, Departments and Agencies, including the budget, should be based. The National Planning Authority (NPA) is the agency which is responsible for Planning under the Framework. Until the preparation of this National Physical Development Plan it has been concerned more with social and economic planning and has lacked a full spatial dimension. The methods of interaction between the NPA and MoLHUD, alignment of the NPDP with the CNDPF, the cycle of National Development Plans and Vision 2040, will be being developed further by the respective agencies as the NDPD is implemented. This will include implementation, monitoring and evaluation procedures.

The overall goal of the Competitiveness and Enterprise Development Project (CEDP), under which the NPDP has been prepared, is to create an enabling environment that will contribute to elimination of key constraints to the cost of doing business and Uganda's international competitiveness.

The National Physical Development Plan and the subsequent lower levels of plan which will be aligned thereby with national planning priorities, will enable

entrepreneurs to locate their investments within national priorities and priority areas. It will enable land owners to understand how their land sits within the approved pattern of land uses and spatial strategy for Uganda. Government agencies and other concerned ministries and agencies are also among main beneficiaries and stakeholders of the NPDP. Private business, financial sector, civil society organizations and development partners will similarly benefit from the development of better physical planning systems.

1.3 Examples of National Physical Planning in other countries

National physical development plans and conceptual frameworks have been prepared over the last decades in many countries. In order to put NPDP in the global perspective of national planning, the best practices are outlined below.

European Spatial Development Perspective (ESDP-1999) has greatly influenced spatial planning policy in Europe by identifying deficits in contemporary planning: the lack of "comparable, quantified and geo-referenced data", lack of indicators for defining regions and lack of understanding the dynamic process of planning. As a result a European Spatial Planning Observatory Network (ESPON), had been created. ESPON is a research program that supports the development of Europe-wide policies providing data, analysis, definitions of spatial terms and techniques, maps and options.

The 2009 World Development Report (WDR) has been particularly influential by distinguishing between two kinds of policies: People-oriented policies would include education, health, community and social welfare programs and Place-based policies which include investments in physical and social infrastructures and institutions. The objective of spatial planning at the national level is to achieve Place-based policies including spatial integration of cities, metropolitan areas, or

other regional growth poles which exhibit economic growth and dynamism with those that are growing slowly or are in decline like isolated rural areas.

The United Nations Economic Commission for Europe published in 2008 a definition for Spatial Planning as a key instrument for development and effective governance: "Spatial planning is concerned with the problem of coordination or integration of the spatial dimension of sectoral policies through a territorially-based strategy. More complex than simple land-use regulation, it addresses the tensions and contradictions among sectoral policies, for example for conflicts between economic development, environmental and social cohesion policies."

In 1989, spurred by the massive wave of immigration and by the dawn of the post-industrial information non-statutory revolution which necessitated new forms of planning, it was decided in Israel to prepare a masterplan, interrelated with other national, regional and sectorial plans, that will serve as a framework for long-range policy. The plan generated 3 goal-oriented alternatives: The Economic Alternative, The Social Alternative and The Physical Environmental Alternative which identified each region's possibilities in terms of development and environmental assets, the plan translated these into unique possibilities for employment, construction, and transportation. The alternatives were then amalgamated into a coherent plan tailored to meet Israel's specific needs in the long-term of 30 years.

The Netherlands National Spatial Strategy (NNSS) contributed two key concepts: the concept of City-Regions as an integrated network of all urban areas and the concept of interconnected pattern of green spaces in and around the urban areas to cater to the increasing demand for more open space and recreational areas.

Scotland's Third National Planning Framework (NPF), titled *Ambition, Opportunity and Place*, aims to achieve a successful, sustainable country, a low-carbon natural and resilient system and a connected place.

Malaysia's Second National Physical Plan (2020) was prepared in 2010. The NPP-2 was prepared together with the Five-year Malaysia Plan. It sets out the national strategic spatial planning policies and measures in respect to the general direction and broad pattern of the land use and physical development and conservation. It includes policies and measures with respect to climate change, biodiversity, green and new technology, sustainable tourism, education, living standards of the poor, rural infrastructures and public transport.

Bulgaria National Concept for Spatial Development is to establishes a spatial and land-use planning base to support regional planning and sectoral planning at the national level for the purposes to achieve the following: Integration within Europe; Balanced, polycentric urban development; Reduced urban-rural disparities; Spatial cohesion and access to education, health care, social and culture-related services; well-preserved natural and cultural heritage and competitiveness through growth and innovation areas.

South Africa has an eighty year history of National Spatial Development Planning. The most recent is the National Spatial Development Perspective (2005). The NSDP provides a set of principles and tools for guiding infrastructure investment and development decisions; a description of the spatial manifestations of the main social, economic and environmental trends to understand the national space economy; and an interpretation of the spatial realities and the implications for government intervention.

The National Spatial Vision of Kenya was completed in 2016 and aims at more balanced regional, urban and rural development by applying the concept of Hierarchical Polycentric Regions, which envisioned several urban centers organized in a hierarchical central place structure. In this structure several urban centers, such as Nairobi, Mombasa and Kisumu are dominant, while the smaller centers are dependent on the bigger centers for the supply of specialized goods and services. The selective concentration nodes such as the Lamu Sea Port, Konza Techno City,

Isiolo Tourist City, Turkana oil fields, Marsabit Wind farms and the emerging Nakuru-Naivasha industrial zone are also based on the vision of integrated polycentric regions, which is aimed at achieving balanced and sustainable regional, urban and rural development.

Ghana National Spatial Development Framework put forward six pillars of the national spatial development strategy. It set out a place-based framework that includes an urban settlement hierarchy; A Mega-Region, amalgamating, several large urban centers in the ECOWAS region; two city regions that have taken on a larger scale than individual large cities; and eight urban networks. The plan recommended an overall policy of concentrated development. Key strategies would promote the Accra Capital Region; promote existing urban settlements and discourage new ones; promote larger and discourage smaller settlements; promote urban settlements along major transport corridors; plan for integration of rural settlements into expanding urban areas; protect agricultural land and forests and maintain and improve the efficiency of main expressway network.

1.4 Basis of the Uganda National Physical Development Plan

The Uganda National Physical Development Plan (NPDP) presented here, is based on two groups of lessons: lessons from the local and international practice of large scale Physical Planning and lessons from the current situation, subsequent analysis and stakeholder consultation. The Plan outlines the various orientations of components that serve the overall goal of achieving the best and most equitable use of land resources for Uganda's population up to 2040 and beyond. This includes an analysis of the optimal locations and distribution of human settlements, land uses including wealth creating activities, and networks/infrastructure that will maximize the benefit of

each component while preserving the key values of social and cultural welfare, equality, and environmental sustainability.

The fabric of these orientations is built on three foundations:

1. The analysis of the components of the overall National Development Planning system that can be controlled by National Physical Development Plan.
2. The Population Forecast for 2040, with special emphasis on the urban population. The urban population has been subdivided into a hierarchy of cities, where each level is characterized by its population size and its functional role in the hierarchy.
3. The Balance Sheet of Current Land Uses in Uganda, and its analysis in two aspects: the availability of land for future activities, and a priori decisions about land use which should be regarded as constraints.

The National Physical Development Plan (NPDP) is based on these foundations. With the aim of ensuring that the elements of the *Physical* Plan are as far as possible "integrated' with *economic and social* basis of National Development Planning, the elements have been specified according to a structure of "Pillars" of the National Development Plan and Vision 2040, which will be described in the next section.

Three basic sets of spatial/physical elements fall under the jurisdiction of the National Physical Development Plan:

A. Elements of Human Settlement.
B. Elements of Land Uses.
C. Infrastructure Networks.

These elements are the variables on which Spatial Options for consideration of the details of the components, and interactions between them, have been generated.

1.4.1 Stakeholder Participation

These Spatial Options were also used to subject the emerging proposals for the NPDP to rigorous discussion by stakeholders in 11 regional conferences which were organized, with the following objectives:

- to validate the elements including the lessons from the Current Situation Analysis, which had been completed, trends and forecasts and the underlying ideas (while adhering to Vision 2040) which were emerging; and
- to consult the participants on the issues by discussing options and selecting the best aspects of them for the basis of the Plan.

1.4.2 Content of the Plan

The following Sections of the NPDP describe:

Section 2: The core attributes and elements of the Plan, and how they relate to Vision 2040 and the National Development Plans.

Section 3: The Population Projections for the Plan and the Land-Use Balance Sheet, how much land is available for which uses.

Section 4: The Basic sets of Physical Elements which constitute the Plan.

Section 5: The Method of Analysis: The Spatial Options for the Plan, based on the attributes of Vision 2050, and Parameters used to show the relationships between the Physical Elements.

Section 6: Stakeholder involvement in Plan preparation.

Section 7: The National Physical Development Plan.

Section 8: The Implementation of the Plan.

2. The National Development Planning system

Planning a physical realm of a country is a way of comprehending a complex amalgam of physical and non-physical components, interacting with each other. This enormous complexity has been analyzed and presented in bright and simple aggregates, organized into an overall framework.

The National Physical Development Plan has been based on the underlying tenets of Vision 2040. The Vision has been elaborated by stating 9 basic "Attributes", either physical, non-physical or a mixture of both:

i. Regional context in which East Africa is federated;
ii. Independence and Sovereignty of Uganda;
iii. Democracy and the Rule of Law;
iv. Peace and Stability;
v. Knowledgeable and Skilled Society;
vi. Wealth Creation and Economic Management of the National Economy;
vii. Inclusive Growth and Human Capital Development;
viii. Environmental Sustainability;
ix. Development of Infrastructure systems, Settlements & Facilities.

Vision 2040 was further developed by specifying aspirations, challenges, opportunities, and fundamentals, leading to baselines and targets. The Vision goes on to recommend modes of action or "Change Strategies" for Uganda's future development. The National Development Plans I and II have used these 9 "Attributes" for their analysis and policies.

It is also important for the implementation of the Plan, to note that these "Attributes" are easily related to the sectors, in which all the policies and decision-making

processes of government, including physical planning, are grouped, under its Ministries, Departments and Agencies.

The National Physical Development Plan uses the same "**Attributes**" for data collection, analyzing, and later for Physical Planning proposals, but revises their subdivision to better fit their physical aspect. The National Physical Development Plan therefore translates the "**Attributes**" into seven "**Pillars**" which contain the spatial elements. Each Pillar is subdivided to "sub pillars", and each sub pillar contains cells of components, which are either physical or nonphysical.

2.1 The Physical and the Non-Physical components of Planning

The Current Situation Analysis identified the key elements of Uganda's Development Planning system, which are subdivided into spatial/physical and non-physical spheres. Physical planning is only one of the many tools available in determining national priorities within the sphere of public policy. It must therefore be considered that the NPDP is responsible only for the **physical components**. This distinction is important as a preparatory stage before considering planned options. There are therefore elements, some of which are controlled, and some not controlled by the Physical Plan.

Within the **subsystems which are uncontrolled** by physical planning, there are the non-physical strategies and plans by the different sectors, and future macro-economic and social development planning.

These have been inputs to the National Physical Development Plan, and will be affected in the future by the plan. There are non-physical subsystems where there are no long term strategies, projections or economic and social development plans, but whose futures have a strong bearing on the physical elements. These have had to be projected for the National Physical Development Plan.

2.2 The NPDP Information & Planning Matrices

The above Pillars and Sub-Pillars are shown in a National Physical Development Plan "Information and Planning Matrix" below. The cells in each Pillar of the Matrix were filled with relevant information in terms of which are physical, non-physical elements, or both. By analyzing these cells, the meaning of the current status of the Pillars was formulated and made visible. Addressing all information in the cells leads to a wide-angle picture of the national physical systems and their relevant underlying forces.

In the following list of the pillars, therefore, cells which deal with the controllable physical elements of the National Physical Development Plan are colored in red. The blue color is for those cells in which only data collection, analysis and forecasts were done, but they are givens for which no decisions related to NPDP are involved.

Pillar 1 - Environment			
Sub pillars 1.1 Geo-physics	**Sub pillars 1.2** Ecology	**Sub pillars 1.3** Natural Resources	**Sub pillars 1.4** Nature Protection
1.1.1 Geology	1.2.1 Fauna & Flora	1.3.1 Minerals	1.4.1 Wild Life Reserves
1.1.2 Soils	1.2.2 Forests	1.3.2 Oil & Gas	1.4.2 Natural Parks
1.1.3 Topography	1.2.3 Wild life		1.4.3 Central Forest Reserves
1.1.4 Climate Change	1.2.4 Wetlands		1.4.4 Bio Regions

Pillar 2 - Human Capital			
Sub pillars 2.1 Demography	**Sub pillars 2.2** Poverty & Vulnerability	**Sub pillars 2.3** Culture, Ethnicity & Social Fabric	**Sub pillars 2.4** Education and Skills
2.1.1 Population	2.2.1 Poverty Maps	2.3.1 Mind Sets	2.4.1 Education Systems
2.1.2 Labor Force		2.3.2 Ethnic Equality	2.4.2 Skills Development
		2.3.3 Social Coherence	2.4.3 Science & Technology

Pillar 3 - Spatial Economy	
Sub pillars 3.1 Macro Economy	**Sub pillars 3.2** Wealth creation Sectors
3.1.1 Financial Services	3.2.1 Industry & Trade
3.1.2 Real Sector	3.2.2 Agriculture
3.1.3 Fiscal & Monetary Development	3.2.3 Oil Gas & Minerals
	3.2.4 Tourism

Pillar 4 - Public Services		
Sub pillars 4.1 Health	**Sub pillars 4.2** Education	**Sub pillars 4.3** Central & local Governmental Services
4.1.1 Hospitals Distribution	4.2.1 Universities & Research Centers Distribution	4.3.1 Quality and Distribution of Services

Pillar 5 - Settlen		
Sub pillars 5.1 Urbanization	**Sub pillars 5.2** Rural Settlements	**Sub p 5** Rur Settle
5.1.1 Growth	5.2.1 Growth	5. Gro
5.1.2 Spatial Distribution	5.2.2 Spatial Distribution	5. Spa Distrib

Pillar 6 - Infrastructure		
Sub pillars 6.1	**Sub pillars 6.2**	**Sub pillars 6.3**
Land Transportation	Air & Marine Transport	Utilities
6.1.1 Roads	**6.2.1** Air Port & Fields	**6.3.1** Energy Infrastructure Power Production & supply
6.1.2 Rail Ways	**6.2.2** Port & Jetties	**6.3.2** Pipelines Oil & Gas
		6.3.3 Water for Industry, Agriculture & Households
		6.3.4 Information Communication Technology (ICT)

Pillar 7 - Governance	
Sub pillars 7.1	**Sub pillars 7.2**
Regional & International Relations	Rule of Low
7.1.1 Regional cooperation	**7.2.1** Justice & Human Wrights
7.1.2 Inter - regional Transportation	**7.2.2** Public Administration
7.1.3 Borders & Border towns	**7.2.3** Land & Planning System & Acts

Figure 2: Pillars of the Vision 2040 and the National Development Plan and their spatial factors:

The Information Matrix was used in the NPDP not only to portray the Current Situation, but also to analyze and assess future projections, visions, proposed options, plans and their implementation. By using the same **"attributes",** the Matrix summarizes all the pertinent issues which are addressed in Vision 2040 and the National Development Plan II. It aggregates "under one roof" all the issues which are relevant to the physical aspect of planning, including Data, Analysis, Forecasts and Plan proposals.

3. The Population and Land Use Projections

3.1 Population and Urbanisation Projections

In Uganda, fast population growth and increasing differences between urban and rural incomes are creating high urbanization growth rates. The majority of growth has taken the form of unplanned settlements and slums, and urban areas are characterized by poor services and road networks. Kampala is a "primate city" – meaning that it is disproportionately larger than any other city in the urban hierarchy. The Greater Kampala Metropolitan Area (GKMA) was approaching 3.5 million in 2017, while the 14 remaining largest settlements were much smaller and ranged between 50,000 and 200,000 residents.

In the tables below, two scenarios of population growth are presented, both of them based on the assumption that the Average Annual Growth Rate (AAGR) will go down from the present 3.01%.

The Annual Urbanization Rate (AUR) in both cases will go down in GKMA - compared to the present 6.2% - yet still be significant in other urban cities and towns, and "rurban" settlements – those with less than 50,000 inhabitants. This assumes a conscious effort to divert the disproportional growth of Kampala as a mega-metropolis and primate city towards structured urban growth all over the country. The details of how, and in what forms, this change can

2040 / Average Annual Growth Rate **(AAGR)= 2.75%**

Total Population	Urban Metropolis & Municipalities	Rurban <10K Town Councils &Townships	Total Urban	Rural
2017 **40 M**	16 % 6.4 M GKMA: 3.5 M Others: 2.9 M	2 % 0.8 M	18% 7.2 M	82% 32.8 M
Vision 2040 **61 M**			60% 37M	40% 24 M
NPDP 2040 **75 M** **AAGR 2.75%**	~30% 23.0 M GKMA: 8.5 M (AUR 4%) Others : 14.5 M (AUR 8.5%)	~10 % 7.0 M (AUR 6.5%)	40% 30.0 M	60% 45.0 M

Figure 3: 2040 Population and Urbanisation Projections

occur will be presented the succeeding Sections of the Plan.

The first projection for 2040 is based on the optimistic assumption that the average AAGR will go down to 2.75%. According to this scenario, urban settlements will be **about 30% of the total projected population in 2040 and include 23 million.** Rurban settlements will include another 10%, or 7 million, of the population. The AUR here will be 4% in GKMA, yet 8.5% in other urban centers, and 6.5% in the rurban realm.

The NPDP should also look forward to the horizon of 2060 in order to make room for the population which will by then be 100 million. Therefore, the second projection which is for 2060, assumes an optimistic decline in the AAGR to 2.2% due to an expected improvement in levels of education, birth control and other factors, with the target AGR of 1.9% in 2060.

This projection shows how the country can still accommodate its growing population, as long as measures are taken to limit the AUR in GKMA, while maintaining a steady AUR in other urban and rurban areas all over the country.

	Urban Metropolis & Municipalities	Rurban <10K Town Councils &Townships	Total Urban	Rural
2017 **40 M**	**16 %** **6.4 M** **GKMA: 3.5 M** **Others: 2.9 M**	**2 %** **0.8 M**	**18%** **7.2 M**	**82%** **32.8 M**
Vision 2040 **61 M**			60% **37M**	40% **24 M**
NPDP 2060 **100 M** **AGR 2.2%**	**40 %** **40.0 M** **GKMA: 10 M** **(UR=2.5%)** **Others: 30 M** **(UR=5.6%)**	**10 %** **10.0 M** **(UR=6.2%)**	**50%** **50M**	**50%** **50 M**

Figure 4: 2060 Population and Urbansiation Patterns

Even according to this optimistic scenario, it is evident that urbanization will be significant: about 50% of the population, or 50 million people, will live in urban areas by 2060.

The main lessons / objectives in the population realm are :

- Preparing room for a population of 75M in 2040 and 100M in 2060.
- Reducing annual growth rate (AGR) from 3.31 to 2.5 in 2040 and 1.9 in 2060.
- Reducing inequality and decreasing poverty - especially by improving GDP, health care and education.
- Increasing skilled manpower through education.
- Restructure vocational and professional training to match the needs of the economy.
- Changing the balance of personal vs. local interest, or individualism, in favor of public interest.

3.2 The National Land Use Balance Sheet

The total land area in Uganda is approximately 241,000 Km². Availability of land is a key factor in agriculture, industry and settlements, and underpins the livelihoods of the majority of people in rural areas. About 50% of household wealth in Uganda is held in the form of land, and land provides the majority of employment opportunities.

Declining soil fertility, coupled with low application rates of productivity-enhancing inputs, threaten the livelihood of the population, particularly that of the poorest households. The country that was once known for high levels of soil fertility is facing degradation of its land resources, with topsoil losses of as much as 5 tons per hectare being reported in some areas, in addition to much reduced opportunities for opening up new lands.

There are essentially three broad land use categories: agricultural land; built up areas; and land reserved for nature protection. These categories are, however, not exclusive and overlap in some areas to give the following seven land use combinations :

1. Exclusively agriculture land (cultivation).
2. Exclusively built up areas.
3. Exclusively forest and wildlife protected areas.
4. Combination of built up and conservation areas.
5. Combination of agriculture and conservation (such as buffer zones in wildlife reserves and community wildlife management areas)
6. Combination of agriculture and built up areas (urban farmlands or rurban settlements).
7. Combination of agricultural land and built up and conservation areas.

The seven land use categories imply that there is potential for land use conflicts, not only between broad categories but as between mutually conflicting activities like pastoralism and crop agriculture. It is anticipated that clarification of land tenure, and formulation and implementation of a national land use plan which is implemented through the Physical Planning system down to local level will reduce potential conflicts and optimise allocation of land resources.

The following balance sheet for 2017 gives a detailed picture of current land Use in Uganda:

2017 Land Use Balance Sheet

Land Use%		Sq. Km	% of TLA
Total Agricultural land		108,000	54.0%
Arable land		64,000	
Permanent Crops		22,000	
Permanent Pasture		22,000	
Grasslands		**29,000**	14.50%
Forest Areas		**13,000**	6.50%
Wetlands		**26,500**	13.25%
Permanent	**7,500**		
Seasonal (Grass Lands)	**19,000**		
National Parks		**10,500**	5.25%
Other Protected Areas		**4,000**	2.00%
Settlements Areas (Urban + Rural)		9,000	4.50%
Total Land Area - TLA		**200,000**	100.00%
Water Bodies		**41,000**	
Total Area		**241,000**	

The Balance Sheet for 2040, below, gives a projection of land use juxtaposed with land needed. Most of the land in Uganda is agricultural land, and as the tables indicate, the anticipated population growth will make it necessary to clear more land for agriculture, while at the same time increasing yield significantly, as the current subsistence cultivation patterns will neither suffice the economic targets for the agricultural sector, nor the household demands for food.

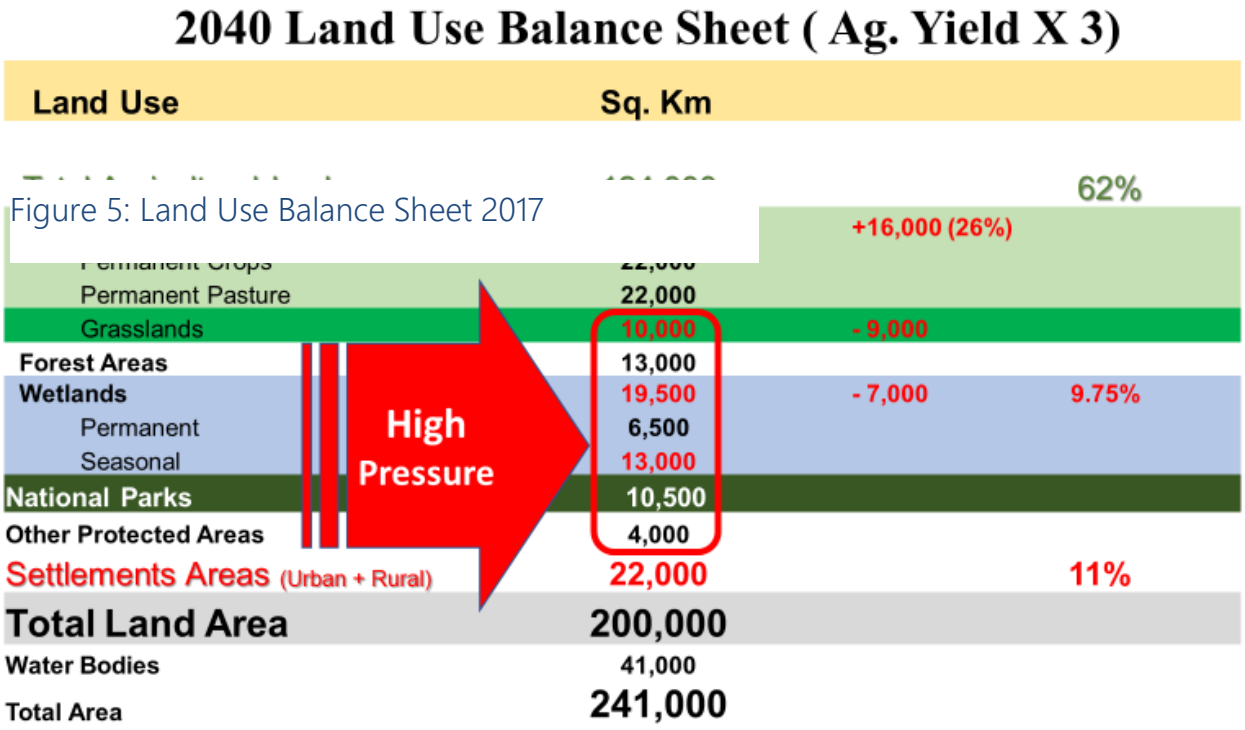


Figure 5: Land Use Balance Sheet 2017

Figure 6: Projected Land Use Balance Sheet 2040

For this reason, the definition of Strategic Agricultural Zones, while also maintaining Secondary Agricultural Zones, as explained in Section 5.2.2 below, is of utmost importance. Another important step, and one which needs to be done in a structured manner in conjunction with the local population, is adding Karamoja to the balance of potential agricultural land.

Analyzing land use serves as a foundation for evaluating future options of Physical and Spatial Development in two aspects: estimating the availability of land of various types for future land allocations, while working through all constraints imposed by a priori decisions about land use. The next chapters will give a more detailed account of the current land uses and how these underlie planning for the future.

4. Basic sets of spatial/physical elements of the NPDP

4.1 Basic Physical Elements of the Plan

As stated in Section 1.4 above, three basic sets of spatial/physical elements have been identified which fall under the jurisdiction of the National Physical Development Plan:

4.1.1 Elements of Human Settlement,

4.1.2 Elements of Land Uses

4.1.3 Infrastructure Networks.

4.1.1 Elements of Human Settlement (Pillar 5 - Settlements)

Human settlement is one of the central elements of the proposed options; each option is accompanied by a table of urban hierarchy of the 52 major urban centers across the country. As mentioned above, Uganda is still an overwhelmingly rural population but is urbanizing rapidly, now 18% and likely to be 40% by 2040. Population densities in some rural areas, especially those with no large urban center, are also reaching high levels.

Therefore, defining the location, size and structure of human settlements is a central component in the spatial structure options, which thus differ from each other by the size of cities included in their list. For each option, there is an urban hierarchy that ranks each city by the size of population, guided by the presented option's strategic rationale. The table details which cities will become "Growth Poles", and place emphasis on the regional role of cities. The hierarchy tables exclude the Rurban Realm (7 million inhabitants) but include all central places that will have critical role in the national system.

Human settlements in this hierarchy are divided into two categories, each with several subcategories that will be detailed below: Regional Cities, which serve as Growth Poles

are those with over 500k inhabitants; and Sub-Regional cities and towns with 50k-500k inhabitants, which serve as local urban centers.

Growth poles are cities of 500k and beyond, where productive economic activities will rapidly expand due to the presence of economies of scale and agglomeration, competition and cooperation, innovation, and backward/ forward linkages. The critical component in a GP is the presence of localized inherent revenue producers with significant economic potential .

The key argument to explain the logic behind the Growth Poles (GP) approach is the fact that growth is not uniform in different places, but growth has different degrees of intensity in different points, or poles, and then it spreads via channels such that its final result for the economy is specific to each region.

The operation of a pole presupposes:

a. A sufficient population size that should be over 500,000 inhabitants.
b. The necessary infrastructure networks (roads, railroads, river transport, and electricity).
c. The operation of propulsive activities that can attract other activities and form a dynamic development climate .
d. Proximity to markets or trade corridors to establish economic linkages with the wider economy.

Vision 2040 identifies ten cities as growth poles: five regional cities (Gulu, Mbale, Kampala, Mbarara, and Arua) and five strategic cities (Hoima, Nakasongola, Fortportal, Moroto, and Jinja). While the NPDP recognises the strategic importance of these cities, options were considered that each represent a different pattern for the growth poles and the other urban centers, that were developed as the basis for the overall NPDP.

4.1.2 The categories of growth poles:

Capital City: Kampala

Regional cities: Beyond 750k: cities of regional importance, based on manufacturing and regional services that are of strategic importance to the national economy .

Sub-regional cities - 500k-750k: cities that serve as urban growth centers on the sub-regional level, built upon significant and planned urbanization and aimed at creating significant urbanization on a countrywide scale.

Urban Settlements (Between 50K and 500K)

Urban Settlements are urban entities that range between 50k and 500k, which are projected to develop both in terms of the number of settlements that grow to this size, and their role in the overall spatial structure. Municipalities smaller than 200K currently represent the majority of Uganda urbanization. Their role in the future of urban growth will remain central. These urban authorities will facilitate local production, services and trade.

The recommended categories of Urban Settlements are:

Major Towns: 250k-500k - towns of local importance that facilitate significant economic activity and industry in peripheral areas.

Secondary Towns: 100k-250k - towns that further expand urban development, supported by regional economic activity such as value chain systems for commercial agriculture.

Townships: 50k-100k - towns that operate as central places for the agricultural periphery and include also production activities

In addition to the distinction between cities and towns according to size, there are two further classifications that are significant in terms of the human settlement patterns:

New Towns are those urban centers, including satellite towns that will be established according to the optimal option for the national spatial structure. These are towns that will have the benefit of starting from a planned growth pattern that takes into account their regional and economic status, which will allow them to grow in a structured manner .

Border Towns are towns of varying size and nature which have a strategic position as entrance-exit gateways to the country. They thus play a significant role – each according to its particular location – especially since Uganda is a landlocked country located in heart of East Africa, bordered by Kenya, Tanzania, Rwanda, DRC and South Sudan. As such, it is in a prime location to become a strategic regional and international transport hub, making the strategic position of Border Towns of utmost importance for international trade (via roads, rail and inland water transportation). Moreover, as locations dealing with the administrative side of border crossing, these towns are important also for the tourism industry.

Rurban Settlements (Below 50K), a pattern of settlements that characterize the peri urban areas, bridging the urban and rural realms.

4.1.3 Elements of Land Uses

Economic Land Uses (Sub Pillar 5.4 - National Land Use Structure and Sub Pillar 3.2 - Wealth Creation Sectors)

As the Land Use Balance Sheet above indicated, land use is a central component in planning a national spatial structure. The main attention in this part is given to agricultural land and protected areas, with the aim of securing the required land for agriculture and the human settlement areas discussed above. Following is a brief overview of these different land uses.

Strategic Agricultural Zones (SAZ)

Uganda is divided into ten agricultural clusters. An agricultural cluster is an area determined by ecological attributes, to which a cluster of strategic crops are matched and suggested for production .

The Strategic Agricultural Zones are based on these clusters, while proposing new areas for them due to the expected, urgent, and growing need for arable land. Importantly, NPDP proposes the inclusion of Karamoja in plans for the development

of these Strategic Agricultural Zones, as it has significant untapped areas and resources that could prove a valuable asset if developed alongside proper infrastructure with community involvement.

The Strategic Agricultural Zones are areas aimed at creating a concentration of producers, agribusinesses and institutions, usually in the same sector, addressing common challenges and opportunities, with the overall aim of facilitating consolidation and moving towards modern agriculture. SAZs are aimed at increasing productivity of selected commodities, as they promote both vertical linkages (inputs and raw materials) and horizontal linkages (marketing and consortia), support relationships, make it easier to develop infrastructure, and enhance access to market information.

Secondary Agricultural Land

These are areas that for strategic reasons are not prioritized as SAZs, being located either on land that is less suitable for commercial agriculture for various reasons, or offering better opportunities for urbanization. In these areas agricultural production and consolidation will also take place, however – as their name suggests – will be of secondary importance, as these zones will provide the space needed for mixed development agriculture, and urban and rurban areas to accommodate the growing population.

AGUR (Agricultural / Urban block)

AGUR Block is a new concept, which is emerging in other rapidly urbanizing locations globally, which offers an original paradigm for modern agricultural living. It is a Special Economic Zone, based on agricultural industries, biotechnologies and value added small and medium enterprises .

They also include:

1. R&D zones designed as a hub of knowledge exchange.

2. Consolidated Agricultural Villages and small townships supplying commerce and public services.
3. Intensive modern farming for cash crops and added value agriculture .
4. Attractions of eco-tourism and African cultures (music, sculpture, painting, gastronomy).

In order for AGURs to function well, they need access to national highways and proper infrastructure such as electricity, water and ICT. AGUR blocks will thus support the development of these networks, and as a result will address three major spatial challenges of Uganda :

- To overcome the urban-rural divide: sprawling urban settlements are overtaking arable land to accommodate increasing spatial demands created by the growing population. The larger these cities become, the further agricultural landscapes are forced away from the people they sustain, allowing more people to depend on non-farm employment. The AGUR Block support and formalizes the intensification of Agriculture on urban fringes that takes place as cities expand.

- To cope with land fragmentation: Consolidation of farms as an instrument for land consolidation - a critical first step towards the modernization of agriculture.
- To tackle inclusively the challenge of agriculture commercialization and industrialization, through a bottom-up approach that allows the population to take an active part in shaping integrative and new ways of modernizing agriculture .

AGUR blocks bring innovative hybrid agricultural and urban typologies into close dialogue. A such, this approach to spatial zoning can describe an "Agropolitan" territory for living, in which inhabitants of any settlement must not only actively produce their own food, but also mediate the space of their collective living with the natural environment while sustaining effective agricultural production and export products.

National Resources Blocks (Oil, Gas and Mining)

Natural Resources Blocks are designated areas containing relatively high concentrations of natural resources - in particular the non-renewable resources, mainly minerals, oil and gas, which Uganda has in plenty. A significant resource are the exploitable reserves of oil and gas in the Albertine Graben rift valley basins. The Albertine Graben (Albertine South, Central and Northern Regions), which forms the northernmost part of the western rift valley, has been identified as the best prospective area for petroleum in Uganda so far. Efforts to develop this non-renewable resource have been stepped up in the last decade.

The aim of identifying Natural Resource Blocks in the NPDP is twofold: preserving natural resources so that they can be extracted according to sustainable, long-term plans, while providing networks and infrastructure to enable this process and make the most of it in terms of industrial and urban development in areas adjacent to these resource blocks.

Nature Protection Land Uses (Sub Pillar 1.4 - Nature Protection)

Protected Areas

Protected Areas are areas recognized for their natural and ecological values, which cover approximately 18% of Uganda's total land area. They include sensitive natural ecosystems that must be separated from artificial human activities, and can be divided into 6 major categories :

- National Parks.
- Wildlife Reserves.
- Community Wildlife Management Areas/ Sanctuaries
- Permanent Forest Estate (Forest Reserves): Areas designated, protected and managed by the National Forestry Authority (NFA).
- Ramsar sites: protected areas designated and managed under international law, specifically The Ramsar Convention on Wetlands of International Importance.
- Central Forest Reserves.

Bio - Regions

Bio-regions are areas which exhibit high levels of biodiversity, including those within the protected areas, but also outside them. While protected areas have already been defined, the entire Nile/Kyoga basin has been also identified by the NPDP as a bio-region due to its crucial ecological importance, the combination of abundance of water and unique rural livelihood. This area has a potential for bio-agriculture and eco-tourism as well. Current and future settlements can gain a lot of wealth from this bio region.

The threats to biodiversity are rampant clearance of natural vegetation, catchment and water sources disturbances, poaching and illegal wildlife trade. The areas must be identified, disseminated and protected by enforcement through the Physical Planning system. The Government of Uganda accords high priority in the protection of natural resources. Bioregional planning restores, maintains, and enhances biodiversity and

the natural ecosystems and also promotes "practical sustainability" to meet human demands for food, water, energy, housing, and materials.

4.1.4 Infrastructure Networks (Pillar 6 - Infrastructure)

Related to agricultural production zones, growth of settlements and industrial clusters, as well as the development of tourism, health care and education, is the potential for more targeted and efficient provision of accompanying infrastructure.

Many industries are currently operating at less than 50 percent capacity due largely to lack of reliable and affordable energy and transport services. This is also true for the formal service sector and export/import.

The overall aim is of creating structured, well-planned and efficient networks to support economic growth based on country-wide development. As will be detailed below, there is a need to create a new network of high quality and safe highways, complemented by a system of high-speed expressways, across the country, to connect urban and economic centers to each other and internationally. This is *in addition* to existing highways and local roads, which need to be brought into good condition, also in peripheral areas.

There is also a need to develop the railway line (SGR), which would connect the country effectively to surrounding countries and make Uganda a hub for international and regional import/export, as well as inland water transportation and airfields for increased air traffic. Electricity and water supply is similarly in need or development.

The first step towards planning these networks is creating a clear hierarchy of road types, which refer to the planning objectives and targets of the National Spatial Structure.

Highway Network

There is a need not only to rejuvenate existing roads, but also to create a new network of highways that connect all urban centers, industrial areas, and central points of interest to each other.

The highest existing road level in Uganda are highways. The highway system in Uganda is based on the original roads which connected the country's major towns to each other and to Kampala. These roads were the main thoroughfares of these towns and cities and as such, the settlements grew along the roads because they provide the greatest accessibility. Today these roads provide the main connection for through traffic traveling long distances, and local demand. The current highway system does not provide the following criteria:

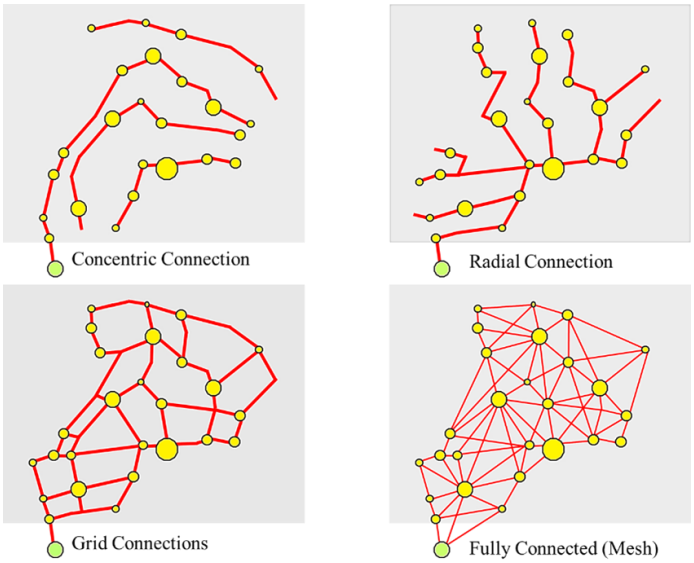
1. Safe bypassing of major cities (reduces congestion and pollution in them).
2. A separation between high speed through traffic and low speed local traffic.
3. Limited access and reduce the number of intersections to improve speeds.
4. The ability to provide multiple lanes of travel which allow for vehicle passing.
5. Separation between each direction of traffic to improve road safety.

For this reason, it is absolutely necessary to build a new network of highways. This network may build upon existing highways in certain places, but needs to be planned based on urbanization growth patterns and connectivity models. To this end, the geometrical network analysis below provides a methodology for developing the new system of highways.

The Geometry of Highway Networks is a pattern of linkages and nodes (vertexes), in this case of possible transportation connections. Each of the options below (see diagram) has a set of linkages which represent connectivity, and nodes that represent central places. Each specific pattern represents one rationale in terms of spatial relationships.

The illustration shows 4 basic schemes which were considered:

1. Fully connected (mesh) network. Theoretically this is an expression of a situation in which "all my friends know each other", meaning that all nodes are connected in a straight line to all other nodes.
2. Concentric connections, in which the connectivity among nodes in the periphery is prioritized over the radial connectivity.
3. Radial connectivity shows the exact opposite conception, in which "all roads lead to Rome"- a situation in which all nodes are radially connected to a central node.



4. Grid connection is a superposition of all other networks with the elimination of redundant connections that may overload the system.

A comparative analysis has been carried out between the networks. The concentric and radial connection patterns do not provide a solution that connects the urban centers in the country in an efficient way, particularly considering Uganda's landlocked position, the benefits of which can be maximized only if all areas of the country are connected to each other. The fully connected mesh provides maximum connectivity,

Figure 7: Transport network options

but there are many redundant roads that take up valuable land that could better be

used for agriculture, urbanization and industry. As a result, The Grid Network came out as the most efficient and flexible one for the country.

The enclosed scheme shows how the different geometries can be used for land use distribution.

Expressway network

The NPDP has underlined the importance of creating a higher level beyond the highways, namely an expressway network. Expressways provide connectivity between cities across the country, provide international traffic of cargo and passengers. Expressways are designed according to intercity travel and international through traffic parameters. Expressways feature the following design and operational attributes:

1. Avoid competition between road and rail network to prioritize sustainable travel
2. If a national toll system is developed, all freeways should have a non-toll alternative
3. Attempt to maintain 70/30 rule: 70% of national traffic will use a maximum of 30% of the road network length
4. The Expressway structure should serve new urban centers and growth poles of over 200,000 residents
5. Distance between interchanges based on international best practice
6. Freeway interchanges coordinated with railways to form intermodal hubs
7. GKMA maintains the proposed freeway structure with necessary modifications

Figure 8: Design and operational attributes of expressway networks

Infrastructure Corridors

Infrastructure corridors are an internationally accepted method of combining major infrastructures into a manageable and easily maintained package. The benefits of this type of development are numerous, the most important being that they simplify and make more efficient the reservation of "right of way" for future infrastructure development.

Right of way refers to the preservation of lands for future development, it applies to all types of infrastructure. Right of way does not immediately need to be utilized, instead it preserves development options for the future. Realistic right of way means that Uganda need not preserve all possible options but instead focus on the appropriate infrastructure corridors for future use. It is important not to abuse right of way preservation.

Infrastructure corridors are best placed along transport infrastructures, in the case of Uganda, the NPDP recommends that they run along expressways and highways in order to ease construction and maintenance. The corridor can and should include all types of infrastructure including transport, water, electricity, ICT, and more. Overall, infrastructure corridors evolve infrastructure development into a highly efficient packing of national assets which is based on the preservation of the appropriate rights of way.

Infrastructures in corridors include

Energy Infrastructures	Power lines and underground cables provide energy transport, this is especially important in Uganda where power generation is based often on hydroelectricity. Infrastructure corridors provide a planned and safer routing for these infrastructures which insure a continuous flow of electricity and minimized interruptions in energy flow.
Pipelines	Pipelines benefit from infrastructure corridors in that they provide easy construction and maintenance because of close proximity to roadways.

Water Supply	Water supply is a complex issue in Uganda which will require the transfer of large amounts of water across the country. Because water is a basic need for Uganda's population, it must be protected and built to the highest standard. Infrastructure corridors allow water pipelines to be built in a sterile landscape without competition from other development, buildings or settlements.
ICT	Similar to energy infrastructures, corridor style development will allow for rapid implementation and continuous flow of ICT cables either above or below ground.

Figure 9: Infrastructures in corridors

5. Method of Planning

Strategic Orientations, Spatial Options and their parameters

Observing and analyzing the overall current situation of a country is a complicated assignment of transferring data into meaningful information. If data tends to be objective, information is not. The value of information needed for physical planning is always affected by the professional narrative of the team of planners. It is emphasized that information is a product of the planner's prepared mind, theories and concepts. The physical planner filters out noisy data and focuses on important phenomena. A narrative of the grouping and interaction of physical planning components is created which is informed by the planner's knowledge and experience of how they are inter-related. If planners succeed in sharing this narrative with their clients, stakeholders and the public, then the Plan may be successful.

The Plan is based on the planner's descriptive abilities, and diagnostic skills, to show how the national spatial framework works, what part of it is satisfactory, what is wrong, and how to improve and grow. It is emphasized that the National Physical Development Plan not only concentrates on the aggregative and national level of the pillars, but also takes account of the diversity of local situations. Furthermore, it is a schematic plan which will be interpreted in more detail at lower levels, from regional to local.

Based on the lessons and objectives from the Current Situation Report, coupled with the main elements of the national spatial framework as outlined above, six different strategic orientations have been considered as a basis for the NPDP, each emphasizing a key aspect of Uganda's economic and social development.

Within each of the strategic orientations, the underlying principles according to which the NPDP is implemented, are identified. These are needed because the Plan will need to be continuously developed in response to the many external factors which are beyond the control of the Planning system. These have to be accommodated, but the circumstances under which the stakeholders, and particularly Government through its planning systems, can react and steer the country's development in an orderly manner have to be guided by these basic principles and objectives.

The strategic orientations, therefore, allow the different groupings of the spatial components of the pillars and sub-pillars to be examined separately, and then suggest how they can be incorporated into the one composite National Physical Development Plan. Each strategic orientation addresses optional concepts, beliefs or attitudes, that maximizes or satisfies Specific Values of National Importance

Out of these orientations, six Spatial Options have been generated to be "placed on the table" for discussion and evaluation.

The Strategic Orientations are:

Strategic Orientation 1: Maximizing national economic growth

Strategic Orientation 2: Favoring social and regional equality.

Strategic Orientation 3: Maximizing supply of agricultural lands.

Strategic Orientation 4: Maximizing environmental sustainability

Strategic Orientation 5: Maximizing urbanization and urbanity

Strategic Orientation 6: Maximizing national and international connectivity.

Figure 10: Strategic Orientations

Each separate strategic orientation has been given spatial expression by using parameters that maximize the value of its underlying principles. The parameters have been mapped and became a Spatial Option.

There are five parameters which characterize each Spatial Options:

(1) Planning Concept

The first parameter is the **"Planning Concept"**, which underlies each spatial option. Here again there are several concepts that are explained firstly separately, and then how they can be incorporated into one model. The Planning Concepts include **Agglomeration** which refers to the consolidation of economic and social activities into human settlements, where one or several urban centers serve as focal points; Clusters which refer to the consolidation of land, including secondary services and economic activities that are entailed in land use; and **Corridors** refer to the consolidation of networks, including both transportation and utilities.

(2) Spatial Form

The second parameter to which we refer is the **spatial forms** of the national physical structure. There are three main basic forms: **monocentric** vs. **polycentric** structures, and structures based on **physiography of natural or man-made land use.**

(3) Development Strategy

The third parameter is **Development Strategy**, which gives an overall view of implementation in practice. This part explains both the rationale and the governmental policies (with a focus on urbanization) that will be required to implement the proposed spatial growth, while contextualizing it within the regional and international context, the urban growth policy it depends on, and its functions and rationale.

(4) Urban Population Distribution

The **fourth parameter is Urban Population Distribution.** This parameter provides detailed information on the distribution of the population in the main urban centers which result in each Spatial Option. Population tables, attached to each Spatial Option, show the distribution of population along the urban hierarchy including that of 2014 and that projected for 2040 for each city.

(5) Urban Settlements Hierarchy

The **fifth parameter** is **Urban Settlements Hierarchy**. This parameter indicates how the levels of hierarchy apply to each Option.

5.1 Spatial Option 1:

The Economic Orientation –

Maximum Growth of National Economy.

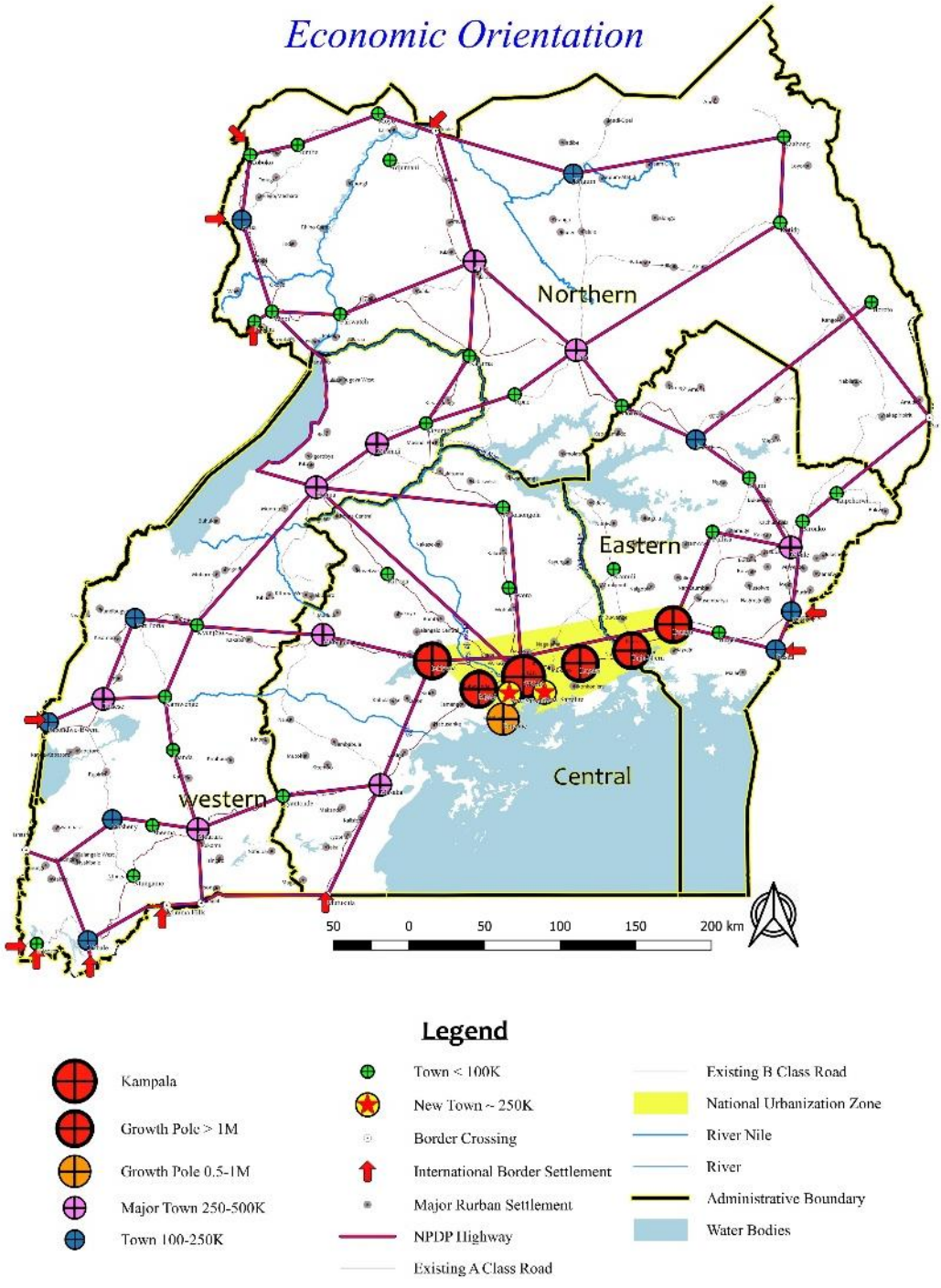


Figure 11: Spatial Orientation 1: Monocentric Settlement Structure

5.1.1 Planning Concept: Super Agglomeration - The Mega Metropolis.

"Agglomeration" is prioritized in order to create clusters of industry and services. By developing six existing towns around Kampala, the aim is to take some of the pressure of hyper-urbanization off Kampala itself, replacing it with a cluster of large metropoles that can be easily connected to one another, including two new satellite cities, and will in fact form one mega-metropolis together.

This mega metropolis will allow industry to develop in a rapid manner, as agglomeration and clustering create economic benefits such as competition and cooperation, innovation, and backward/ forward linkages.

This is also the option that requires the least intervention, since the Business-As-Usual (BAU) for the country's urban growth is that GKMA will continue to grow at a 6.2% annual urbanization rate, to the effect of almost quadrupling its current size (3.5 mil.) to 14 Mil. The benefit in this scenario is that this is done in a planned manner that makes an effort to expand the mega-metropolis to have seven focal points, while also developing infrastructure between them, as well as creating a system of new highways to connect the GKMA to other parts of the country. Super agglomeration can compete on a global scale and attract foreign investment. This will also expand business tourism with economic benefits to the nation's economy.

On the condition that appropriate transportation solutions are also implemented, along with stable access to electricity and clean water, such a situation will allow high-tech industry and ICT to flourish, having positive effects on all related services within the metropolitan area, including financial services, education, healthcare, and permanent housing. Super agglomeration addresses long-term economic growth, but may not address important factors underlying regional and sub-regional integration and development with all its benefits (as detailed in the options below).

5.1.2 Spatial Form : A Monocentric Settlement System

5.1.3 Development Strategy:

GKMA remains the Primate City. Kampala and cities in its vicinity expands, including two new satellite cities - large urban centers that serve to expand Kampala in a structured manner. National Policy will be in favor of continuing the existing dominance of Kampala and some major cities in its vicinity. This tendency is typical in 42 countries in Africa. The result: More than 80% of future urbanization growth, 18 Million people, will take place in the central region along Lake Victoria.

5.1.4 Urban Population Distribution:

Region:	Central	Eastern	Northern	Western	Total
Population	18,190,000	970,000	1,730,000	2,110,000	23,000,000
Percent	79.1%	4.2%	7.5%	9.2%	100.0%

Figure 12: Spatial Orientation 1: Urban Population Distribution

5.1.5 Urban Settlements Hierarchy:

Kampala and eight other cities from Iganga to Mitanya will aggregate into one mega-metropolis of 17.5 Million people. Iganga, Jinja-Njeru, Lugazi, Mpigi, and Mitanya with 1 million residents each and Entebbe - Uganda's main entry point for tourism and air traffic – with 500K residents. In addition- two new satellite cities will be established in proximity and excellent connectivity to Kampala and a capacity to grow up to 250,000 inhabitants by 2040. All these, constitute Level 1+2 in the urban hierarchy table. In level 3, nine Major towns with a target population of 250K are distributed evenly and in level 4 Nine Towns with a target population of 150K. Level 5 consists of additional thirty townships with a population ranging between 50-80K, scattered across the country based on existing urban and trading centers. Population projections are based

on the natural growth in a BAU scenario with no intervention or incentives to enhance growth. The complete hierarchy is specified in the table below :

Level	Function	Range	Settlements	Total Pop.
1+2	Mega-Metropolis		GKMA: Kampala, Kira, Nansana, Mukono, Wakiso, Lugazi, Njeru, Jinja, , Iganga, Mpigi, Mityana+ 2 Satellite Towns.	17,500,000
4	Major Towns	250-500K	9	2,250,000
5	Secondary Towns	100-250K	9	1,350,000
6	Townships	50-100K	30	1,900,000
7	New Towns	250K	2 Satellite towns	(500,000)
8	Rurban	10-50K	126	7,000,000
	Total			30,000,000
	*Included in GKMA Population			

Figure 13: Spatial Orientation 1: Hierarchy of Urban Settlements

Growth Poles	Capital	1		1	**GKMA**	3,500,000	**12,000,000**	CEN
	Cities	2	0.5- 1M	2	Entebbe	69,430	500,000	CEN
				3	Iganga	55,186	1,000,000	CEN
				4	Jinja-Njeru	113,887	1,000,000	CEN
				5	Lugazi	114,163	1,000,000	CEN
				6	Mpigi	43,360	1,000,000	CEN
				7	Mityana	95,428	1,000,000	CEN
Urban Settlements	Major Towns	3	250-500K	8	Gulu	149,802	250,000	NOR
				9	Hoima	100,126	250,000	WES
				10	Kasese	101,557	250,000	WES
				11	Lira	99,511	250,000	NOR
				12	Masaka	103,293	250,000	CEN
				13	Masindi	94,439	250,000	WES
				14	Mbale	92,863	250,000	EAS
				15	Mbarara	195,160	250,000	WES
				16	Mubende	95,416	250,000	CEN
	Secondary Towns	4	100-250K	17	Arua	61,951	150,000	NOR
				18	Bushenyi-Ishaka	51,606	150,000	WES
				19	Busia	54,821	150,000	EAS
				20	Fort Portal	53,628	150,000	WES
				21	Kabale	49,201	150,000	WES
				22	Kitgum	75,594	150,000	NOR
				23	Mpondwe-Bwera	51,351	150,000	WES
				24	Soroti	49,646	150,000	NOR
				25	Tororo	42,016	150,000	EAS
	Townships	5	50-100K	26	Adjumani	35,433	70,000	NOR
				27	Apac	14,500	60,000	NOR
				28	Bugiri	28,747	70,000	EAS
				29	Dokolo	20,135	50,000	NOR
				30	Ibanda	32,752	70,000	WES
				31	Kaabong	23,900	50,000	NOR
				32	Kapchorwa	43,595	70,000	EAS
				33	Kamuli	19,240	50,000	EAS
				34	Kamwenge	19,591	50,000	WES
				35	Karuma	Unknown	50,000	WES
				36	Kiboga	18,698	70,000	CEN
				37	Kigumba	17,561	50,000	WES
				38	Kisoro	22,900	60,000	WES
				39	Koboko	41,195	70,000	NOR
				40	Kotido	22,900	60,000	NOR
				41	Kumi	36,493	70,000	EAS
				42	Kyenjojo	23,467	70,000	WES
				43	Luweero	42,869	80,000	CEN
				44	Lyantonde	13,586	50,000	CEN
				45	Moroto	14,213	70,000	NOR
				46	Moyo	23,700	70,000	NOR
				47	Nakasongola	9,832	70,000	CEN
				48	Nebbi	34,950	70,000	NOR
				49	Ntungamo	18,724	70,000	WES
				50	Paidha	31,632	70,000	NOR
				51	Pakwatch	22,360	70,000	NOR
				52	Pallisa	33,138	70,000	EAS
				53	Sheema	16,221	50,000	WES
				54	Sironko	18,884	70,000	EAS
				55	Yumbe	34,806	50,000	NOR
	New Towns	6		56	.ampala Sattelite 1*			CEN
				57	.ampala Sattelite 2*			CEN
					Total		**23,000,000**	

Figure 14: Spatial Orientation 1 Map and Settlement

5.2 Spatial Option 2:

The Social Orientation: Maximum regional equality and favored growth.

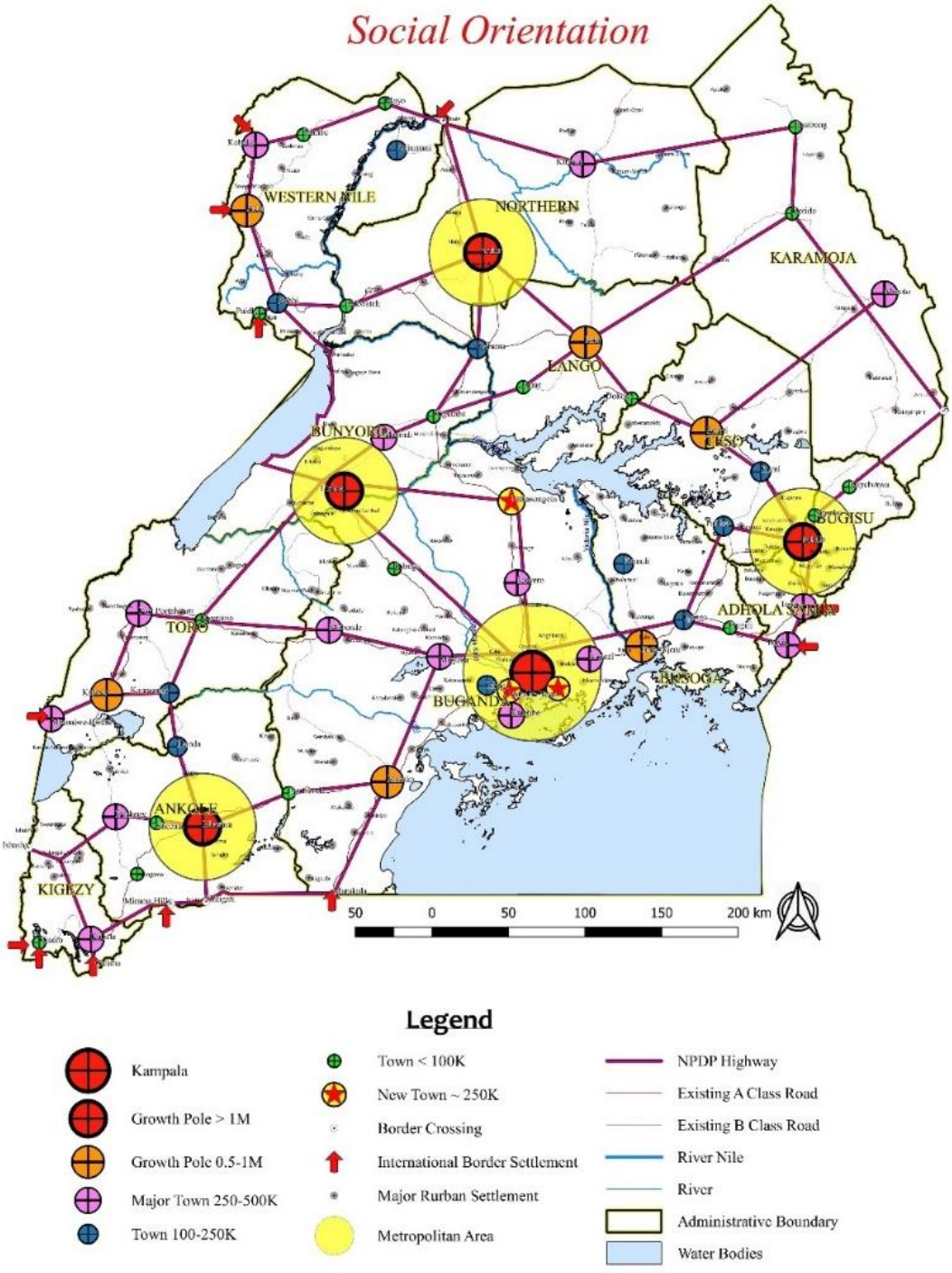


Figure 15: Spatial Orientation 2: Social Orientation

5.2.1 Planning Concept: regional and sub regional distribution of wealth

This option prioritizes the objectives of minimizing regional disparities, reducing inequality and decreasing the spread of poverty, with the overall aim of creating sustainable, long-term economic development. The polycentric growth pattern suggested here creates four significant growth poles - Gulu, Hoima, Mbarara, and Mbale – in addition to GKMA, each in a different region, with the aim of establishing significant urban centers that will take the pressure off GKMA and encouraging regional growth.

While agricultural and environmental consideration are not prioritized here, these would also be supported by regional growth poles effecting the development of the periphery, where most of Uganda's agricultural land and natural resources are located. The main objective here is nation-wide urban growth that would make room for industry and high-tech agriculture around regional centers, which would bring the benefits of agglomeration and clustering to other parts of the country.

5.2.2 Spatial Form : A Polycentric Settlement System

5.2.3 Development Strategy

A main benefit of this option would therefore be making the most of the resources of the whole country, while improving secondary services such as education and health care. This would lead, on the one hand, to urbanization and regional clustering that would enhance economic activity in the periphery, while also allowing GKMA to grow in an orderly and more sustainable way. On the condition that this growth is supported by the necessary infrastructures, it would allow the country to tap into its oil and gas industry, mineral deposits, and would also boost tourism.

The suggested road network is a "Spider- Web network" connecting all major urban centers in an efficient orderly and accessible grid. Highways are based on existing major roads with necessary routes improvements, increased level of service and limited access

to prevent informal and unsafe activities along high speed roads and to eliminate linear continuous sprawl along them.

Perhaps most importantly for this option, the social benefits of creating development and equality for peripheral populations are not only a matter of personal welfare but have significant ramifications for the future of Uganda. As a very significant percentage of Uganda's population is rural – 82% at present and expected to go down to 60% in 2040 and 50% by 2060 – the NPDP certainly needs to take this population distribution into consideration. Targeting the NPDP at the social aspect of development, and hence, under this option, on a more regionally balanced approach which can reach rural populations more readily, could be instrumental in bringing down birth rates. Social models show that financial security, safety functions and availability of basic services can reduce the pressure to have many children. Targeting the rural population by connecting them to national networks and infrastructure could also impact the balance of personal/local interest, or individualism, in favor of public interest. This, in turn, is extremely important in formalizing the land tenure system, and in consolidating human settlements and agriculture, which depends on people's willingness to cooperate with governmental plans and initiatives to be effective.

In this option, the national policy of Urbanization Growth will be in favor of peripheral sub-regions. In addition to Kampala, four regional cities become growth poles of over 1 million residents, while the new town of Nakasongola (currently only a small village with population of about 10K) will become a major regional urban center of 250k residents.

The Polycentric option will give every region and sub-region its urban identity by creating "regional capitals", while restraining GKMA's growth. Urbanization will be directed to grow within the sub-regions and not outside them. Urban sprawl will be discouraged by powerful enforcement of settlements' consolidation.

5.2.4 Urban Population Distribution

Region:	Central	Eastern	Northern	Western	Total
Population	10,850,000	3,100,000	3,650,000	5,400,000	23,000,000
Percent	47.2%	13.5%	15.9%	23.5%	100.0%

Figure 16: Spatial Orientation 2: Urban Population Distribution

5.2.5 Urban Settlements Hierarchy:

The main urban settlements hierarchy with their current and target population is elaborated in the table below :

Level	Function	Range	Settlements	Total Pop.
1	Capital	8.5 M	GKMA	8,500,000
2	Regional GP	1 M <	Hoima, Gulu, Mbarara, Mbale	5,250,000
3	Sub Regional GP	0.5- 1 M	Arua, Jinja-Njeru, Kasese, Lira, Soroti, Masaka	3,200,000
4	Major Towns	250-500K	15	3,850,000
5	Secondary Towns	100-250K	10	1,050,000
6	Townships	50-100K	18	900,000
7	New Towns	250K	3	250,000*
8	Rurban	10-50K	126	7,000,000
	Total			30,000,000
	*Additional 500,000 in new satellite towns are already included in GKMA population			

Figure 17: Spatial Orientation 2: Urban Settlements Hierarchy

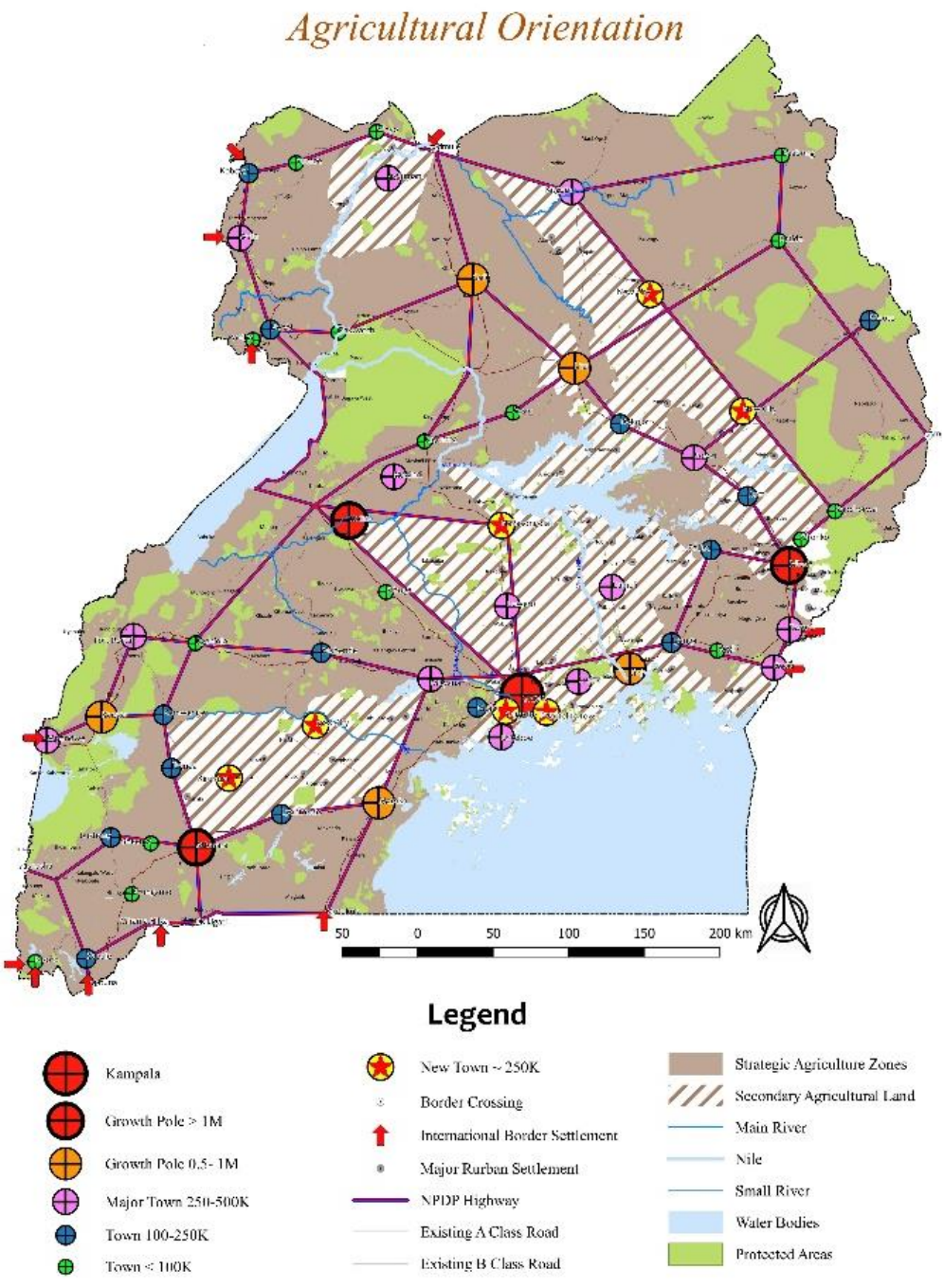
Function	Level	Range		Urban Center	2014 POP	2040 Target	Region
Growth Poles	Capital	1	1	GKMA	3,500,000	8,500,000	CEN
	Regional	2	>1M	2 Hoima	100,126	1,500,000	WES
				3 Gulu	149,802	1,250,000	NOR
				4 Mbarara	195,160	1,500,000	WES
				5 Mbale	92,863	1,000,000	EAS
	Sub Regional	3	0.5-1M	6 Arua	61,951	500,000	NOR
				7 Jinja-Njeru	113,887	500,000	EAS
				8 Kasese	101,557	600,000	WES
				9 Lira	99,511	500,000	NOR
				10 Masaka	103,293	600,000	CEN
				11 Soroti	49,646	500,000	EAS
Urban Settlements	Major Towns	4	250-500K	12 Busheny	51,606	250,000	WES
				13 Busia	54,821	300,000	EAS
				14 Entebbe	69,430	250,000	CEN
				15 Fort Portal	53,628	250,000	WES
				16 Kabale	49,201	250,000	WES
				17 Kitgum	75,594	250,000	NOR
				18 Koboko	41,195	250,000	NOR
				19 Lugazi	114,163	250,000	CEN
				20 Luwero	42,869	250,000	CEN
				21 Masindi	94,439	250,000	WES
				22 Mityana	95,428	250,000	CEN
				23 Moroto	14,213	250,000	NOR
				24 Mpondwe-Bwera	51,351	250,000	WES
				25 Mubende	95,416	300,000	CEN
				26 Tororo	42,016	250,000	EAS
	Secondary Towns	5	100-250K	27 Adjumani	35,433	150,000	NOR
				28 Ibanda	32,752	100,000	WES
				29 Iganga	55,186	100,000	EAS
				30 Kamuli	58,984	100,000	EAS
				31 Kamwenge	19,240	100,000	WES
				32 Karuma	Unknown	100,000	WES
				33 Kumi	36,493	100,000	EAS
				34 Mpigi	43,360	100,000	CEN
				35 Nebbi	34,950	100,000	NOR
				36 Pallisa	33,138	100,000	EAS
	Townships	6	50- 100K	37 Apac	14,500	50,000	NOR
				38 Bugiri	28,747	50,000	EAS
				39 Dokolo	20,135	50,000	NOR
				40 Kaabong	23,900	50,000	NOR
				41 Kapchorwa	43,595	50,000	EAS
				42 Kiboga	19,591	50,000	CEN
				43 Kigumba	18,698	50,000	WES
				44 Kisoro	17,561	50,000	WES
				45 Kotido	22,900	50,000	NOR
				46 Kyenjojo	23,467	50,000	WES
				47 Lyantonde	13,586	50,000	CEN
				48 Moyo	23,700	50,000	NOR
				49 Ntungamo	18,724	50,000	WES
				50 Paidha	31,632	50,000	NOR
				51 Pakwatch	22,360	50,000	NOR
				52 Sheema	16,221	50,000	WES
				53 Sironko	18,884	50,000	EAS
				54 Yumbe	34,806	50,000	NOR
	New Towns	7	250K	55 Nakasongola	9,832	250,000	CEN
				56 Kampala Sattelite 1*			CEN
				57 Kampala Sattelite 2*			CEN
				Total		23,000,000	

* New Sattelite Towns Population is included in Total GKMA Population

5.3 Spatial Option 3:

The Agricultural Orientation - Increasing Agricultural productivity as the backbone of Uganda's economic

Figure 18: Spatial Orientation 2: Urban Settlements and population



5.3.1 Planning Concept

Figure 19: Spatial Orientation 3: Agricultural orientation

- Preserving Agricultural clusters by constraining Urban Development in them.
- Identify and protect Strategic Agricultural Zones.
- Constrain urban development, sub-division of land and sprawl within them.

This option considers the implications for an NPDP of Uganda's physiographical nature, the geographical disposition of its physical characteristics in terms of land which is suitable for agriculture. Agriculture is the greatest land use in terms of its extent and significance, it is the economic and social backbone of Uganda. This option focuses on how to enhance the agricultural sector, by factoring in its Strategic Agricultural Zones (SAZs). The main benefit of this orientation is that it draws on favored clusters of crops to create an agricultural sector that is organized and regulated in a manner that will enable modernization and a move toward high-tech commercial agriculture.

By focusing on one or several products to be prioritized in each SAZ, this structure is aimed at giving the tools - and changing the mindset – towards moving agriculture from individual subsistence to cooperation and development of agro-processing industries. Indeed, modernizing farming practices and consolidating agricultural land is the main step towards making sure the rapidly growing population will be able to sustain itself, as the projections of land use in Section 4 above show. This orientation is also directed at the need to increase the availability of arable land in order to achieve long-term sustainability, by transforming grassland into cultivated lands.

An important objective and concept here is also the need to match urban growth with agricultural zones, as this option designates areas of Secondary Agricultural Land for

urban development. Five new cities of approx. 250K inhabitants – in addition to the two satellite cities around Kampala – are planned outside or on the border of the SAZs. By creating this distinction between strategic and secondary zones, the option allows resources to be focused on two important aspects of economic and social development: targeted investment of commercial agriculture in certain areas and on specific products; and orderly urbanization in locations all over the country designated for urban and rurban development, in zones where this does not interfere with the development of agriculture.

The SAZs serve as a framework for consolidating agricultural plots and stopping subdivision (which is the only long-term sustainable option, even for subsistence farming), for instance by moving rural hamlets into planned settlements. Further benefits of SAZs include making access to clean water easier, and developing value chains and supporting services such as marketing, storage, quality assurance, financial support, transportation and export. Overall, prioritizing agriculture.

5.3.2 Spatial Form - Physiographical.

5.3.3 Development Strategy:

Agricultural clusters represent the Governmental strategic policy for matching major crops, for local consumption and export, with specific districts. In this option, the clusters have been processed and mapped according to their main production, and they have been designated as Strategic Agricultural Zones for food and cash crops. Only a limited amount of urbanization activities are suggested in these zones. Some areas have also been added from other land uses to the Strategic Agricultural Zones in order to meet increasing demands, most notably large parts of Karamoja which are still classified as "Hunting Areas".

Total Required Agricultural Strategic Lands area is approx. 126,000 Km2.

This number refers to the brown area in the map and includes Karamojong region, seasonal wetlands and settlements footprint inside the agricultural lands, while protected areas, water bodies and permanent wetlands are excluded.

- According to the projected 2040 land use balance sheet, this inventory should provide the country's agriculture needs up to the target year and even beyond without utilizing any of the secondary agricultural lands. It should be emphasized that Agricultural land use projection is based on a presupposition of yield multiplied by 3.
- All other open lands, which are not included in the category of SAZs or protected areas, can be designated as "Secondary Agricultural Zones".
- The precise definition of SAZs will be decided at District Plan level, and carried down to Sub-County level such that the total areas of primary and secondary agricultural zones are designated and monitored, but the national framework for regions is the following:

5.3.4 Urban Population Distribution :

Region:	Central	Eastern	Northern	Western	Total
Population	11,200,000	3,430,000	3,350,000	5,020,000	23,000,000
Percent	48.7%	14.9%	14.6%	21.8%	100.0%

Figure 20: Spatial Orientation 3: Urban Population Distribution

5.3.5 Urban Settlements Hierarchy:

Level	Function	Range	Number of settlements	Total Pop.

1	Capital	8.5 M	GKMA	8,500,000
2	Regional GP	1 M <	Hoima, Mbarara, Mbale	3,400,000
3	Sub Regional GP	0.5- 1 M	Gulu, Jinja-Njeru, Kasese, Lira, Masaka	2,500,000
4	Major Towns	250-500K	14	3,750,000
5	Secondary Towns	100-250K	14	2,700,000
6	Townships	50-100K	16	900,000
7	New Towns	250K	5 (+2 Satellite towns in GKMA)	1,250,000
8	Rurban	10-50K	126	7,000,000
	Total			30,000,000

This option emphasizes the need to avoid depletion and fragmentation of the strategic agricultural lands and clusters. Most of the urban development will be directed to the secondary agricultural areas while ruralization (accompanied by Cooperation and consolidation) will be encouraged in the strategic zones. In order to reduce the expected conflict between the need to accelerate urbanization on the one hand and to modernize agriculture on the other- the dispersion of the population includes five new towns in addition to the empowerment of existing urban centers in the secondary agricultural areas.

Figure 21: Spatial Orientation 3: Urban Settlements Hierarchy

Function		Level	Range		Urban Center	2014 POP	2040 Target	Region
Growth Poles	Capital	1		1	GKMA	3,500,000	8,500,000	CEN
	Regional	2	>1M	2	Hoima	100,126	1,200,000	WES
				3	Mbale	92,863	1,000,000	EAS
				4	Mbarara	195,160	1,200,000	WES
	Sub Regional	3	0.5-1M	5	Gulu	61,951	500,000	NOR
				6	Jinja-Njeru	113,887	500,000	EAS
				7	Kasese	101,557	500,000	WES
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Urban Settlements	Major Towns	4	250-500K	10	Adjumani	35,433	250,000	NOR
				11	Arua	61,951	250,000	NOR
				12	Busia	54,821	300,000	EAS
				13	Entebbe	69,430	250,000	CEN
				14	Fort Portal	53,628	250,000	WES
				15	Kamuli	19,240	250,000	EAS
				16	Kitgum	75,594	250,000	NOR
				17	Lugazi	114,163	250,000	CEN
				18	Luwero	42,869	250,000	CEN
				19	Masindi	94,439	300,000	WES
				20	Mityana	95,428	300,000	CEN
				21	Mpondwe	51,351	250,000	WES
				22	Soroti	49,646	300,000	EAS
				23	Tororo	42,016	300,000	EAS
	Secondary Towns	5	100-250K	24	Busheny	51,606	200,000	WES
				25	Dokolo	20,135	200,000	NOR
				26	Ibanda	32,752	200,000	WES
				27	Iganga	23,900	200,000	EAS
				28	Kabale	43,595	200,000	WES
				29	Kamwenge	19,240	200,000	WES
				30	Koboko	41,195	200,000	NOR
				31	Kumi	22,900	200,000	EAS
				32	Lyantonde	13,586	200,000	CEN
				33	Moroto	14,213	200,000	NOR
				34	Mpigi	43,360	200,000	CEN
				35	Mubende	95,416	200,000	CEN
				36	Nebbi	34,950	150,000	NOR
				37	Pallisa	33,138	150,000	EAS
	Townships	6	50- 100K	38	Apac	14,500	50,000	NOR
				39	Bugiri	28,747	80,000	EAS
				40	Kaabong	23,900	50,000	NOR
				41	Kapchorwa	43,595	70,000	EAS
				42	Kiboga	18,698	50,000	CEN
				43	Kigumba	17,561	70,000	WES
				44	Kisoro	22,900	50,000	WES
				45	Kotido	22,900	50,000	NOR
				46	Kyenjojo	23,467	50,000	WES
				47	Moyo	23,700	50,000	NOR
				48	Ntungamio	18,724	50,000	WES
				49	Paidha	31,632	50,000	NOR
				50	Pakwatch	22,360	50,000	NOR
				51	Sheema	16,221	50,000	WES
				52	Sironko	18,884	80,000	EAS
				53	Yumbe	34,806	50,000	NOR
	New Towns	7		54	New City (Patongo)		250,000	NOR
				55	New City (Katakwi)		250,000	NOR
				56	New City (Kiruhura)		250,000	WES
				57	Nakasongola	9,832	250,000	CEN
				58	New City (Kafu)		250,000	CEN
				59	Kampala Sattelite 1*			CEN
				60	Kampala Sattelite 2*			CEN
					Total		23,000,000	

* New Sattelite Towns Population is included in Total GKMA Population

Figure 22: Spatial Orientation 3: Urban Settlements population

5.4 Spatial Option 4:

Environment and Tourism Orientation - Environmental Sustainability and Tourism Boost.

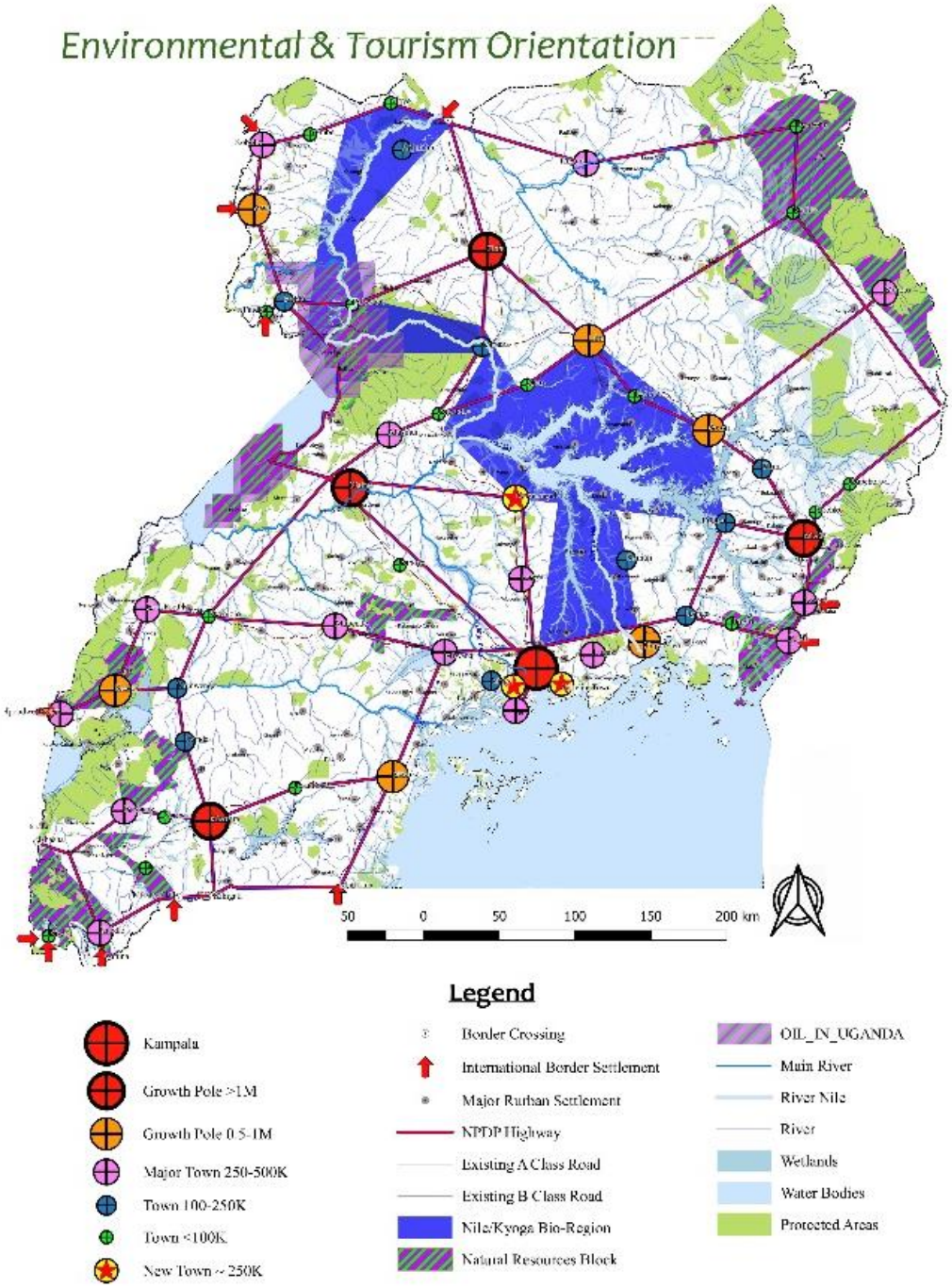

Figure 23: Spatial Orientation 4: Environment and Tourism

5.4.1 Planning Concept: Constraining Development in areas of important natural resources.

This option considers the implications for NPDP of another aspect of Uganda's physiographical nature, its natural resources, protected areas and environments suitable for tourism. The environmental orientation prioritizes long-term, sustainable growth, which depends on conscious, well-organized and regulated use of natural resources. This option is based on the recognition of the River Nile and Kyoga water system (Lake Kyoga) as a bio-region that stretches across the country, and additionally marking areas rich in natural resources as bio-regions (marked hatched blue and purple on the map). Anchoring the Nile/Kyoga bio-region as a protected area is important in several respects, as it has long-term benefits of preserving the natural environment for the well-being and stability of future generations.

In addition, preserving bio-regions offers significant economic opportunities. The Kyoga/Nile area has a potential for bio-agriculture, as it is rich in water and is already cultivated according unique rural livelihood strategies. As such, agriculture in this area could not only be developed into highly productive zones, but also could offer the opportunity to develop local knowledge-based solutions (e.g. to water-shortage problems, deforestation, fishing etc.). This, in turn, could become a hub for conducting research (particularly on grassroot permaculture), enforcing regulations for environmental sustainability, and promoting "practical sustainability" to meet human demands for food, water, energy, housing, and materials.

Eco-tourism is another significant source of income that could be developed by conserving natural habitats and wildlife, forests, areas of unique biodiversity and

vegetation, and valued cultural-historic assets. As environmental concerns are very much part of the international development discourse, bio-regions and protected areas are the pillar of the tourism industry in general, and can also lead to significant international investments in research or in other avenues.

Furthermore, this option recognizes areas of significant deposits of natural resources, so that mineral and petroleum exploration will be integrated into a masterplan of regional and urban planning. This is the first step towards creating a mineral development master plan for the excavation of various raw materials and the related mining industry, which is expected to make a significant contribution to Uganda's economy in the future.

This will also provide value addition for minerals – particularly those that are exported in raw form – and ensure environmental sustainability of exploration, production, refining and transportation of oil and its related industries.

These aspects together are here incorporated into a plan that also depends on regional growth poles, which together with a highway network, create a system for developing natural resources in a way that will allow the country to enjoy them for many years to come by planning supporting industries that do not destroy the resources. For instance, long-term tourism sustainability of Murchison Falls NP is dependent on strong measures to curb the impact of short-term exploitation for oil, gas, minerals, forestry, etc. in the area.

5.4.2 Spatial Form - Physiographical.

5.4.3 Development Strategy:

The idea behind this option is to tie urbanization and rural growth to areas in which natural resources will not be negatively affected. The following components are included in this option: nature protection areas, mining/gas/oil areas, main rivers, wetlands - permanent and seasonal.

The corridor of the River Nile and Kyoga water system have been regarded as a special bio-region, in which agriculture production, settlements and nature will be managed by sustainable principles and rules.

5.4.4 Urban Population Distribution:

Region:	Central	Eastern	Northern	Western	Total
Population	10,850,000	3,100,000	3,650,000	5,400,000	23,000,000
Percent	47.2%	13.5%	15.9%	23.5%	100.0%

Figure 24: Spatial Orientation 4: Population Distribution

5.4.5 Urban Settlements Hierarchy:

This will be the same as in Option 2.

Function	Level	Range		Urban Center	2014 POP	2040 Target	Region
Growth Poles	Capital	1		1 GKMA	3,500,000	8,500,000	CEN
	Regional	2	>1M	2 Hoima	100,126	1,500,000	WES
				3 Gulu	149,802	1,250,000	NOR
				4 Mbarara	195,160	1,500,000	WES
				5 Mbale	92,863	1,000,000	EAS
	Sub Regional	3	0.5-1M	6 Arua	61,951	500,000	NOR
				7 Jinja-Njeru	113,887	500,000	EAS
				8 Kasese	101,557	600,000	WES
				9 Lira	99,511	500,000	NOR
				10 Masaka	103,293	600,000	CEN
				11 Soroti	49,646	500,000	EAS
Urban Settlements	Major Towns	4	250-500K	12 Busheny	51,606	250,000	WES
				13 Busia	54,821	300,000	EAS
				14 Entebbe	69,430	250,000	CEN
				15 Fort Portal	53,628	250,000	WES
				16 Kabale	49,201	250,000	WES
				17 Kitgum	75,594	250,000	NOR
				18 Koboko	41,195	250,000	NOR
				19 Lugazi	114,163	250,000	CEN
				20 Luwero	42,869	250,000	CEN
				21 Masindi	94,439	250,000	WES
				22 Mityana	95,428	250,000	CEN
				23 Moroto	14,213	250,000	NOR
				24 Mpondwe-Bwera	51,351	250,000	WES
				25 Mubende	95,416	300,000	CEN
				26 Tororo	42,016	250,000	EAS
	Secondary Towns	5	100-250K	27 Adjumani	35,433	150,000	NOR
				28 Ibanda	32,752	100,000	WES
				29 Iganga	55,186	100,000	EAS
				30 Kamuli	58,984	100,000	EAS
				31 Kamwenge	19,240	100,000	WES
				32 Karuma	Unknown	100,000	WES
				33 Kumi	36,493	100,000	EAS
				34 Mpigi	43,360	100,000	CEN
				35 Nebbi	34,950	100,000	NOR
				36 Pallisa	33,138	100,000	EAS
	Townships	6	50- 100K	37 Apac	14,500	50,000	NOR
				38 Bugiri	28,747	50,000	EAS
				39 Dokolo	20,135	50,000	NOR
				40 Kaabong	23,900	50,000	NOR
				41 Kapchorwa	43,595	50,000	EAS
				42 Kiboga	19,591	50,000	CEN
				43 Kigumba	18,698	50,000	WES
				44 Kisoro	17,561	50,000	WES
				45 Kotido	22,900	50,000	NOR
				46 Kyenjojo	23,467	50,000	WES
				47 Lyantonde	13,586	50,000	CEN
				48 Moyo	23,700	50,000	NOR
				49 Ntungamo	18,724	50,000	WES
				50 Paidha	31,632	50,000	NOR
				51 Pakwatch	22,360	50,000	NOR
				52 Sheema	16,221	50,000	WES
				53 Sironko	18,884	50,000	EAS
				54 Yumbe	34,806	50,000	NOR
	New Towns	7	250K	55 Nakasongola	9,832	250,000	CEN
				56 Kampala Sattelite 1*			CEN
				57 Kampala Sattelite 2*			CEN
				Total		23,000,000	

* New Sattelite Towns Population is included in Total GKMA Population

Figure 25: Spatial Orientation 4: Urban Settlements Hierarchy

5.5 Spatial Option 5:

Urbanization Orientation - growth of urban regions and urbanized corridors.

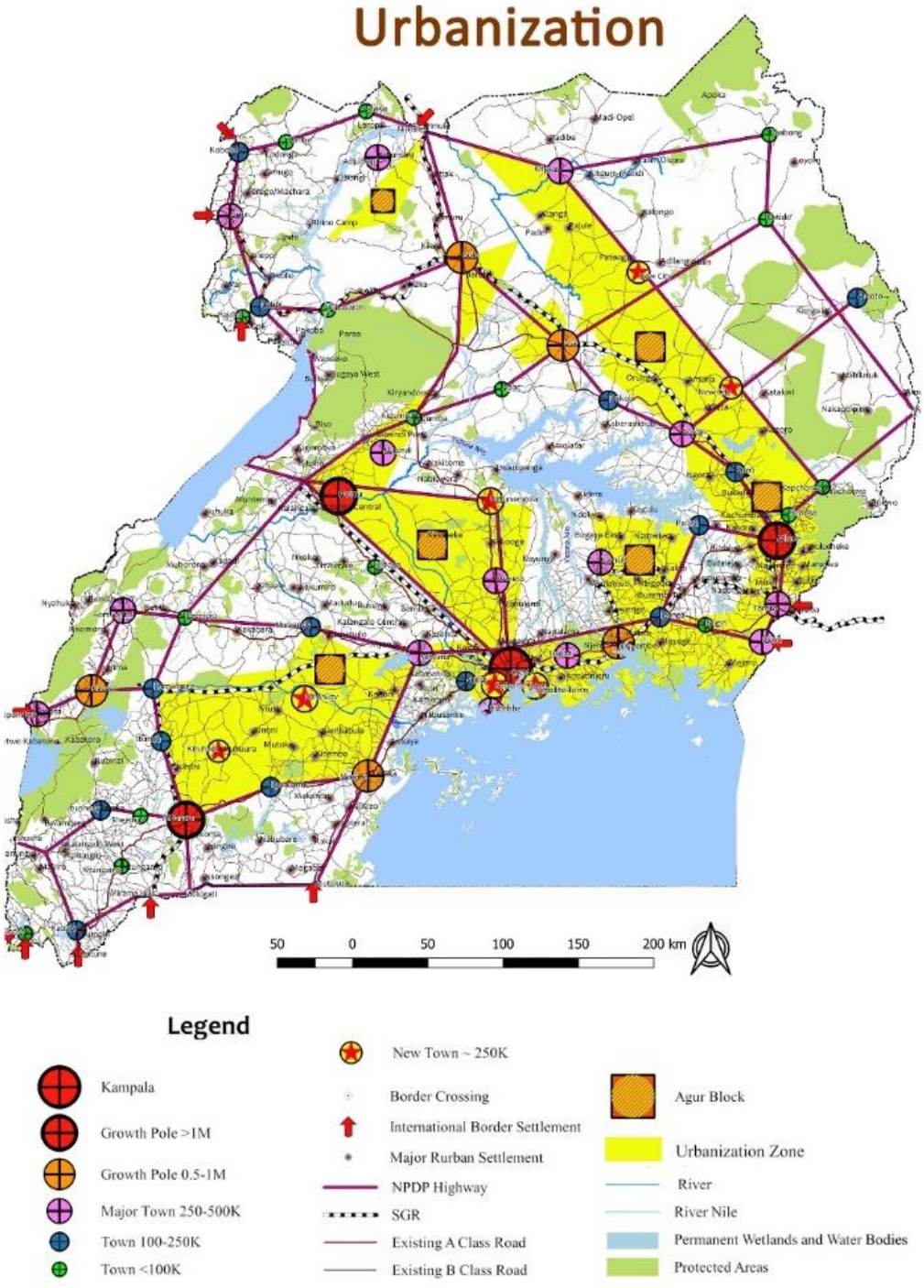

Figure 26: Spatial Orientation 5: Urbanization

5.5.1 Planning Concept

This option also considers the implications for an NPDP of Uganda's physiographical nature, in terms of land which is suitable for urban development. Maximize the advantages of urbanization across regions of high demand and high potential for development while minimizing the penetration to strategic agricultural lands- Complementary to option 3-Agricultural orientation.

5.5.2 Spatial Form: Physiographical and polycentric forms.

5.5.3 Development Strategy

Focusing on the development of excellent urban infrastructure, industries, social services and transportation within the regions designated for urbanization. Attracting the mass of the population to these urban regions and leave the more productive lands for commercial agriculture.

5.5.4 Urban Population Distribution:

Region:	Central	Eastern	Northern	Western	Total
Population	11,200,000	3,430,000	3,350,000	5,020,000	23,000,000
Percent	48.7%	14.9%	14.6%	21.8%	100.0%

Figure 27: Spatial Orientation 5: Urban Population Distribution

5.5.5 Urban Settlements Hierarchy

This option emphasizes the need to avoid depletion and fragmentation of the strategic agricultural lands and clusters. Most of the urban development will be directed to the secondary agricultural areas while ruralization (accompanied by Cooperation and consolidation) will be encouraged in the strategic zones. In order to reduce the expected conflict between the need to accelerate urbanization on the one hand and to modernize agriculture on the other- the dispersion of the population includes 5 new towns in addition to the empowerment of existing urban centers in the secondary agricultural areas.

Level	Function	Range	settlements	Total Pop.
1	Capital	8.5 M	GKMA	8,500,000
2	Regional GP	1 M <	Hoima, Mbarara, Mbale	3,400,000
3	Sub Regional GP	0.5- 1 M	Gulu, Jinja-Njeru, Kasese, Lira, Masaka	2,500,000
4	Major Towns	250-500K	14	3,750,000
5	Secondary Towns	100-250K	14	2,700,000
6	Townships	50-100K	16	900,000
7	New Towns	250K	5 (+2 Satellite towns in	1,250,000

Figure 28: Spatial Orientation 5: Urban Settlements Hierarchy

	GKMA)			
8	Rurban	10-50K	126	7,000,000
	Total			30,000,000

Function		Level	Range		Urban Center	2014 POP	2040 Target	Region
Growth Poles	Capital	1		1	**GKMA**	3,500,000	**12,000,000**	CEN
	Cities	2	0.5- 1M	2	Entebbe	69,430	500,000	CEN
				3	Iganga	55,186	1,000,000	CEN
				4	Jinja-Njeru	113,887	1,000,000	CEN
				5	Lugazi	114,163	1,000,000	CEN
				6	Mpigi	43,360	1,000,000	CEN
				7	Mityana	95,428	1,000,000	CEN
Urban Settlements	Major Towns	3	250-500K	8	Gulu	149,802	250,000	NOR
				9	Hoima	100,126	250,000	WES
				10	Kasese	101,557	250,000	WES
				11	Lira	99,511	250,000	NOR
				12	Masaka	103,293	250,000	CEN
				13	Masindi	94,439	250,000	WES
				14	Mbale	92,863	250,000	EAS
				15	Mbarara	195,160	250,000	WES
				16	Mubende	95,416	250,000	CEN
	Secondary Towns	4	100-250K	17	Arua	61,951	150,000	NOR
				18	Bushenyi-Ishaka	51,606	150,000	WES
				19	Busia	54,821	150,000	EAS
				20	Fort Portal	53,628	150,000	WES
				21	Kabale	49,201	150,000	WES
				22	Kitgum	75,594	150,000	NOR
				23	Mpondwe-Bwera	51,351	150,000	WES
				24	Soroti	49,646	150,000	NOR
				25	Tororo	42,016	150,000	EAS
	Townships	5	50-100K	26	Adjumani	35,433	70,000	NOR
				27	Apac	14,500	60,000	NOR
				28	Bugiri	28,747	70,000	EAS
				29	Dokolo	20,135	50,000	NOR
				30	Ibanda	32,752	70,000	WES
				31	Kaabong	23,900	50,000	NOR
				32	Kapchorwa	43,595	70,000	EAS
				33	Kamuli	19,240	50,000	EAS
				34	Kamwenge	19,591	50,000	WES
				35	Karuma	Unknown	50,000	WES
				36	Kiboga	18,698	70,000	CEN
				37	Kigumba	17,561	50,000	WES
				38	Kisoro	22,900	60,000	WES
				39	Koboko	41,195	70,000	NOR
				40	Kotido	22,900	60,000	NOR
				41	Kumi	36,493	70,000	EAS
				42	Kyenjojo	23,467	70,000	WES
				43	Luweero	42,869	80,000	CEN
				44	Lyantonde	13,586	50,000	CEN
				45	Moroto	14,213	70,000	NOR
				46	Moyo	23,700	70,000	NOR
				47	Nakasongola	9,832	70,000	CEN
				48	Nebbi	34,950	70,000	NOR
				49	Ntungamo	18,724	70,000	WES
				50	Paidha	31,632	70,000	NOR
				51	Pakwatch	22,360	70,000	NOR
				52	Pallisa	33,138	70,000	EAS
				53	Sheema	16,221	50,000	WES
				54	Sironko	18,884	70,000	EAS
				55	Yumbe	34,806	50,000	NOR
	New Towns	6		56	Kampala Sattelite 1*			CEN
				57	Kampala Sattelite 2*			CEN
					Total		**23,000,000**	

* New Sattelite Towns Population is included in Total GKMA Population

Figure 29: Spatial Orientation 5: Urban Settlements

5.6 Spatial Option 6:

The Connectivity Orientation - Maximum National & International Connectivity.

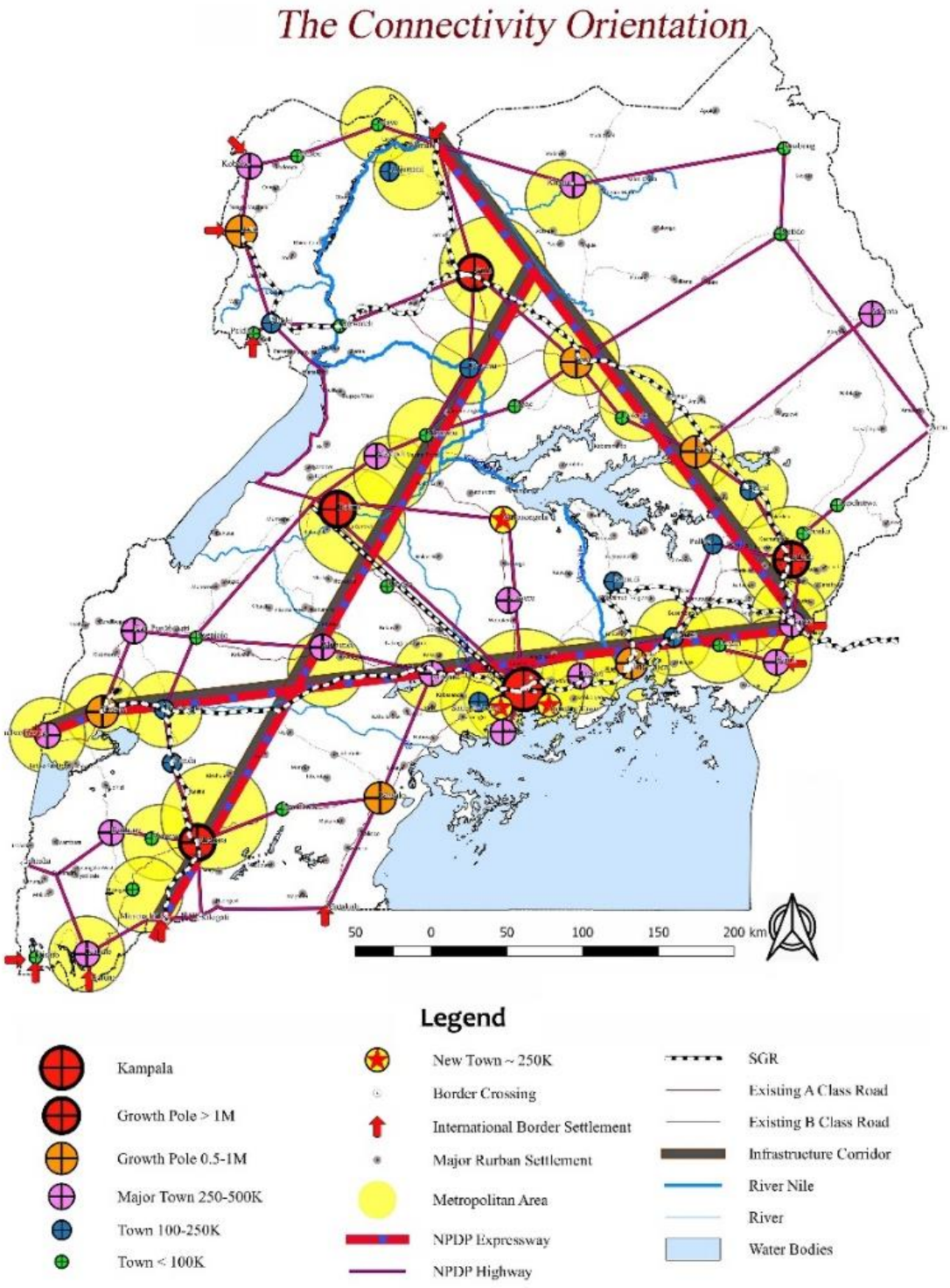

Figure 30: Spatial Orientation 6: Connectivity

5.6.1 Planning Concept: Urbanization Corridors

This option examines how the benefits of nation-wide connectivity can be combined with urban agglomeration by creating corridors of connectivity and infrastructure. The model offered here is based on a triangle network of expressways that, while being based on existing settlement patterns, offer a new and revolutionary model for conceiving nationwide urban development along three main arteries. While human settlements in this option are also envisioned as regional growth poles and the expansion of existing towns, each of the urban centers here is surrounded by an area of urban and rurban growth, which will allow industry to develop in a rapid manner, thus combining the benefits of super-agglomeration in the economic orientation with those of the polycentric settlement system of the social orientation.

The corridors offer an optimal solution for developing infrastructure that will enable a robust economy, both in terms of an expressway network to make the entire country accessible in the easiest and fastest way possible, and infrastructure – particularly electricity, water and ICT – that will reach across the country.

The clustering along the lines of the expressway triangle would support the economic viability of this option, creating economic benefits such as competition and cooperation, innovation, and backward/ forward linkage.

The connectivity here is directly related to the size and spread of the urban centers, all of which reduce regional disparity and inequality, and support the modernization of agriculture – which needs to be brought integrated into urban forms of living - and the development of high-tech regional industry, which is dependent on infrastructure and access. Importantly, the corridors are also directly targeted at connectivity with neighboring countries, leading directly to Kenya, Tanzania/Rwanda, the D.R.C. and South Sudan - a key element in boosting national economy as a hub of regional industry.

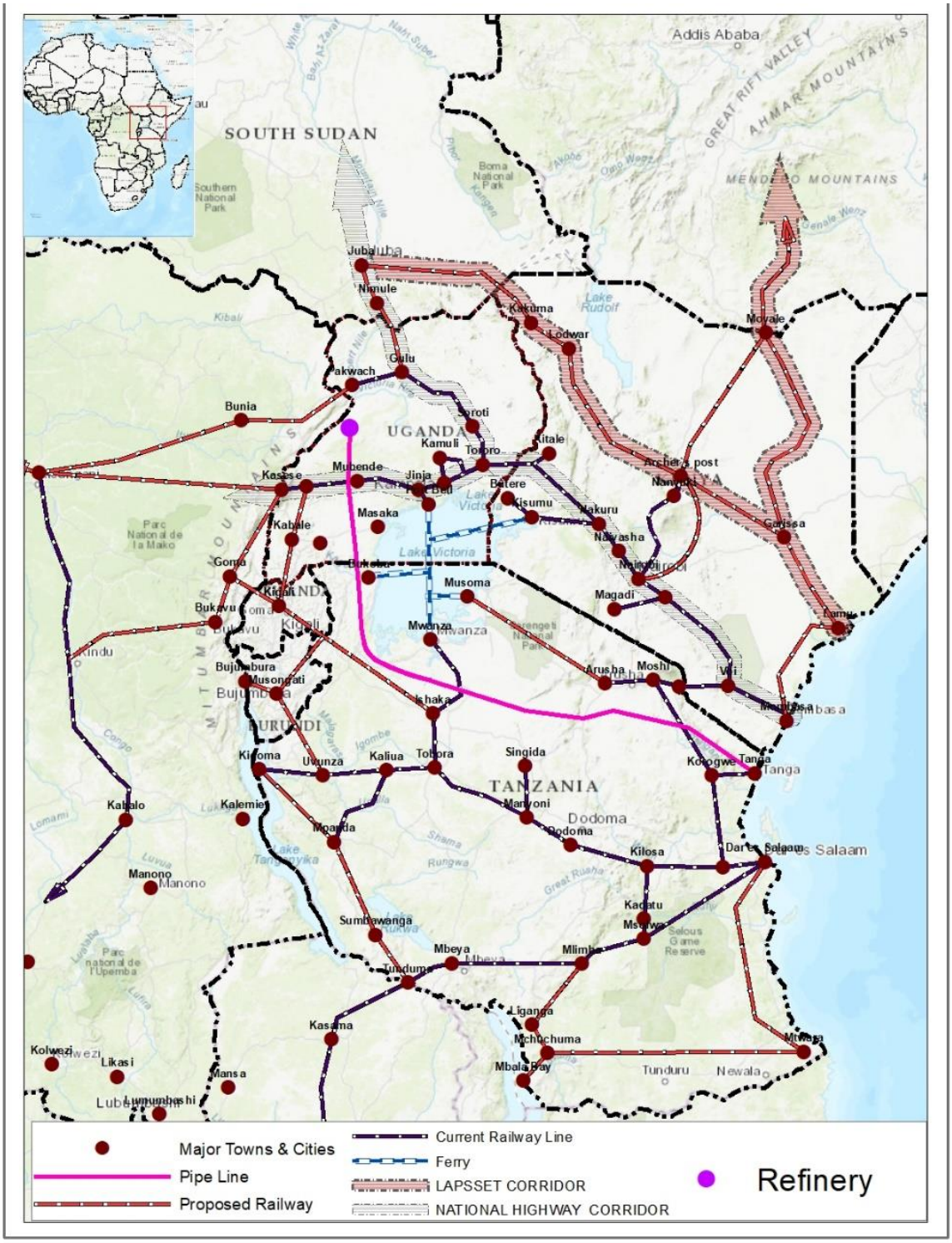

Figure 31 : Uganda's neighbouring countries, key cities and corridors

Uganda acts as a crossroads between several land-locked counties and the coast, via the Northern Corridor. For example, the manufacturing and services located on the northern corridor between Kampala and Jinja are estimated to service 90 million customers including Uganda and neighboring countries.

Other major corridors are:

1. LAPPSET from the Port of Lamu to Juba, skirting the eastern and norther sides of Uganda. LAPPSET is a contender for the East-West African corridor, continuing through DRC and CAR, Cameroun and thence Nigeria, Ghana and Cote d'Ivoire. A branch of LAPPSET connects to Addis and thence northwards to Djibouti and Cairo.
2. The "Southern Corridor" across Tanzania.
3. The Northern branch of the Northern Corridor connects to Gulu, Kanagani (DRC) and Juba whence it connects via the Nile through to Cairo.
4. The designed route for the East African Crude Oil Pipeline (EACOP) from Hoima to Tanga Port in Tanzania, opens up another potential corridor.
5. Lake Victoria marine transport also opens network connections between corridors north-south and east-west.

As the very recent decision to invest over $3.5bn in the EACOP shows, it is difficult to predict which corridors will thrive and when, being dependent on many unknowable geo-political and investment circumstances and decisions. Nevertheless it is important to understand how Uganda's main arteries and corridors connect regionally.

Aside from the highway network that repeats itself (with minor changes) in all options across country, a National Expressway Network is suggested. This network includes 3 arms in a shape of a Triangle, parallel to the Urbanized Corridors. The Expressway triangle operates also as an International Bypass System, connecting East African Countries.

(A) Rwanda - South Sudan, (B) Kenya - South Sudan, (C) Kenya - DRC.

A process of validation was undertaken through a TDM (Travel Demand Model) (Annex A), answered the following questions:

1. What will be the level of demand for transport and its distribution in 2040 and 2060 ?
2. What will be the transport infrastructure requirements for year 2040 and 2060 ?
3. What will be the order of implementation of expressways till 2060 ?

The model was based on the following data :

Indicators	2017	2040	2060	
Total Population	40 mil	80 mil	100 mil	NPDP population forecasting
Urban Population % / Population	18% / 7.2 mil	40% / 32 mil	50% / 50 mil	NPDP population forecasting
Uganda GDP (USD)	24 bil.	32 bil	41 bil	World Bank forecasts and past trend data for Uganda, (accessed March 2018)
Motorization Rate (Private Vehicle per 1,000 Residents	44	135	358	NPDP car ownership forecasting in conjunction with KCCA data
Total Daily Simulated Trips	0.6 mil	2.37 mil	5.6 mil	Travel Demand Model Simulation

Figure 32: Spatial Orientation 6: Motorization Rates 2017- 2060

Statistical analysis of the relationship between population, national GDP, urban population and growing motorization rates show that trip generation in Uganda is growing faster than population. For the period up to 2060, the annual growth rate is set at 2.2% while the annual growth rate of trip production is 5.4%. This is explained by the impact of other trip generation factors:

- Urban population: urban populations in Uganda and worldwide are found to undertake more trips between traffic analysis zones than their rural counterparts. Urbanization is a central issue in the near future for Uganda and a side effect is a rapid growth in trip generation and the demand for urban transport infrastructures and mobility overall

- National GDP: as GDP increases, wealth trickles down and increases the spending power of most Ugandans. This increased ability allows for increasing consumerism and movement. Cargo rates increase as well as leisure trips.
- Mobilization rate: a main impact of increased national wealth is an accelerated mobilization growth rate. Once a vehicle is purchased it is used more by an individual than if that individual were to rely only on PT. Thus, increased motor vehicles creates trips much more than only the increase in physical vehicles.

Regression analysis of these factors shows that population and urban population are the strongest explaining variables in trip generation growth, this is followed by increasing GDP and finally motorization rates. The output of the analysis yielded forecasts for both 2040 and 2060 trip rates for use in travel demand model trip generation.

5.6.2 Spatial Form: National Structure is based on a triangle of expressways.

5.6.3 Development Strategy

Most existing major cities are located within three corridors in a form of a triangle. The suggested policy of this option is to continue to emphasize this distribution by conceiving the corridors as the major transportation arteries in Uganda, connecting the

country directly to the EAC with expressways and SGR. The corridors also enable high speed internal flow of passengers and cargo. Most of urban development that would take place in the corridors in the future would include cities, industrial sites, new planned villages, air strips, railway stations, administration and public activities. The size of land included in the triangle has the capacity for urbanization till the end of the 21st century.

5.6.4 Urban Population Distribution :

Region:	Central	Eastern	Northern	Western	Total
Population	10,850,000	3,100,000	3,650,000	5,400,000	23,000,000
Percent	47.2%	13.5%	15.9%	23.5%	100.0%

Figure 33: Spatial Orientation 6: Connectivity - Population Distribution

5.6.5 Urban Settlements Hierarchy :

The same hierarchy of settlements as in Option 2, is grouped around the corridors as follows:

Group 1: National Urbanization Corridors major urban centers:

1. North East Corridor: **Mbale, Soroti and Lira**.
2. North West Corridor: **Mbarara, Hoima, Gulu**.
3. Central Corridor: GKMA, Jinja, Mubende , Kasese.

Group 2: Other major cities (Growth Poles outside national corridors):

Arua, Masaka.

Group 3: All other Major Towns, towns and townships Whether inside the corridors or outside them.

Group 4: Rurban Settlements (<10K):

Population target: 7M

Function	Level	Range		Urban Center	2014 POP	2040 Target	Region
Growth Poles	Capital	1	1	GKMA	3,500,000	8,500,000	CEN
	Regional	2	>1M	2 Hoima	100,126	1,500,000	WES
				3 Gulu	149,802	1,250,000	NOR
				4 Mbarara	195,160	1,500,000	WES
				5 Mbale	92,863	1,000,000	EAS
	Sub Regional	3	0.5-1M	6 Arua	61,951	500,000	NOR
				7 Jinja-Njeru	113,887	500,000	EAS
				8 Kasese	101,557	600,000	WES
				9 Lira	99,511	500,000	NOR
				10 Masaka	103,293	600,000	CEN
				11 Soroti	49,646	500,000	EAS
Urban Settlements	Major Towns	4	250-500K	12 Busheny	51,606	250,000	WES
				13 Busia	54,821	300,000	EAS
				14 Entebbe	69,430	250,000	CEN
				15 Fort Portal	53,628	250,000	WES
				16 Kabale	49,201	250,000	WES
				17 Kitgum	75,594	250,000	NOR
				18 Koboko	41,195	250,000	NOR
				19 Lugazi	114,163	250,000	CEN
				20 Luwero	42,869	250,000	CEN
				21 Masindi	94,439	250,000	WES
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				23 Moroto	14,213	250,000	NOR
				24 Mpondwe-Bwera	51,351	250,000	WES
				25 Mubende	95,416	300,000	CEN
				26 Tororo	42,016	250,000	EAS
	Secondary Towns	5	100-250K	27 Adjumani	35,433	150,000	NOR
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				33 Kumi	36,493	100,000	EAS
				34 Mpigi	43,360	100,000	CEN
				35 Nebbi	34,950	100,000	NOR
				36 Pallisa	33,138	100,000	EAS
	Townships	6	50- 100K	37 Apac	14,500	50,000	NOR
				38 Bugiri	28,747	50,000	EAS
				39 Dokolo	20,135	50,000	NOR
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				41 Kapchorwa	43,595	50,000	EAS
				42 Kiboga	19,591	50,000	CEN
				43 Kigumba	18,698	50,000	WES
				44 Kisoro	17,561	50,000	WES
				45 Kotido	22,900	50,000	NOR
				46 Kyenjojo	23,467	50,000	WES
				47 Lyantonde	13,586	50,000	CEN
				48 Moyo	23,700	50,000	NOR
				49 Ntungamo	18,724	50,000	WES
				50 Paidha	31,632	50,000	NOR
				51 Pakwatch	22,360	50,000	NOR
				52 Sheema	16,221	50,000	WES
				53 Sironko	18,884	50,000	EAS
				54 Yumbe	34,806	50,000	NOR
	New Towns	7	250K	55 Nakasongola	9,832	250,000	CEN
				56 Kampala Sattelite 1*			CEN
				57 Kampala Sattelite 2*			CEN
				Total		23,000,000	

* New Sattelite Towns Population is included in Total GKMA Population

Figure 34: Spatial Orientation 6: Connectivity - Urban Settlements Hierarchy

6. Consultation in the NPDP Crystallization.

The NPDP crystallization was accompanied by a series of Information, Education and Communication activities. It is important to state that the process involved extensive stakeholder consultation and participation, which is summarized here. The Plan has been developed with a wide range of participants from across the whole of Uganda.

As part of the Information, Education and Communication activities for the NPDP, a series of 8 introductory and 11 participative regional conferences were organized. MDAs were also consulted at these two stages.

The first, introductory, objective was to expose the options and the underlying ideas based on the lessons from the Current Situation Analysis and 2040 trend and forecasts.

The second, participatory, objective was to consult the participants on the issues by discussing the Spatial Options as options, and how they should be combined.

The second round of conferences were carried out in the following order:

- Karamoja Region Conference (Moroto).
- Eastern Region Conference (Mbale).
- Greater Masaka Region Conference (Masaka).
- South Western Uganda Conference (Mbarara).
- Western Uganda-Regional Conference (Kasese).
- West Nile Conference (Arua).
- Northern Uganda Region Conference (Gulu).
- Mid-Eastern Uganda Conference (Lira).
- Mid-Western Uganda Conference (Hoima).
- Central Region Conference 1 (Kampala).
- Central Region Conference 2 (Jinja).

The 11 conferences were successfully held and organized. Participants, who were invited by the Directorate of Physical Planning and Urban Development in the MoLHUD, were from Local Governments and local branches of MDAs and other stakeholders. Participants were given some communication materials at the time of registration. All the conferences were well attended.

The sitting arrangement was conducive to discussion, and a presentation was made by the client, with the six options (maps) pinned on walls for viewing throughout the conferences.

For group discussions, each conference had four groups to discuss all the six NPDP options . This gave participants an advantage of engaging in detail about their regions regarding the orientations. The outcomes of their discussions were summarized and presented to the rest of the conference participants. After the presentations, they were given an opportunity to mention additional issues which have informed the NPDP from the regional perspective.

Stakeholders later had another opportunity to raise any other issues and share their opinion about NPDP. The outcomes of the group engagements were to inform the next output of the NPDP.

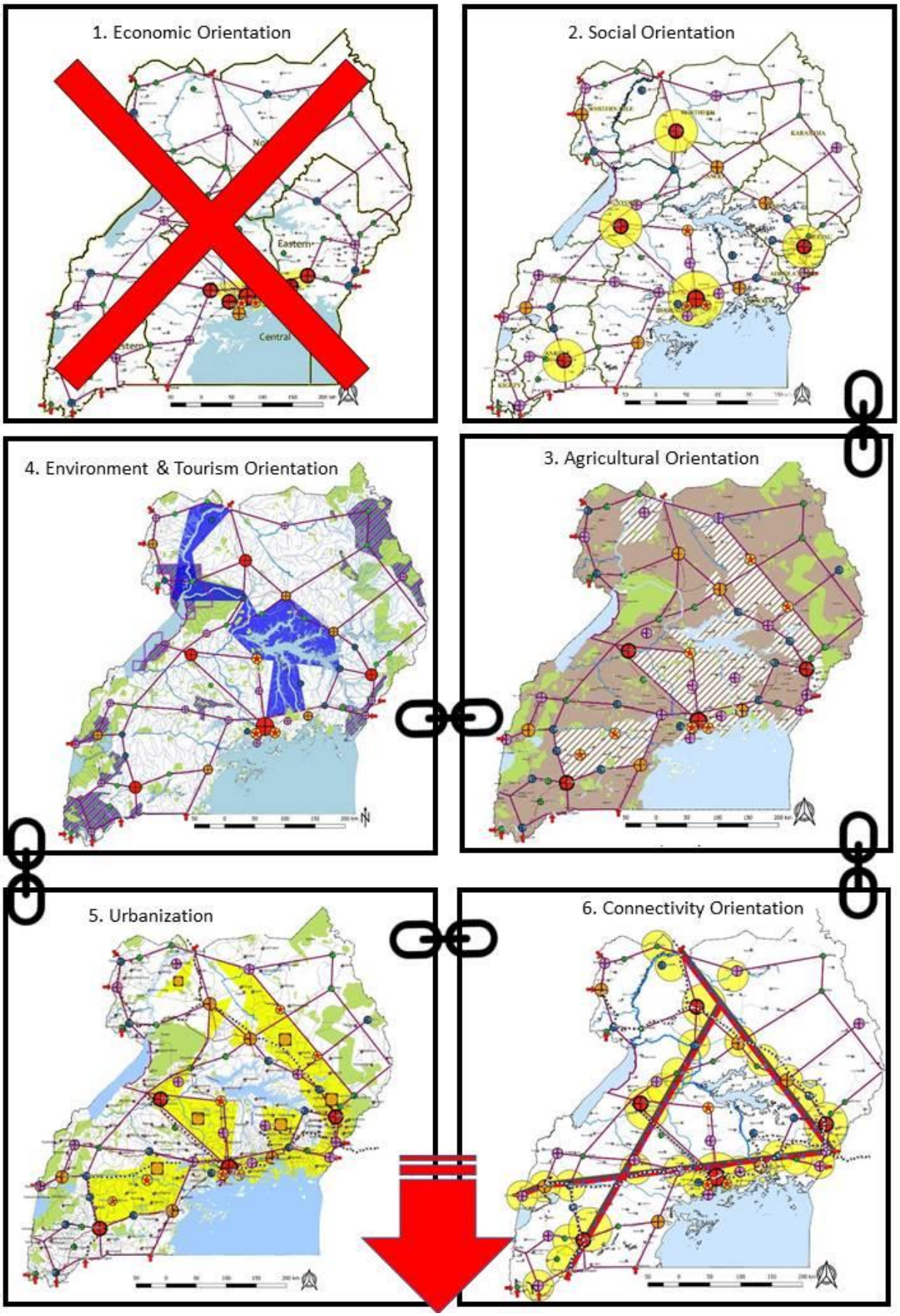
Immediately after the conferences, the client arranged two national meetings. One meeting was held with MDAs and the second with the National Physical Planning Board (NPPB).

Following the submission of the Regional Consultative Report which summarized the opinions and comments from the various parties, discussions were held to select the best combination of the Spatial Options , based on the outcome of the consultations. These were confirmed by the final decision-making workshop on the basis for the NPDP, which was attended by the DPPUD, the NPA and UBoS as expert planners.

The main results of these consultations can be summarized as follows:

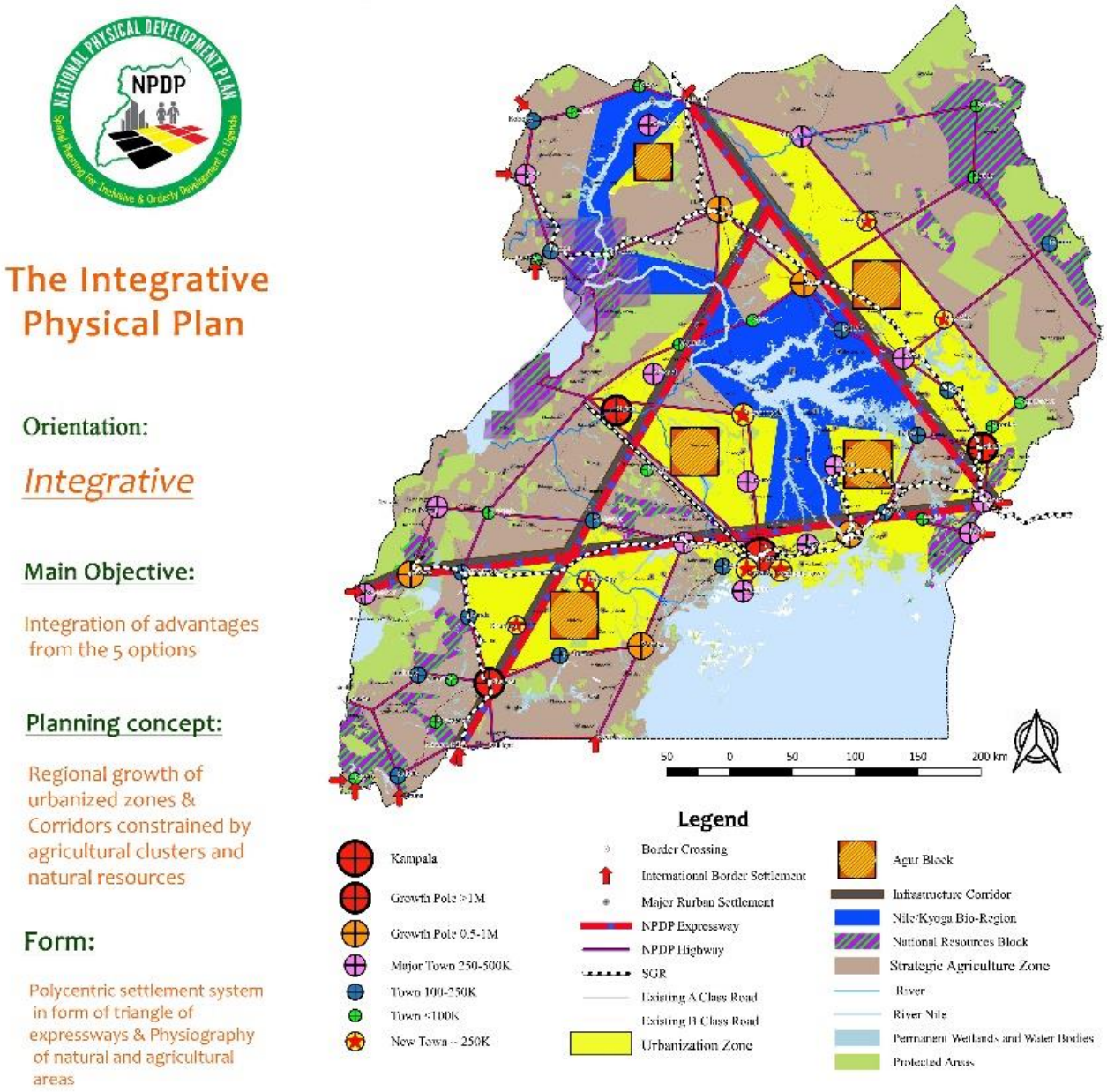
- The continued development of Kamapala and its region as the primate city for Uganda was resisted and regional balance was strongly favored. The idea of regional balanced growth from Option 2 was accepted.
- In the Northern Region: *Elegu* has a township status due to its rapid growth as a trading center located strategically at the border with South Sudan and its large refugee population. *Karuma* and *Kamdini* are merged to one dual city development area with a secondary city status (Karuma-Kamdini).
- The highlighted emphasis of the special status of the sub-regional capitals Arua and Gulu caused upgrading to a regional city status, for each. The population target was doubled: Arua increased from 250,000 to 500,000 and Gulu from 500,000 to 1,000,000. Moroto is now titled as a strategic/Regional city (In accordance with Vision 2040), although its population target remained at 300,000. Its spatial role is better emphasized now by the extending the SGR passenger & cargo railway and the and better connecting the city to the national network by a new highway.
- In the Central Region: The recommendation to upgrade Kyotera into a Secondary Town status with a population of 100,000 was accepted. Mutukula as a border town became a township with a population target of 50,000.
- In the Western Region: Bullisa and Kiryandongo received a township status with a population target of 50,000 each. The population projection for *Kisoro* town was updated to 100,000.
- The **thematic maps,** as discussed with stakeholders and presented in the Regional Consultative Report-National Physical Development Plan August 2018, showed the location and disposition of growth poles, cities, towns and rurban settlements in schematic maps using symbols to express the hierarchy and relative sizes. In these maps, the yellow areas were marked as "**areas for intensified urbanization**". Their total area was previously 53,379 KM^2, which is far beyond the required land for urbanization in the land use balance sheet (20,000 KM^2) and therefore reduced significantly in the elaborated plan.

- The location of urbanization zones from Option 5 has been coordinated with the distribution of agricultural clusters in Option 3. These clusters plus the wide underexploited plains in Karamojong sub-region, define the future territory of the rural realm. Urbanization zones have been further elaborated and redefined as secondary agricultural zones (SAZ). These zones also contain focused and consolidated patches of urbanization, future expansion pattern for existing cities, designated territories for new cities, areas for future urbanization and AGUR Blocks.
- The concept of the international expressways which was superimposed on the highway system was accepted.
- From Option 4 all meaningful protected areas and water systems have been integrated into the final solution. The water system includes permanent wetlands, the River Nile / Kyoga water system bio-region while seasonal wetlands are excluded from protection and the islands of Lake Victoria were also designated as Bio-Region. In addition, the National Resources Blocks from Option 4 have been adopted.


1. Economic Orientation
Eastern
Central
2. Social Orientation
4. Environment & Tourism Orientation
3. Agricultural Orientation
5. Urbanization
6. Connectivity Orientation

7. NPDP integrative Scheme

The National Physical Development Plan has been formed by selecting and combining complementary parameters, which were also informed by stakeholder input. The



outcome is characterized by the 5 parameters:

Figure 36: NPDP integrative scheme which combines the 6 orientations

7.1 Planning Concept:

regional growth of urbanized zones and corridors constrained by agricultural clusters and natural resources.

The NPDP is drawn around Strategic Agricultural Zones, as well as the identified bio-regions, recognizing that these are key elements for long-term growth. At the same time, it adopts the models of connectivity corridors that mark urban development along a triangular model that optimizes the development of infrastructures and expressways based on three main arteries.

Here, again, the polycentric settlement system is adopted that seeks to limit the expansion of Greater Kampala Metropolitan Area in favor of planned urbanization along the corridors. These follow the Secondary Agricultural Zones that become the target locations for regional urban growth.

Locations for Agri-Urban (AGUR) blocks within these Secondary Agricultural Zones are recommended to be used to soften the urban/rural divide by creating hubs for agricultural industries, biotechnologies and value added small and medium enterprises. This combination strengthens the presently dominant agricultural sector by modernizing it and complementing it with a strong industrial sector, particularly regarding added value to existing natural resources.

The precise boundaries of these Zones and Blocks will be defined by Physical Development Plans at Regional and Local Government levels.

The NPDP allows all levels of the system to coexist. With the overall aim of consolidating the pattern of rural sprawling settlement into consolidated blocks to allow for the consolidation of land. This is a huge challenge, considering the 82% of the population who live this way, and therefore finding a solution that is flexible and does not cancel any of the elements in the system, is the only way to create lasting change

Most importantly, this concept provides an integrative approach to urbanization, which will be the main challenge due to the expected growth of population. Urban centers that are well connected by geometric networks of highways, with an additional network of expressways and infrastructure corridors, are absolutely necessary. In order to bridge the urban-rural divide, the urban settlement plan is fully integrated into the environment, with the result of creating a foundation for sustainable growth even beyond the 21st century.

7.2 Spatial Form:

a polycentric settlement system, connected by a triangle of expressways, aligned with the physiographical forms of Agricultural and Natural Resources areas.

The NPDP aims at balancing the benefits of the above-mentioned orientations into one integrative spatial structure, by adopting the key elements, and their benefit, of each option. The objectives of the different elements are regarded as complementary, rather than mutually exclusive. They provide both immediate solutions to pressing challenges, as well as a long-term basis for Uganda - and Ugandans - to also grow and develop beyond the 21st century in a country that can sustain them.

It is important to note that the thematic approach, their analytical parameters, and manner of combination provide a guide on how to flexibly adapt the NPDP as the country develops in practice. The main physical planning issues and factors, how they inter-relate, what is more important and less important are explained in the thematic analysis, such that as and when circumstances change, the NPDP acts as a guide to the method of adapting to them.

7.3 Development Strategy

The National Physical Development Plan combines the aggregate of the spatial content of pillars and sub-pillars for development planning under the Spatial Options , into one over-arching framework for the physical development of Uganda.

The concept of the mega-metropolis in option 1 has been resisted. The idea of regional balanced growth is favored.

The concept of the international expressways was superimposed on the highway system.

Then the location of urbanization zones has been coordinated with the distribution of agricultural clusters. These clusters define the territory of the rural realm.

All meaningful protected areas and water systems have been integrated into the final solution. The water system includes Permanent wetlands, the River Nile / Kyoga water system bio-region while seasonal wetlands are excluded from protection. In addition, the National Resources Blocks are recognized.

The National Physical Development Plan contains seven central Spatial Options and maps:

1. Settlements.
2. Agriculture, Crops Specialization and Natural Resources.
3. Tourism.
4. Transport: Roads.
5. Transport: Railways.
6. Transport: Airports.
7. Utilities.

7.4 Urban Population distribution

The projection for the total urban population is 30 Million, and the urban population forecast in big settlements (more than 50,000) is 24.1 Million. The Rurban projection is 5.9 Million. The following table shows the distribution of urban population by regions.

Region:	Central	Eastern	Northern	Western	Total
Population	11,350,000	3,430,000	4,250,000	5,170,000	24,100,000
Percent	47%	14.1%	17.5%	21.4%	100.0%

Figure 37: NPDP integrative scheme/Urban Population Distribution by Region

7.5 Urban Settlements Hierarchy:

Level	Function	Range	Number of settlements	Total Pop.
1	Capital	8.5 M	GKMA	8,500,000
2	Regional GP	1 M <	Hoima, Mbarara, Mbale	3,400,000
3	Sub Regional GP	0.5- 1 M	Gulu, Jinja-Njeru, Kasese, Lira, Masaka	2,500,000
4	Major Towns	250-500K	14	3,750,000
5	Secondary Towns	100-250K	14	2,700,000
6	Townships	50-100K	16	900,000
7	New Towns	250K	5 (+2 Satellite towns in	1,250,000

Figure 38: NPDP integrative scheme / Hierarchy of Settlements

	GKMA)			
8	Rurban	10-50K	126	7,000,000
	Total			30,000,000

This emphasizes the need to avoid depletion and fragmentation of the strategic agricultural lands and clusters. Most of the urban development will be directed to the secondary agricultural areas while ruralization (accompanied by cooperation and consolidation) will be encouraged in the strategic zones.

In order to reduce the expected conflict between the need to accelerate urbanization on the one hand and to modernize agriculture on the other- the dispersion of the population includes five new towns in addition to the empowerment of existing urban centers in the secondary agricultural areas.

The settlements hierarchy in the NPDP is listed in the table below:

The detailed list of settlements and projected populations is given in Figure 39 which follows:

Function	Urban Region	Population	SqKM	Density
Capital	GKMA	8,500,000	2223	3,823
Regional Cities	Arua	500,000	319	1,566
	Gulu	1,000,000	589	1,697
	Hoima	1,200,000	639	1,877
	Jinja-Njeru	500,000	303	1,648
	Kasese	500,000	250	2,000
	Lira	500,000	256	1,956
	Mbale	1,000,000	494	2,022
	Mbarara	1,200,000	435	2,760
	Moroto	300,000	147	2,035

Function	Urban Region	Population	SqKM	Density
	Soroti	300,000	154	1,948
Major Town	Masaka	500,000	242	2,067
	Busia	300,000	147	2,038
	Masindi	300,000	156	1,919
	Mityana	300,000	150	2,000
	Tororo	300,000	121	2,471
	Adjumani	250,000	150	1,663
	Entebbe	250,000	56	4,490
	Fort Portal	250,000	155	1,614
	Iganga	250,000	110	2,273
	Kabale	250,000	143	1,749
	Kamuli	250,000	114	2,186
	Kitgum	250,000	122	2,052
	Luwero	250,000	94	2,662
	Mpondwe	250,000	127	1,967
Secondary Towns	Busheny	200,000	97	2,063
	Dokolo	200,000	125	1,604
	Ibanda	200,000	99	2,023
	Kamwenge	200,000	116	1,725
	Koboko	200,000	161	1,241
	Kumi	200,000	88	2,284
	Lyantonde	200,000	117	1,704
	Mubende	200,000	111	1,803
	Nebbi	150,000	94	1,599
	Pallisa	150,000	69	2,166
	Urban Region	Population	SqKM	Density
	Kisoro	100,000	75	1,329

Function	Urban Region	Population	SqKM	Density
	Kyotera	100,000	55	1,832
	Moyo	100,000	50	2,016
	Rukungiri	100,000	63	1,590
	Yumbe	100,000	55	1,804
Townships	Bugiri	80,000	47	1,701
	Sironko	80,000	77	1,035
	Kapchorwa	70,000	22	3,187
	Kigumba	70,000	48	1,461
	Apac	50,000	41	1,231
	Buliisa	50,000	25	2,028
	Elegu	50,000	28	1,805
	Kaabong	50,000	57	870
	Kiryandongo	50,000	39	1,276
	Kotido	50,000	56	889
	Kyenjojo	50,000	28	1,806
	Mutukula	50,000	17	3,004
	Paidha	50,000	41	1,226
	Pakwatch	50,000	24	2,120
	Sheema	50,000	42	1,202
New Cities	New City Katakwi	250,000	183	1,366
	New City-Katonga	250,000	177	1,409
	New City- Kiruhura	250,000	180	1,391
	Nakosongola	250,000	187	1,335
	New City- Patongo	250,000	224	1,115
Total		24,100,000		10,682
Average of densities				1,888
Average density				2,256

Figure 39: NPDP integrative scheme/ Settlements

8. The NPDP Settlement System and Land Use Map

8.1 Urban Settlements detailed description

The final NPDP has refined the urbanization pattern as discussed in the above Sections into much more accurate recommendations in terms of locations and settlements sizes. The signs of settlements are no longer symbolic but are drawn according to required areas, based on population targets and desired density. These suggested "patches" limit the current typologies of growth and sprawl and offer a reasonable consolidated footprint.

The suggested settlements are included within the urban corridors presented in Option 5. Urban corridors have now become Secondary Agricultural land (NPDP MAP 2, colored light greyish yellow). These areas are a mixture of Agriculture, Urbanization and future "search areas" for the development of new cities or for the expansion of existing settlements beyond 2040. Some of the more environmentally sensitive areas or with higher potential to increase productivity- were shifted into Strategic Agricultural Zones.

As shown in Figure 22, the urbanization zones are influenced by constraints, such as current patterns of development, transportation, sensitive areas (like wetlands, forests and other protected areas), topography etc. The boundaries of urban areas are those of existing administrative units (parishes), but will be subject to re-interpretation, as with the secondary agricultural zones and other elements when lower levels of Plan are prepared. However, the individual Regional, District and Urban Council Plans should henceforth refer to, and be based on the NPDP. Any significant changes to

the settlement hierarchy, urban extents or other zones here described will need to be approved by the NPPB as changes to the NPDP.

The total land allocated for urbanization zones is 12,806 KM2 and the total gross area within the ring roads is 20,766 KM2.

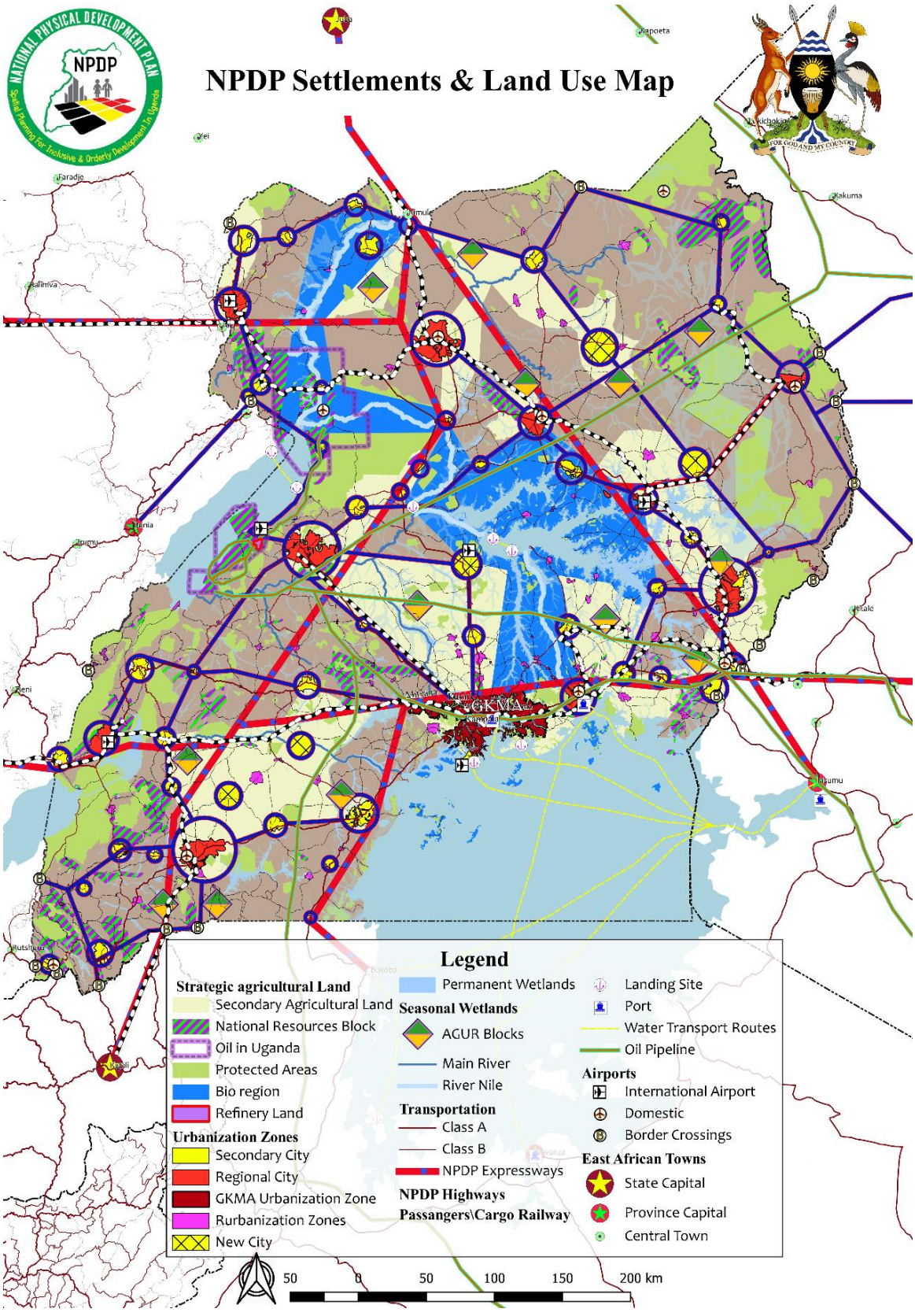


Figure 40: NPDP Map 1 / Settlements and Land Use Map

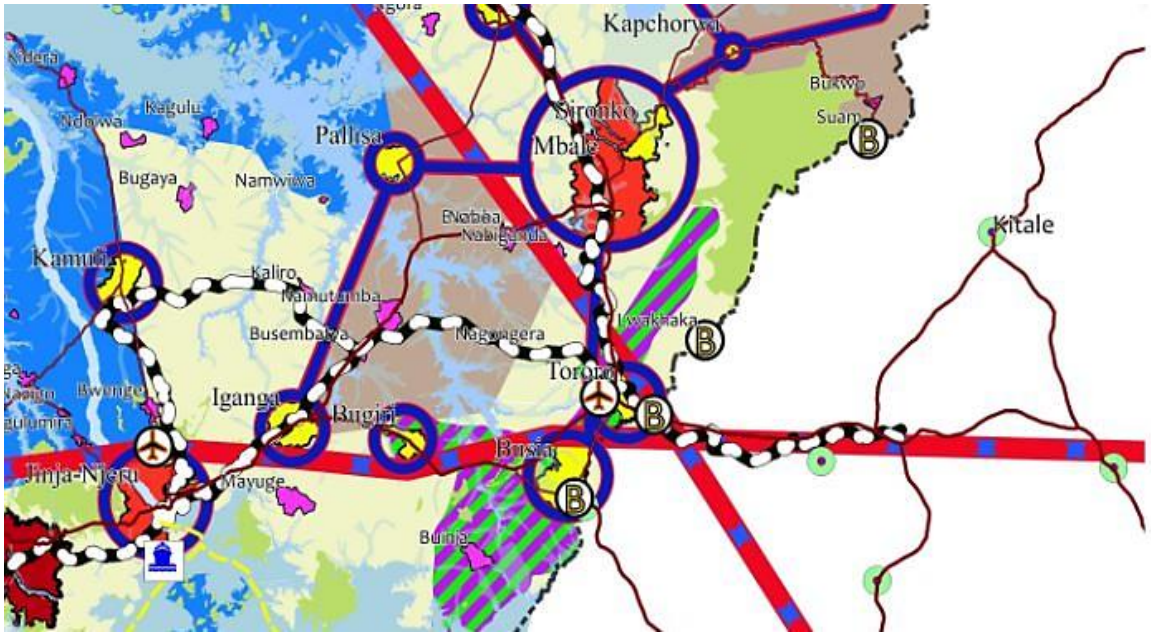


Figure 41: Characteristics of Urbanisation Zones

8.1.1 GKMA

The principal urbanized conurbation in the central region of the country is shown in the maps as a pattern representing the entire maximum area of expansion. This patch₩pattern shows the physical boundaries in which the continuous sprawling of built up area will be tolerated. Even if all measures are taken to ensure compact development and maximizing urbanity, the region is expected to extend from Mityana in the west to Lugazi in the east and Entebbe in the south. In the north, the sprawling of GKMA will be spatially limited by a new expressway crossing the country from east to west.

The total metropolitan land area is 2223 KM2 with a target population of 8,500,000 (excluding Mityana) and a net density of 3,823 P₩KM2. Currently, GKMA include the Municipalities of Mukono, Kira, Kampala, Nansana, Wakiso, and Mpigi as well as the peri-urban and the rural spaces scattered among them. According to projections, the metropolitan area of Kampala will encompass Mityana and merge with it into one, predominantly urban, continuum.

8.1.2 Regional Cities

Ten regional cities are proposed: Mbarara, Hoima, Mbale, Gulu, Arua, Lira, Soroti, Moroto, Kasese and Jinja, containing a population of 6,150,000. Their total net area is 3587.4 KM^2 and average density is 1714 P₩KM^2.

Bright Red
RGB (253,50,39)
Color Code: #fd3227

Figure 42: Regional Cities Symbols

These are cities of regional importance, based on manufacturing and regional services that are of strategic importance to the national economy.

Built upon planned urbanization, excellent infrastructures, economic agglomeration and specialization, regional cities serve as engines of growth for the entire region and aimed at creating significant urbanization on a countrywide scale.

For illustration purposes, Figure 44 shows the future metropolitan area of Gulu, which will include one million residents on an area of approximately 690 KM2. The purple lines are boundaries of level 1 administrative units (Villages).

In Gulu's case there are 121 "Village Units" that will be gradually consolidated to create the municipal framework of the city. The "patch" of the city area is surrounded by a ring road called “The Urban Ring”, defining possible extension area for the city up to 2050 and beyond. The goal is to ensure the preservation of right of way for a ring road/bypass to maximize connections from all directions. Another goal is to mark the area for intervention and more detailed land use planning in local plans. This circle presents the gross urban area, which in the case of Gulu is 1,135 KM2.

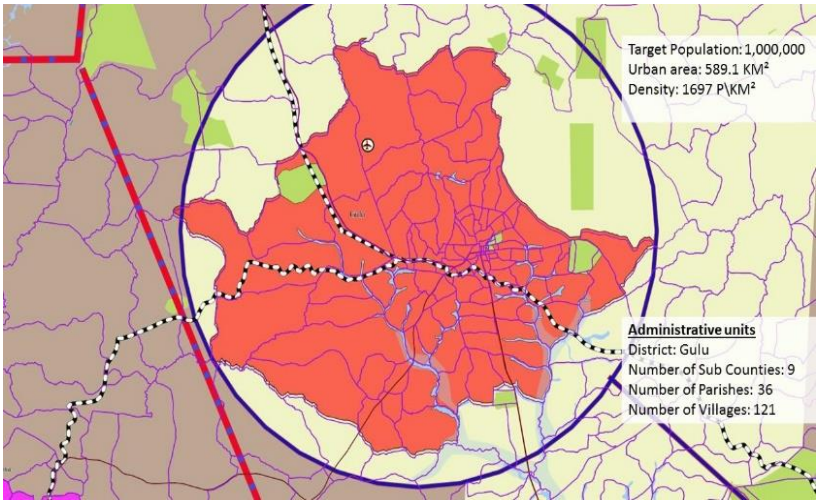
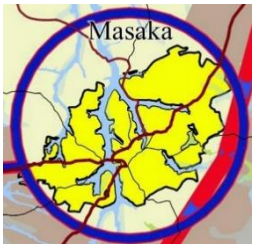
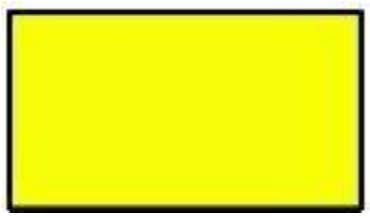


Figure 43: Example of Urban expansion - Future Metropolitan Area of Gulu

8.1.3 Secondary Cities

Secondary cities: 50 Urban settlements (Cities and towns) are designated as secondary cities with populations over 50K each. Their total population is projected to be 8,300,000, covering an area of 4721.5 KM2 and density will be 1758 P₩KM^2. New cities are also included in this category.





Vivid yellow
(Bounded by black line)
RGB (247,255,6)
Color Code: #f7ff06

Figure 44: Secondary Cities Symbols

This category refers to urban entities that range between 50k and 500k, and these will be developed both in terms of the number of settlements that grow to this size, and their role in the overall spatial structure.

These cities will facilitate local production, services and trade. These settlements are subdivided into 3 types:

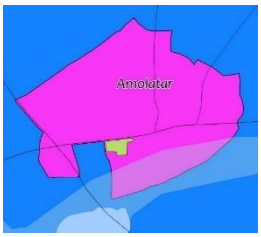
Major Towns: 250k-500k - towns of local importance that facilitate significant economic activity and industry in peripheral areas.

Secondary towns: 100k-250k - towns that further expand urban development, supported by regional economic activity such as value chain systems for commercial agriculture.

Townships: 50k-100k - towns that operate as central places for the agricultural periphery and include also production activities.

8.1.4 Rurban Settlement Area

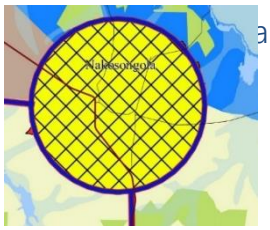
Rurban Settlements are entities of a mixed nature, mostly rural places which have undergone a process of urbanization. They are defined as towns with less than 50,000 inhabitants. The total Rurban settlements area should inhabit 5.9 million Uganda's in 2040 with an average density of 1000 P/KM2. the maps include 126 Rurban settlements of population between 10K and 50K inhabitants.



Bright magenta

RGB (247, 54.247)

Color Code: #f736f7



al settlements symbols

8.1.5 New Cities

An area designated for the development of a new city. New cities are those urban centers, including satellite cities that will be established according to the optimal option for the national spatial structure. These are towns that will have the benefit of a starting from a planned growth pattern that considers their regional and economic status, which will allow them to grow in a structured manner and in order of magnitude of up to

Vivid yellow
(With black lines lengthwise and crosswise)

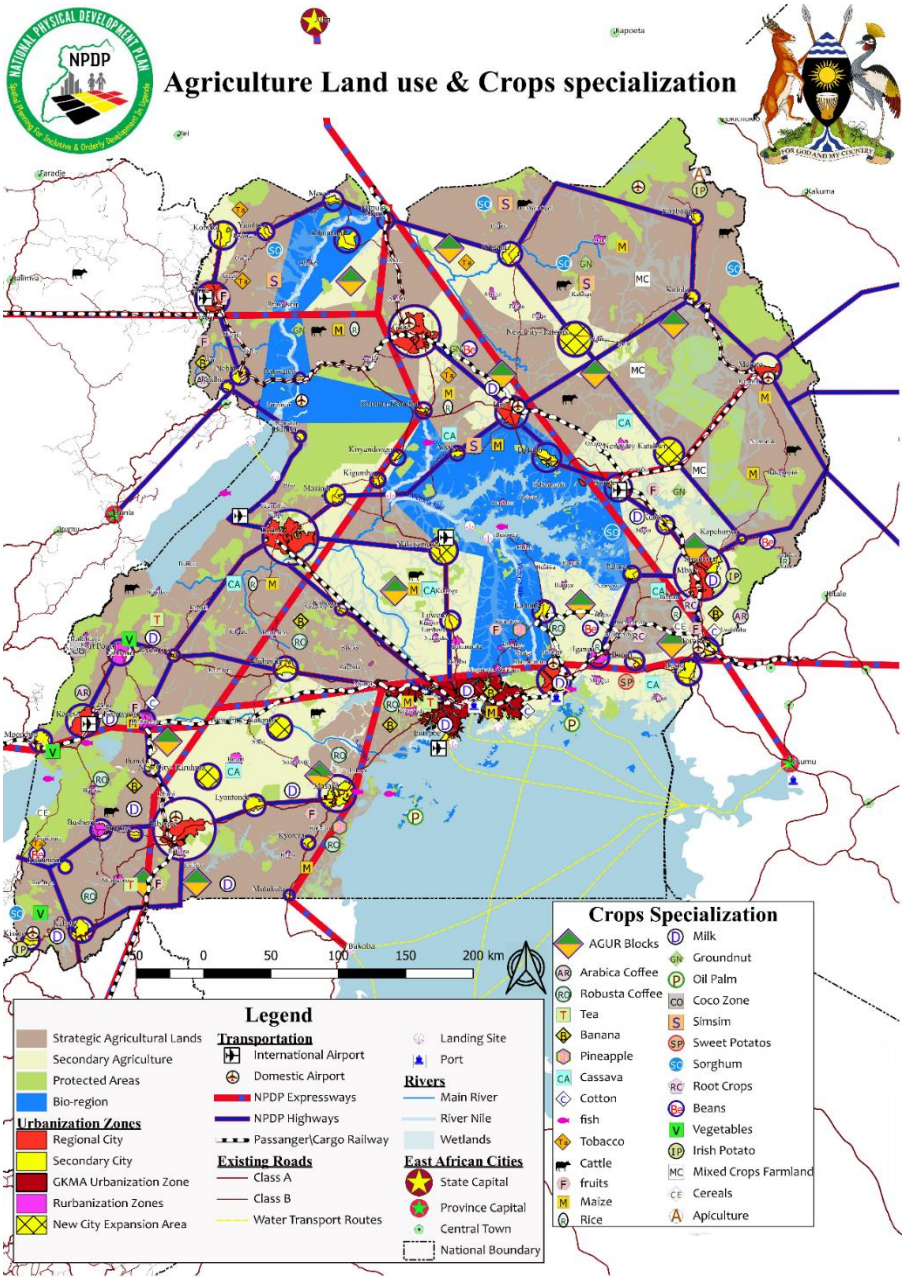
RGB (247,255,6)
Color Code: #f7ff06

Figure 46: New Towns symbology

250,000 inhabitants. 5 new cities are proposed. shown as yellow circle with black grid lines inside, encircled by a ring road. The precise locations of each new city should be designated in regional and lower levels of Plan.

8.2 Agricultural Crops Specialization and Natural Resources

As already stated, the NPDP identifies schematically the crop specialisation areas as Strategic Agricultural Zones, the Secondary Zones which are of less strategic significance, often combine with the presence of the cattle corridor, and provide the



potential for urban expansion

Figure 47: NPDP Map 2: Agricultural Zones, Crops Specialization and Natural Resource Blocks

8.3 Strategic Agricultural Lands:

The total land area in Uganda is approx. 241,000 Km². Agriculture is the largest land-consuming economic activity. These **Strategic Agricultural Zones (SAZs)** are based on 12 agricultural **clusters** which were determined by MAAIF, while adding new areas to them due to the expected – and urgent – growing need for arable land (mainly the extensive terrains in the north-east- Karamojong lands).

Grayish orange

Figure 48: Strategic Agricultural Lands Symbology

Agricultural clusters are areas characterized by ecological attributes, to which a cluster of strategic crops are matched and suggested for production. Their development as Strategic Agricultural Zones is aimed at creating a concentration of producers, agribusinesses and institutions, usually in the same sector, addressing common challenges and opportunities, with the overall aim of facilitating consolidation and moving towards modern agriculture.

When placed together, clusters create a sequence of **Strategic Agricultural Land** in which the majority of agricultural activities will take place, whether for consumption or for export. Land will be used for food, cash crops, pasture, and forestry, as well as for the conservation of the open land and landscape of the country.

Crops specializing areas are shown on the agricultural map by the following symbols:

Arabica Coffee Zone	AR	Groundnuts Production Zone	GN
Robusta Coffee Zone	RO	Tea	T

Banana Production Zone

Pineapple Production Zone

Cassava Production Zone

Cotton Production Zone

Fisheries

Tobacco Production Zone

Cattle Zone

Fruits Production Zone

Maize Production Zone

Rice Production Zone

Production Zone

Palm Oil Production Zone

Coco Production Zone

Simsim Production Zone

Sorghum Production Zone

Root Crops Production Zone

Beans

Vegetables

Irish Potato

Apiculture

Mixed Crops Farmland

Dairy Production 

Figure 49 Agricultural Crops specializing areas symbology

8.4 Secondary Agricultural Lands

These are areas that for strategic reasons are not prioritized as SAZs, being located either on land that is either less suitable for commercial agriculture or offers better opportunities for urbanization. In these areas, agricultural production and consolidation will also take place, however - as their name suggests - they will be of secondary importance. Instead, these zones will provide the space needed for mixed development agriculture, as well as urban and rurban areas to accommodate the growing population.

Light grayish yellow.
RGB (241,244,199)
Color Code: #f1f4c7

Figure 50: Secondary Agricultural Lands Symbology

8.5 AGUR Blocks

The AGUR Blocks initiative offers an original paradigm for modern agricultural living. These are hubs for agricultural industries, biotechnologies and value-added, small- and medium enterprises.

It is a Special Economic Zone, aimed at strengthening the presently dominant agricultural sector by modernizing it and complementing it with a strong industrial sector, particularly regarding value additions to existing natural resources.

Rhombus: **Soft Violet**
RGB (194, 99, 244)
Color Code: #c263f4
Top triangle: Dark Lime Green
RGB (51, 160, 44)
Color Code: #33a02c
Lower triangle: **Pure Yellow**
RGB (255, 200, 0)
Color Code: #ffc800

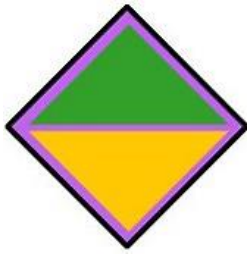


Figure 51: AGUR Blocks symbology

AGUR blocks bring innovative hybrid agricultural and urban typologies into close dialogue. A such, this approach to spatial zoning can describe an "**Agropolitan**" territory for living, in which inhabitants of any settlement must not only actively produce their own food, but also mediate the space of their collective living with the

natural environment while sustaining effective agricultural production and export products.

8.6 National Resources Block

National (Natural) Resources Blocks are designated areas containing relatively high concentrations of natural non-renewable resources, mainly minerals, oil and gas.

Purple & Green Hatched
Vivid Magenta RGB (189,21,240)
Color Code: #bd15f0
Vivid lime green RGB(21,240,10)
Color Code: #15f00a

Figure 52: Natural Resource Blocks symbology

The aim of National Resource Blocks within spatial planning is twofold; the first aim is to preserve natural resources so that they can be extracted according to sustainable, long-term plans. The second aim is to simultaneously provide networks and infrastructure to enable this process and make the most of it in terms of industrial and urban development in adjacent areas.

8.7 Oil Production Zone

Oil Production Zones include all the licensed areas and areas that contain oil discoveries as well as the centers of the oil and gas industry and the developing oil infrastructures, including production wells, refineries, pipelines, power generation sites, Central Processing Facilities for crude oil or natural gas, etc. Unlicensed acreage with potential for discoveries are not included in the comprehensive land use map and the plan's provisions.

Transparent fill bound by solid Vivid Magenta line (Color Code: #bd15f0) and above it a Dashed very dark lime green line (Color Code #035d07)

Figure 53: Oil Production Zone symbology

8.8 Tourism Strategic Regions and Environmental Protection NPDP MAP 3

8.8.1 Tourism Strategic Regions

There are two main Tourism Strategic Regions marked in the plan. The first is the Albertine Graben region which accounts for over 70% of the country's current tourism revenue, and the second is the Eastern Corridor tourism region (streched from Jinja through Mt. Elgon NP, Pian Upe WR up to Kidepo Valley NP). with considerable potential to increase revenue.

Tourism Strategic Regions
Very soft green
RGB (204,244,187)
Color Code: #ccf4bb

Figure 54 : Tourism Strategic Regions symbology

Central Forest Reserve (CFR)	
Travel Destination	
Business/ Urban Tourism	
Designated Resorts Area	
UNESCO World Heritage	
Touristic Ferry Line	
Cargo₩Passenger Vessels	

Figure 55: Symbology for Tourism facilities and infrastructure

Tourism is primarily eco-based around the landscapes and wildlife in several world-class protected areas. The development of tourism facillities and infrastructures will be focoused around these regions and the baskets of economic activities be tourism oriented. The symbols on the tourism map are:

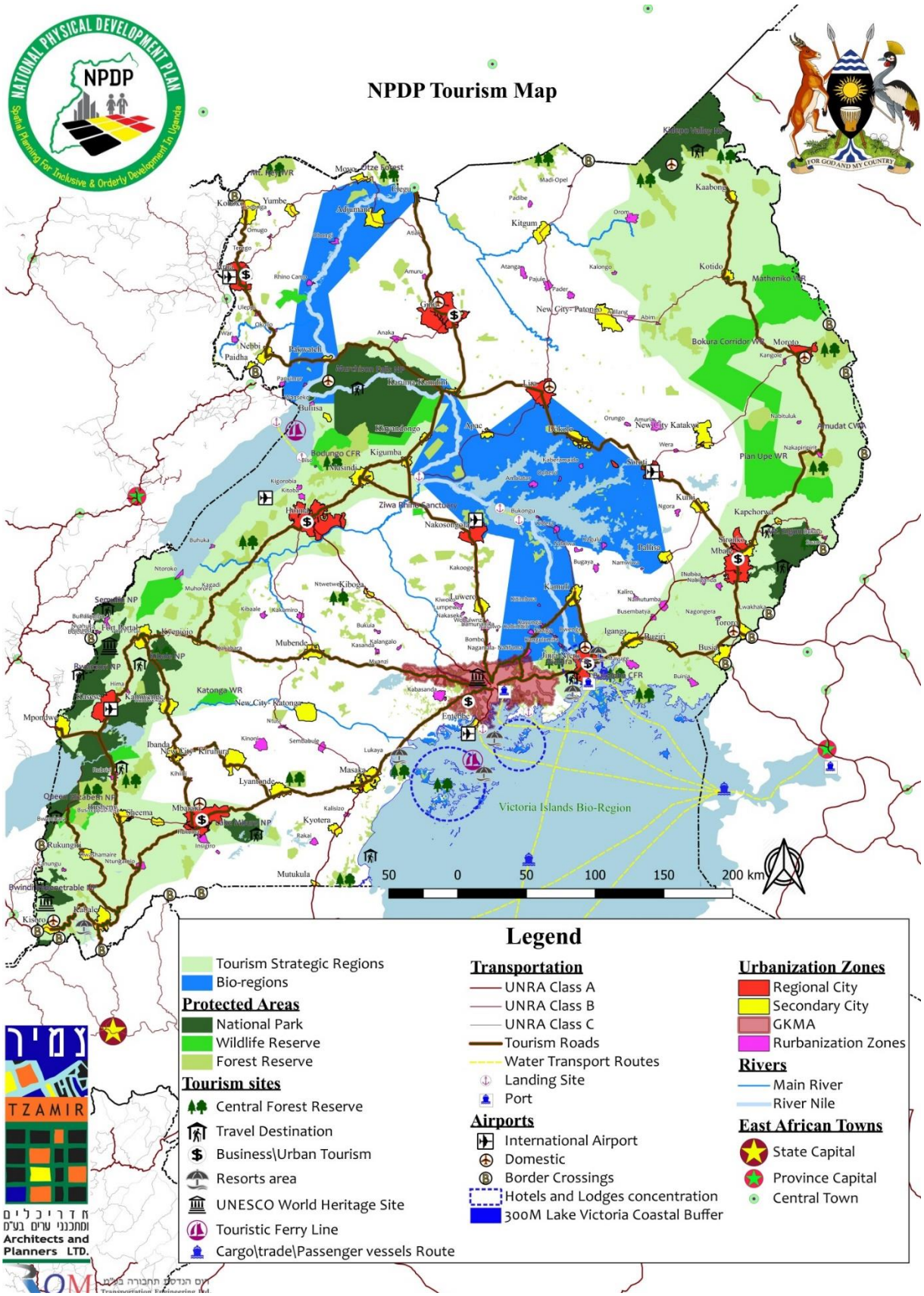


Figure 56: NPDP Map 3: Tourism and environmental protection areas

8.9 Bio-Regions

Bio-regions are areas which exhibit high levels of biodiversity, including those within the protected areas, but also outside them. The plan designates the entire **Nile/Kyoga basin** as well as the **islands of Lake Victoria** to be bio-regions, due to their crucial ecological importance, the combination of abundance of water and unique rural livelihood. This area has a potential for bio-agriculture and eco-tourism as well.

Vivid blue
RGB (22,130,253)
Color Code: #1682fd

Figure 57: Bio-Region Symbology

Current and future settlements can gain a lot of wealth from this bio-region.

The threats to biodiversity are rampant clearance of natural vegetation, catchment and water sources disturbances, poaching and illegal wildlife trade. The areas must be identified, disseminated and protected through enforcement by the Physical Planning system.

Drivers of ecosystem change natural or human-induced factors that directly or indirectly cause a change in an ecosystem are referred to as 'drivers. Drivers are of two types: direct and indirect. The Nile Kyoga Bio region has four types of indirect drivers: demographic, economic, science and technology, and cultural and religious factors. The direct drivers include climate change and climate variation, land use change, invasive species and over-exploitation of natural resources (Pilot Integrated Ecosystem Assessment of the Lake Kyoga Catchment Area, 2008).

The four major ecosystems in the Nile Lake Kyoga bio region area include freshwater systems (consisting of River Nile, Lake Kyoga complex, several permanent and seasonal rivers and wetlands), forests, grasslands, and agro-ecosystems. The dry land ecosystem, a major feature of Uganda's cattle corridor, is also identified within the bio region.

As for Kalagala within Lake Victoria is composed of 84 islands and of which are majorly forested with a lot of opportunities for marine tourism and agriculture.

8.10 Protected Areas

Protected Areas (PAs) are areas recognized for their natural and ecological values, which cover approximately 16% of Uganda's total land area. They include sensitive natural ecosystems that must be separated from artificial human activities, and can be divided into 3 major categories:

National Parks.

Wildlife Reserves.

Central Forest Reserves.

Other areas for conservation, such as permanent wetlands, animal sanctuaries, and local forest reserves, are excluded from this category.

As mentioned, Protected Areas (PAs) are areas recognized for their natural and ecological values. They are subdivided into the following categories:

8.11 National Parks

National parks offer a mix of natural habitat areas and complimentary tourism facilities. They offer provision of wildlife habitat; protection of plant and animal diversity; protection of rare and endangered species; maintenance of scenic beauty; and provision of opportunities for income generation activities.

Dark desaturated lime green
RGB (47,95,41)
Color Code: #2f5f29

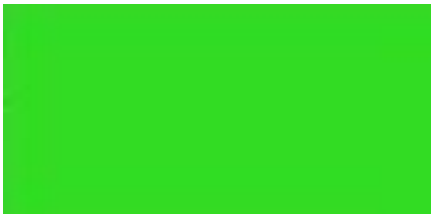
Figure 58: National Parks Symbology

Land-uses permitted include: conservation facilities, toll stations, hotels, scientific research and camping sites among others. With the recent discovery of oil in some of the designated national parks the government has revised its policy to

accommodate oil exploration and production activities in national parks such as the Murchison Falls National Park in the region.

8.12 Wildlife Reserve (WR)

Wildlife reserves are declared under section (2) (b) of the Wildlife Act, 1996. These are areas that are important for wildlife conservation and management.



Bright lime green
RGB (50,220,35)
Color Code: #32dc23

Figure 59: Wildlife Reserve Symbology

The wildlife reserves sole purpose is to offer areas for conservation of biological diversity and protection of wild animals and plants, with complimentary activities such as scenic viewing, recreation, scientific research and regulated extractive utilisation of natural resources. Permitted sustainable exploitation of wildlife reserves is permitted in a manner compatible with wildlife. Such uses include: tourist facilities, scientific research facilities, mining, and oil exploration among others.

8.13 Central Forest Reserve (CFR) :

This category includes all permanent forest reserves on government land. The central forests are under the government trusteeship and will be protected and managed sustainably.

Soft green
RGB (186,221,105)
Color Code: #badd69

Figure 60: Central Forest Reserve Symbology

The Central Forest Reserve is exclusive only for forestry. Restricted land uses will be permitted. These land uses have to be related to forestry and should promote sustainable conservation of the forest reserves.

8.14 Rivers and Reservoirs

Open or surface water bodies provide the population with water for consumption and agriculture, as well as related commercial activities such as fishing, hydropower, etc. Moreover, water bodies offer natural habitats for various species of flora and fauna, and as such have invaluable long-term ecological importance, making them the target of donor and tourist attention.

Apart from River Nile, the major rivers which forms Uganda' main drainage basins and marked on the main map of land uses are: Achwa, Pager, Ora, Katonga and Nkusi.

Main River- Vivid blue
(RGB 10,133,255)
Color Code: #0a85ff
River Nile - Very pale blue
(RGB 204,229,255)
Color Code: #cce5ff

Figure 61: Rivers symbology

These water bodies require minimum interference from human activities to remain sustainable sources of livelihood. These areas include not only the water bodies themselves, but also water catchment areas that provide recharge for the water bodies (e.g. rivers and groundwater reservoirs).

8.15 Lakes

In addition to Lake Victoria, Uganda has several large lakes that provide the above resources and at the same time serve as borders, both international and between districts. As such, lakes also need to be considered in the framework of transportation. Principal large lakes of Uganda include: Lake Albert, Kyoga, Kwanya, Edward, George Bisina, Wamala, Bunyonyi, Mutanda and opeta- among many other smaller lakes. Some of these lakes are RAMSAR-Listed wetlands of international importance.

Very soft cyan
RGB (170, 211, 223)
Color Code: #aad3df

Figure 62: Lakes Symbology

8.16 Permanent Wetlands

A wetland is an area of land that is permanently saturated with water including marshes, swamps and bogs. Permanent wetlands cover 3.75% of the land area (7,500 KM2). Permanent wetlands have great ecological importance (i.e. water purification, flood control, reservoirs of biodiversity among others) and are protected by international conventions, specifically, The RAMSAR Convention on Wetlands of International Importance.

Pale blue
RGB (163, 204, 255)
Color Code: #a3ccff

Figure 63: Permanent Wetlands symbology

8.17 Seasonal Wetlands

An area of land that is seasonally saturated with water. Seasonal wetlands cover 9.5% (19,000 KM2) of the total land area in Uganda and if used sustainablly can benefit the livelihood of communities surrounding them, for example by adjusing irrigation schemes to increase agricultural produce.

Very soft cyan
60% Transparent
RGB (170,211,223)
Color Code: #aad3df

9. Infrastructure:

9.1 Transport: Roads

The NPDP defines the Ugandan road network (the country's most important transport asset) as essential to the recommended development contained in the development plan. Planned urbanization, urban areas and agricultural areas, not to mention new cities and growth poles will be fed by improved and more intelligent road infrastructures. The key to improvement in road infrastructure is the definition of a new hierarchy. The highest roads in the hierarchy, defined as expressways, provide high mobility over long distances while low level roads provide local accessibility. Opposite this roadway are local and urban roads which provide high accessibility but with low capacity and speed.

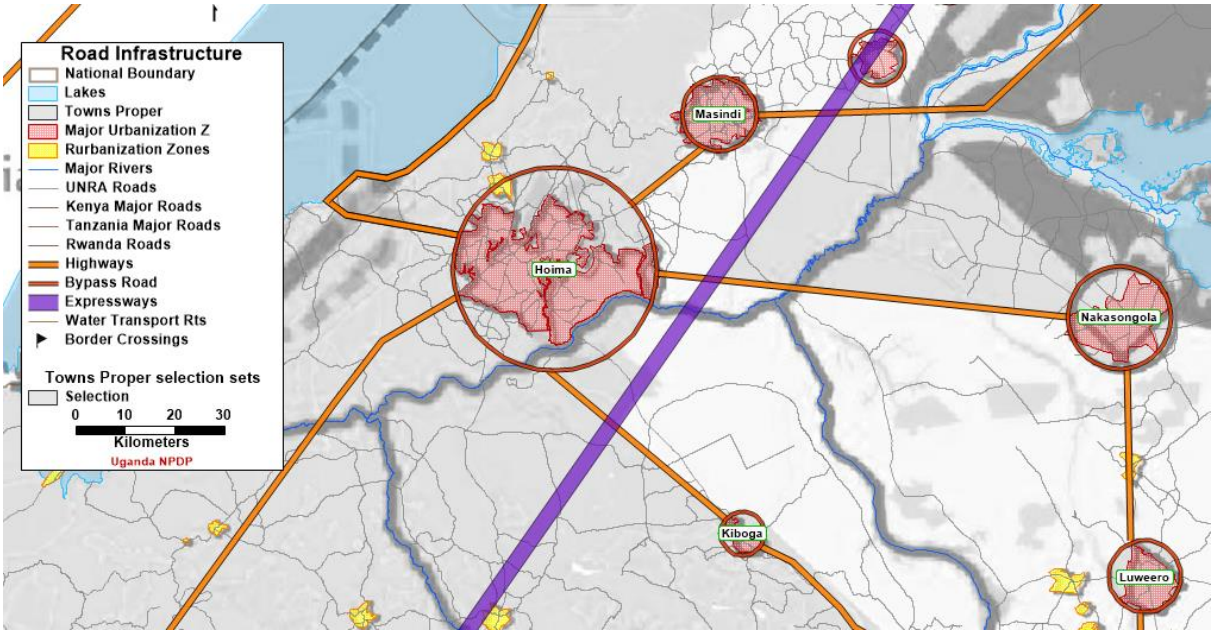


Figure 64: Road Hierarchy

The road network ensures movement between growth poles, urbanizing cities and agriculture areas. The network is designed to provide a rigid structure for development and support the organization of Uganda's growing population.

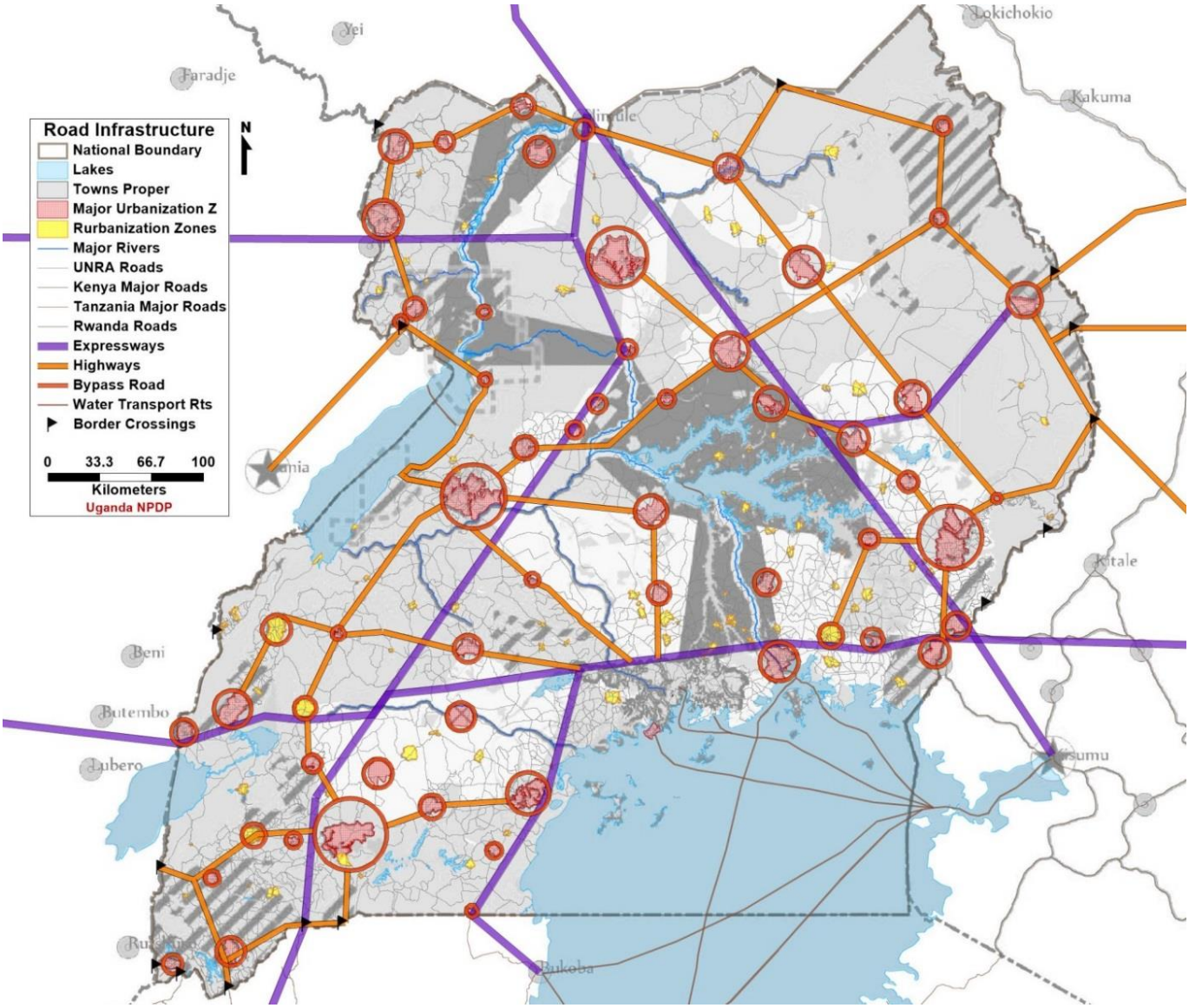


Figure 65: NPDP Map 4: Road hierarchy and networks

Road Infrastructure	Map Symbol	Hierarchy Level	Description
Expressways	Purple Line	Highest	Road network which provides high speeds, high capacities and protected travel over long distances. Entrance and exits to this road way are limited and crossings are grade separated for speed and safety.
Highways	Orange Line	High	Existing and improved highway network providing regional connectivity between cities and towns. These roads provide a balance between mobility and accessibility with many meetings with local road networks. Roads offer significantly lower speed and capacity in comparison with Expressways
Bypass Roads	Red Rings	Medium	Road assets which allow for regional and intercity traffic to avoid entering city centers reducing pollution and safety risks. These roadways also help to reduce urban sprawl as they define the outskirts of urbanizing areas with a hard boundary
Local Roads	Grey Line	Low	Local and urban roads which provide maximum accessibility but low mobility

Figure 66: Road Infrastructure Symbols

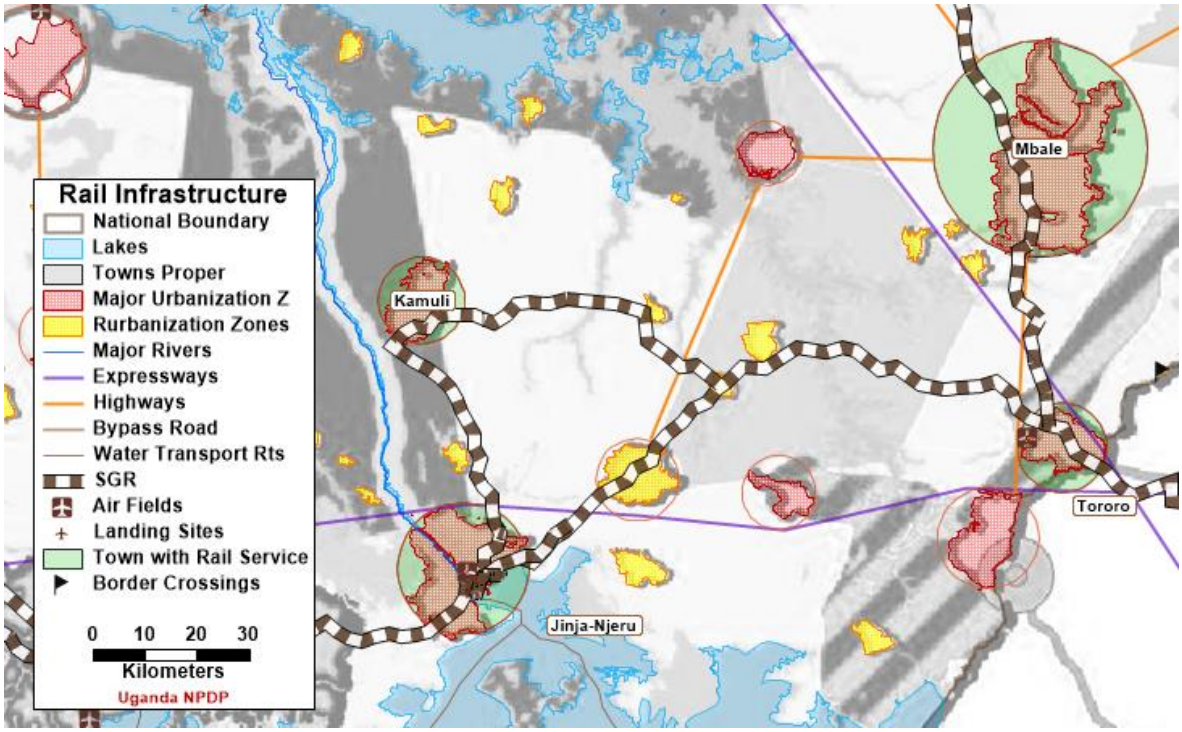


Figure 67: Detailed example of Rail Infrastructure

9.2 Transport: Rail Infrastructure

Uganda is currently developing a railway network which utilizes the standard gauge railway (SGR) specifications. Mapping of the National Railway network illustrates the following:

Map Symbol	Hierarchy Level
Brown Dashed Line	SGR Railway Infrastructure
Urban Areas in Green Shading	Towns with Railway service (Passenger and Cargo)

Figure 68: Rail Infrastructure symbology

This SGR specification provides numerous benefits including:

- Compatibility with existing railways in Kenya and Tanzania which provide access to major ports
- Higher speeds, capacity and safety
- International standards

This railway will provide cargo and passenger service between most of the major urban centers and growth poles in Uganda as well as connect major agricultural areas. The railway is planned to provide cross border connectivity to all of Uganda's neighboring countries, operations which will bring revenue to the railway system to allow for proper maintenance and management. The potential positive benefits of rail travel for a growing Uganda are massive and include:

- Removing trucks for roadways
- Highly efficient transport of passengers and cargo
- High speed travel in a safer environment than road
- Stations act as development nodes for increased urbanization and high density economic activity.

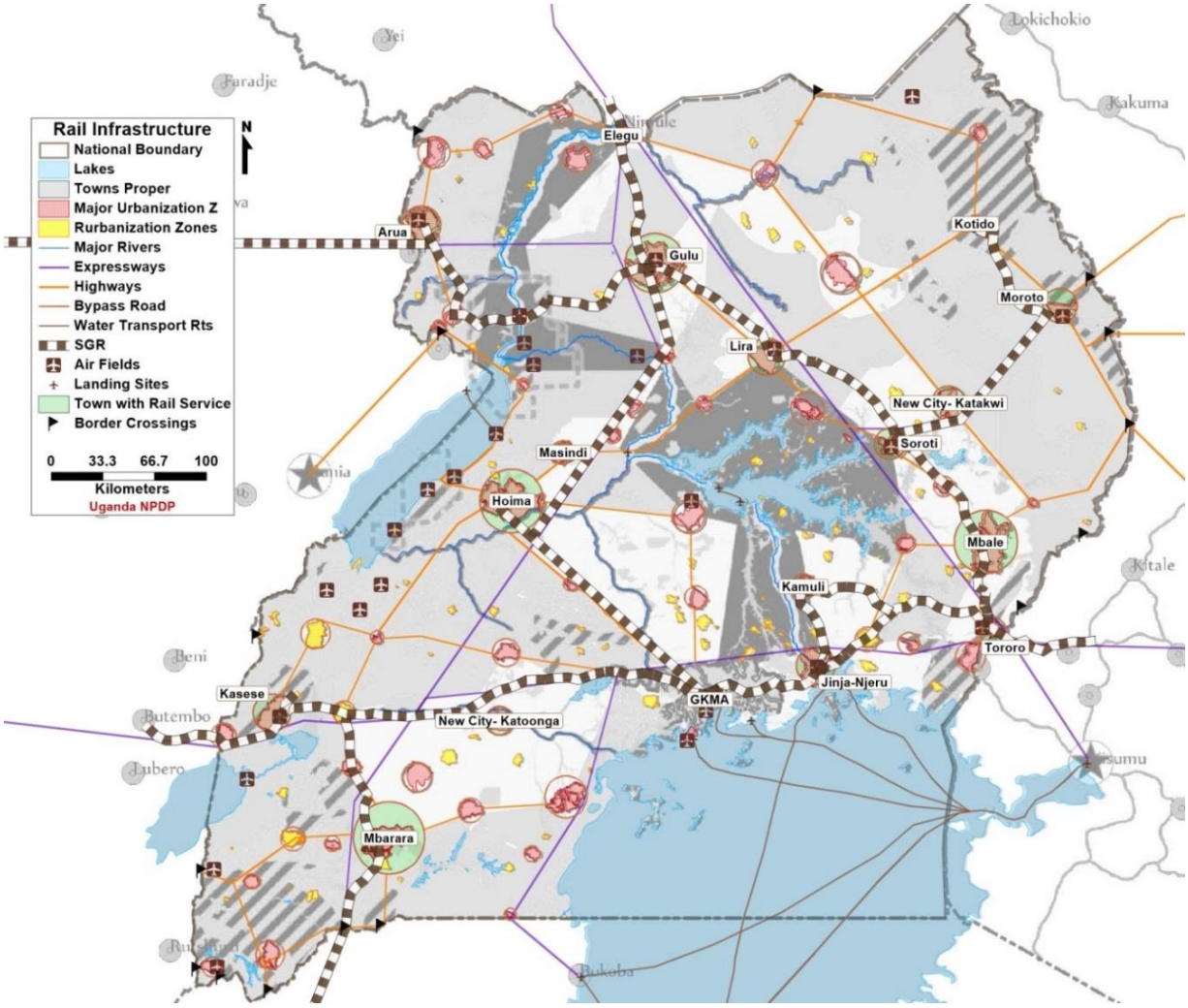


Figure 69: NPDP Map 5: Rail Infrastructure Map

9.3 Transport: Air

The Jaspers 2011 airport master plan set out a prioritized plan for the development of Uganda's airports including the addition of 5 international airports around the country and the substantial upgrade of Entebbe International airport.

Mapping of these facilities shows the proximity of planned and under construction international airports to the Plan's proposed growth poles. Domestic airfields complete the air transport network in Uganda by providing rapid but exclusive transport. Domestic airfields are in close proximity to urbanizing cities, smaller growth poles and major tourist centers.

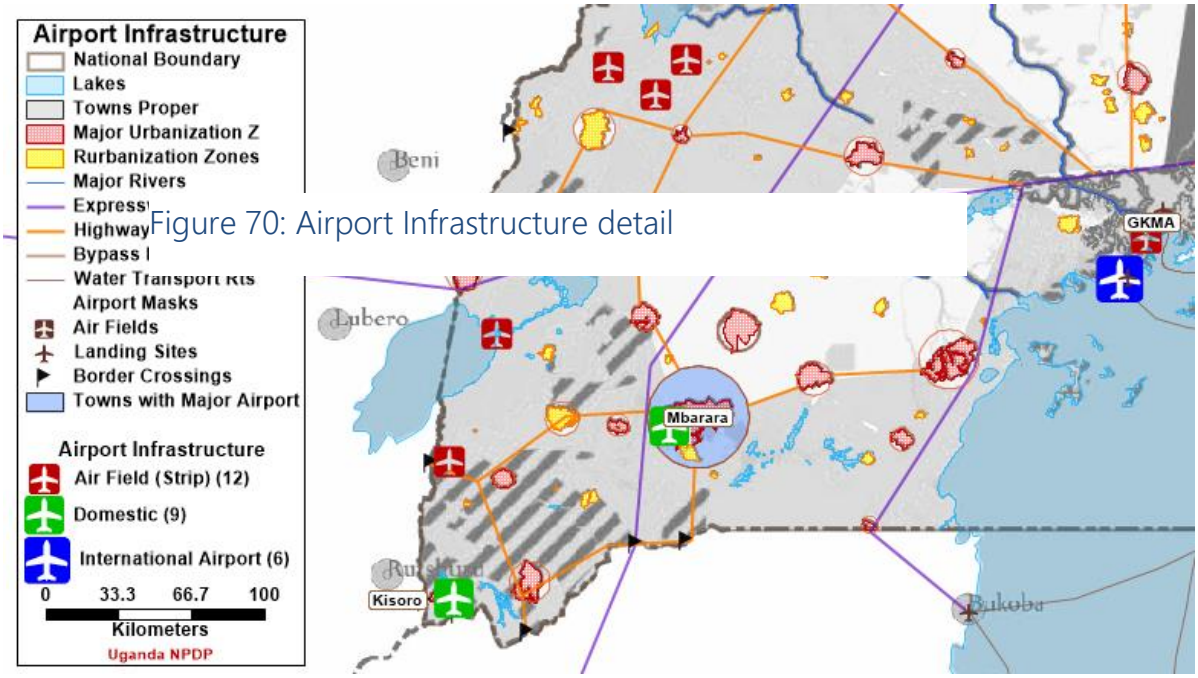


Figure 70: Airport Infrastructure detail

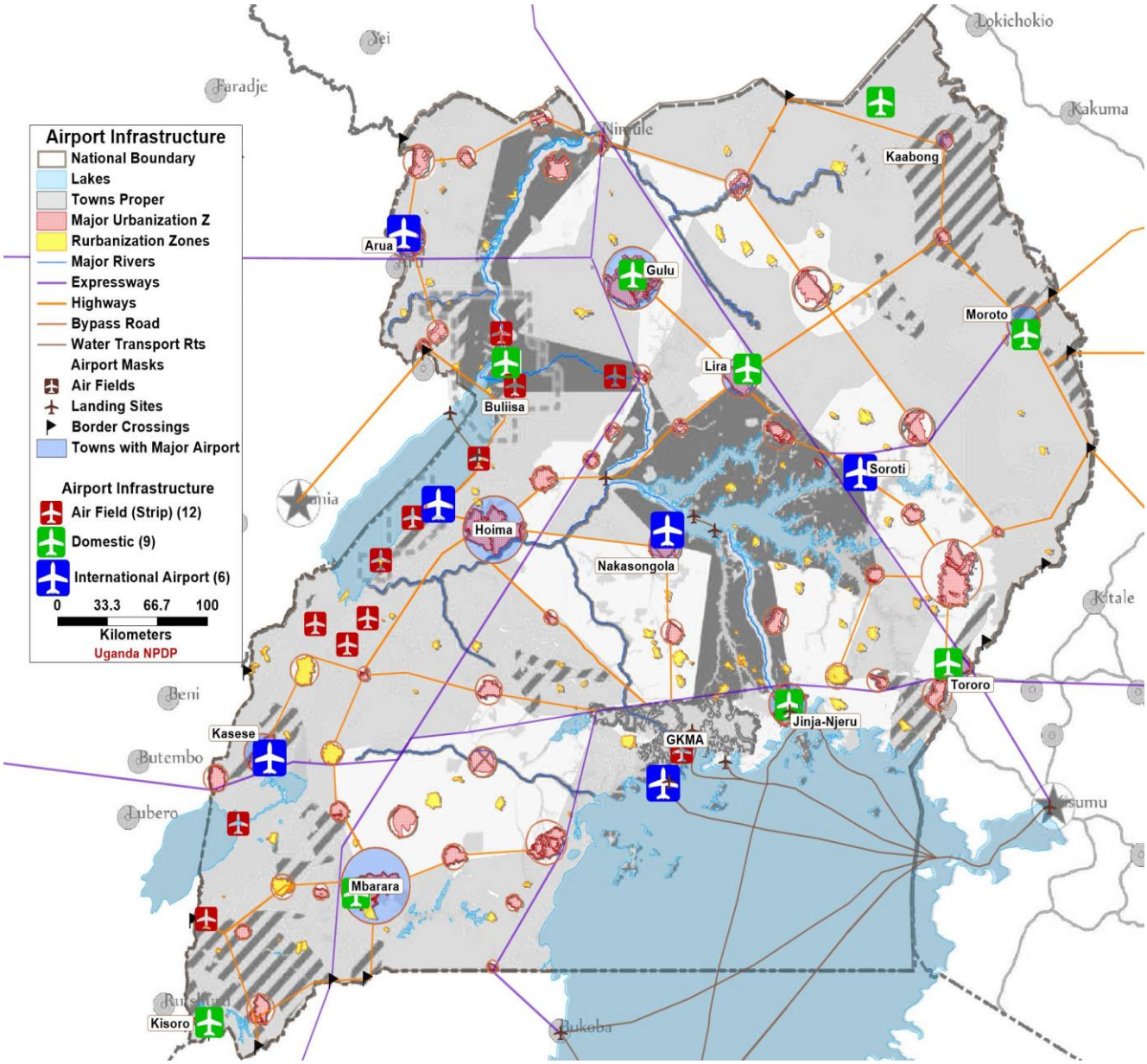


Figure 71: NPDP Map 6: Airports Map

Map Symbol	Airport Type	Description
	Air Field	Low capacity airfield servicing local needs and tourism. Minimum infrastructure and maintenance
	Domestic Airport	Medium capacity airports which provide domestic connectivity between Uganda's growth poles and Ugandan international airports. Facilities include paved runways, minimal navigation and ATC facilities and support infrastructure for a medium level of service
	International Airport	Medium to High capacity airports which provide international and domestic connectivity for passengers and cargo. These facilities have the highest level of infrastructure including ATC, navigation, radar, ILS and passenger and cargo terminals of international standards. Accessibility to these facilities is important and it is recommended that they be connected to the proposed expressway network where possible.

Figure 72: Airport symbology

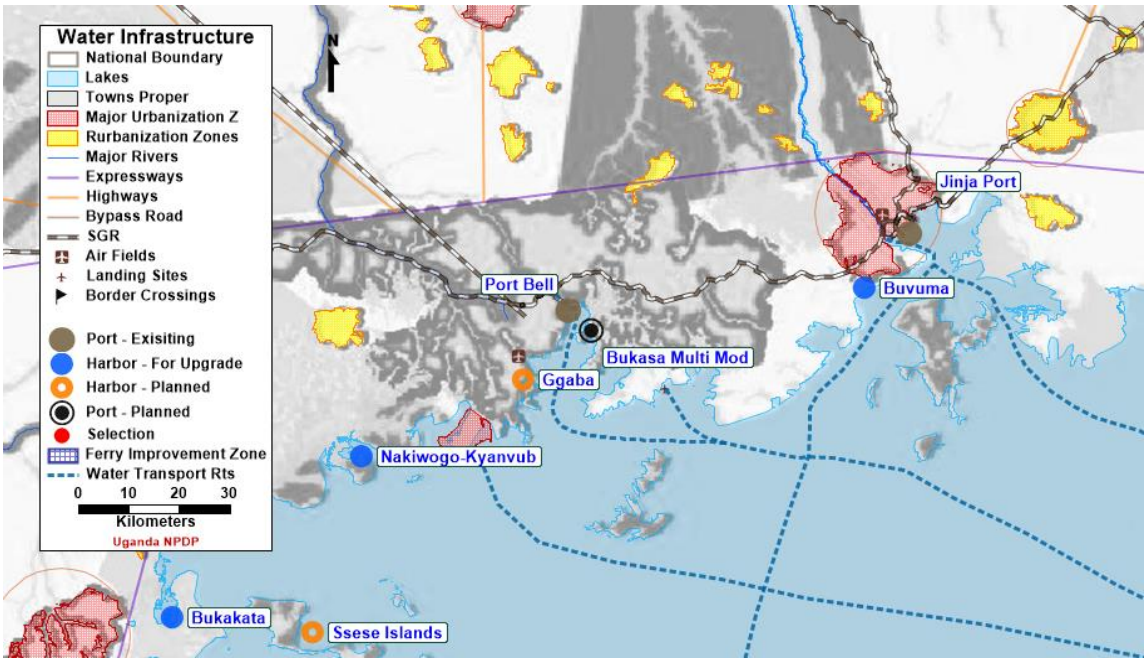


Figure 73: NPDP Map Marine Infrastructure

Water transport in Uganda is used only marginally for international cargo shipment across Lake Victoria, as ferry services along the lake, and for local and domestic small scale goods movement.

The 2015 NDPII states the following points:

- Transport services, between the mainland and Uganda's islands and neighboring countries, have not been well developed to facilitate trade in goods and services (primarily for tourism).
- The limited functionality of the ferry system on Lake Victoria and other water bodies coupled with Port Bell's inadequate supporting infrastructure makes the use of water transport challenging.

As a result, the National Physical Development Plan recommends the preservation of lands and waterways for future development if and when water transport becomes a priority. Essential issues in water transport include short access for both ground and

water side transport, multi modal shipping at ports and harbors and the definition of design guidelines and safety practices.

The following map defines and categorizes existing and planned water transport facilities in Uganda with the purpose of ensuring that these locations continue to be preserved for future development in the transport sub sector of inland water transport.

Map Symbol	Marine Facility Type	Description
	Existing Port	Large scale water transport facility which requires high capacity access to groundside transport (road or rail) as well as comprehensive port facilities such as fueling, washing, maintenance, loading, office and storage facilities. These facilities should have the ability to support passenger water transport
	Planned Port	The planned Bukasa Trimodal port facility is intended to provide the water transport capacity needed for a growing Uganda. The port utilizes a connection to the SGR railway as well as close proximity to the proposed Expressway network to facility high quality intermodal cargo shipping.
	Existing Harbor with plans for upgrades	Existing harbor facilities which allow for light goods and passenger trips. Common upgrades include improvement of landing sites, new services and improved ferry services.
	Planned	Significant upgrade of informal facilities to high capacity domestic harbors with a high standard

	Harbor	of services and infrastructures
	Ferry Improvement Zone	Area of ferry improvements were 'road bridge' activity is currently high. Into the future these informal facilities will need to be formalized with design and safety standards in order to increase capacity.

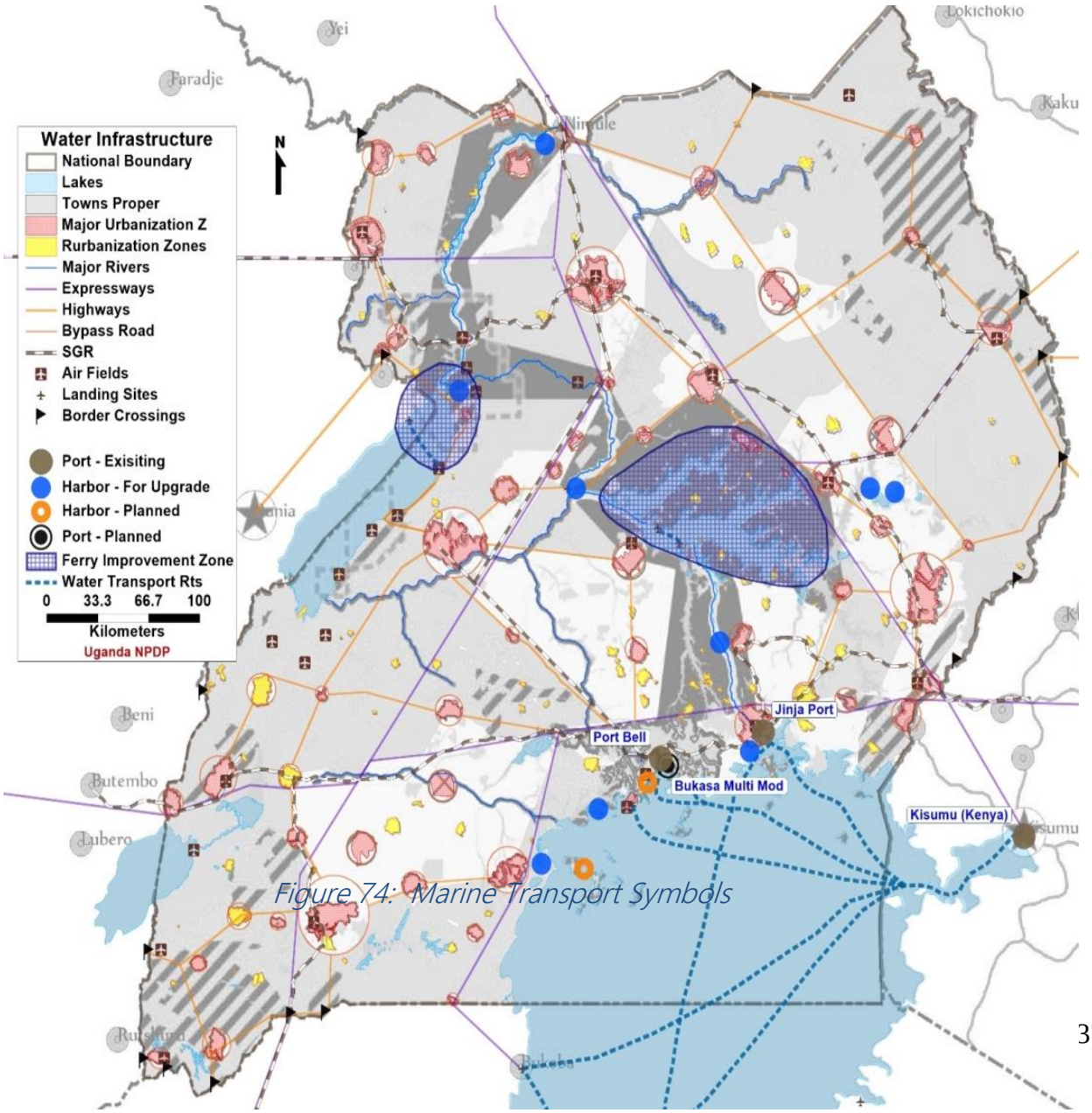


Figure 74: Marine Transport Symbols

Figure 75: NPDP Map 7: Marine transport Map

10. Utilities

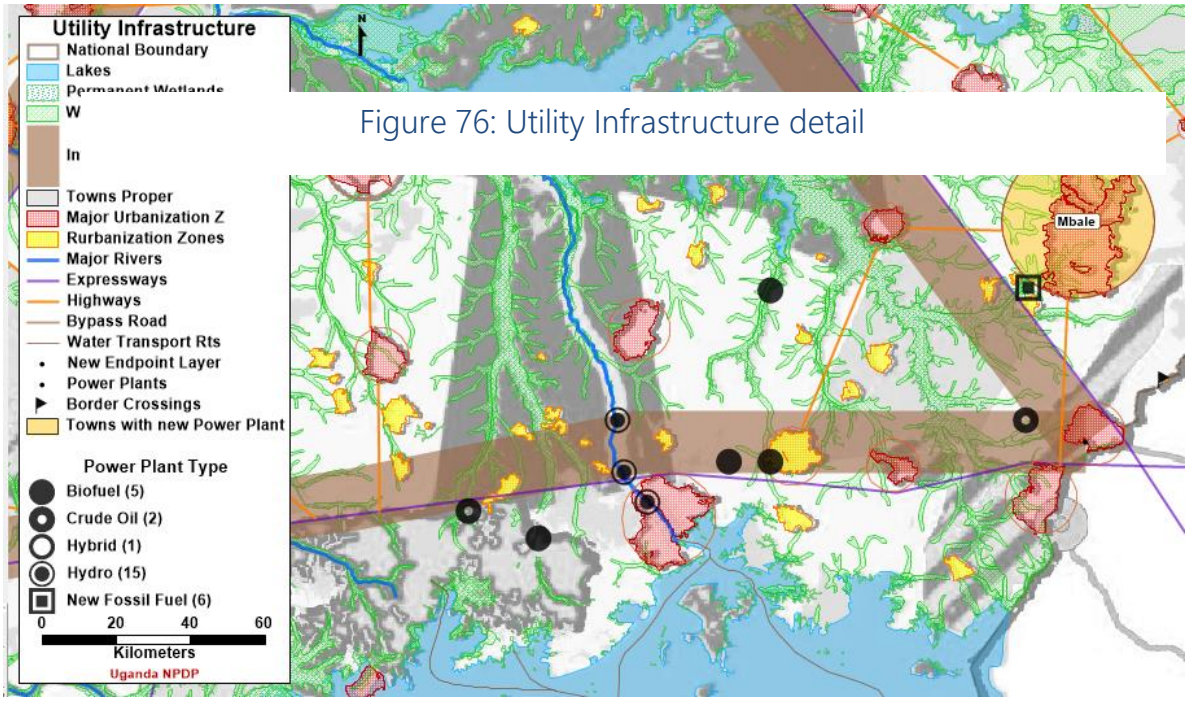


Figure 76: Utility Infrastructure detail

Utilities infrastructure provides a high level structure for the movement of essential resources across Uganda including water, electricity, information and more.

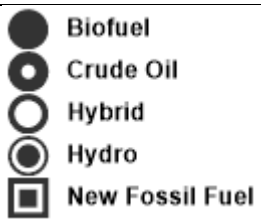
Map Symbol	Type	Description
Brown Ribbon	Infrastructure Corridor	Preserved 'right of way' which coordinates and concentrates assets including transport and utility infrastructures
Light Blue Line	Small River	Water source at a local level
Dark Blue Line	Major River	Major source of water resources including the Nile
Blue Polygon	Lake	Water source at national and local levels
Green Pattern Polygons	Permanent and Seasonal Wetlands	Local water source and agricultural water resource
	Power Plant by Type	Power plants by type distributed across the map
Urban Area with Yellow Shade	New Fossil Fuel Power Plant	Cities which are recommended to receive standalone new fossil fuel power plants to provide electricity for growing demand

Figure 77: Utility Infrastructure symbols

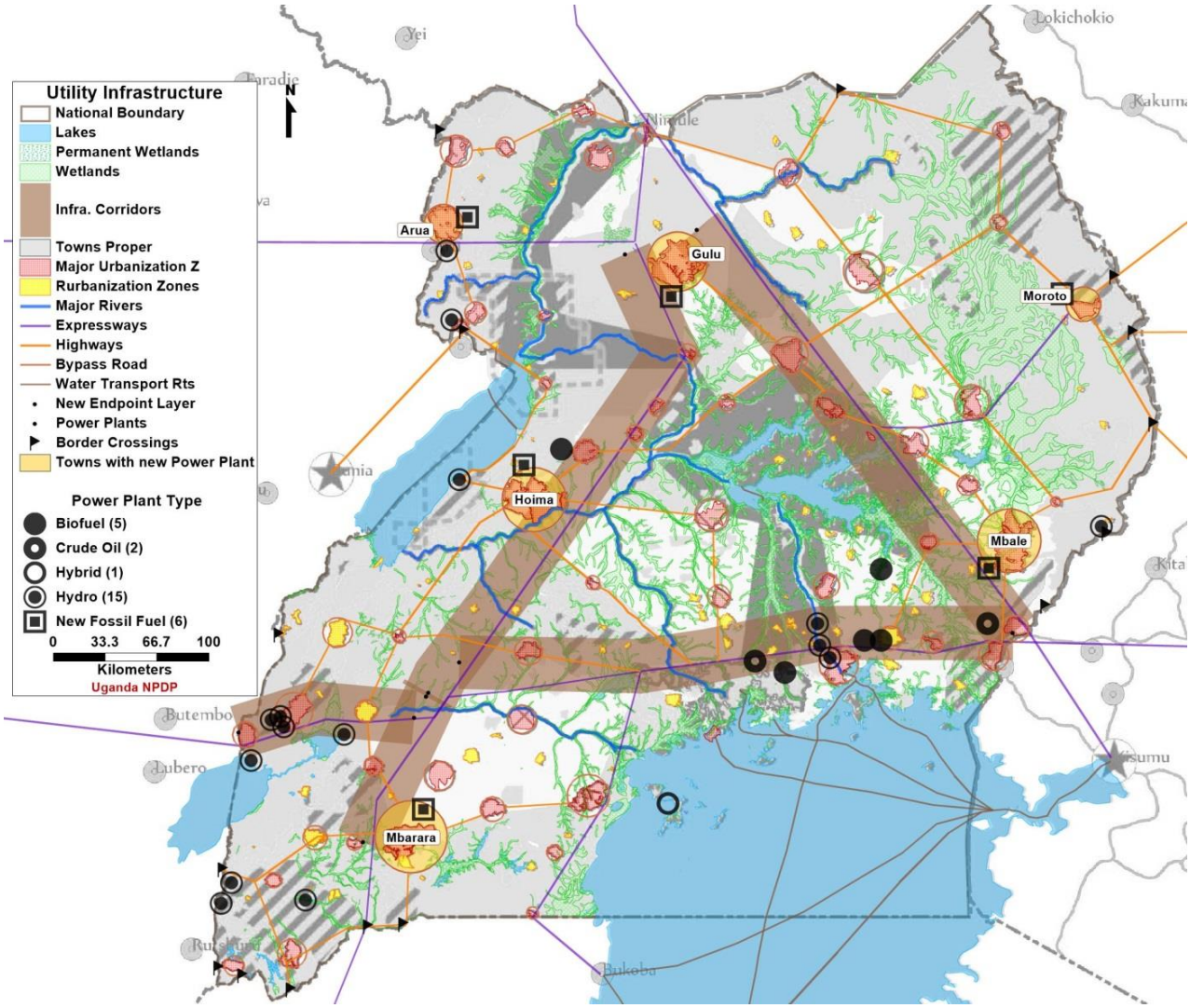


Figure 78: NPDP Map 8: Infrastructure Corridors Map

10.1 Infrastructure Corridors

Utility infrastructures in the Physical Development Plan are recommended to be bundled into infrastructure corridors which package these assets in an easy to build and easy to maintain way. As is clear in the map, these corridors are based on the proposed expressway network. This has many benefits, including:

- Limiting the amount of 'right of way' required for preservation
- Easing construction and maintenance because of close proximity to road ways

- Protecting utility assets as expressways provide a cordoned barrier on both sides
- Facilitating close proximity to key growth poles and urban areas
- Facilitating proximity to water resources

Uganda's significant water resources include Lake Victoria, the Nile River, permanent and seasonal wetlands and vast groundwater reserves. Challenges in terms of water include restrictions on water usage from the Nile, lack of distribution infrastructure, population distribution, difficulties in providing broad sewage and water treatment, and increasing demand.

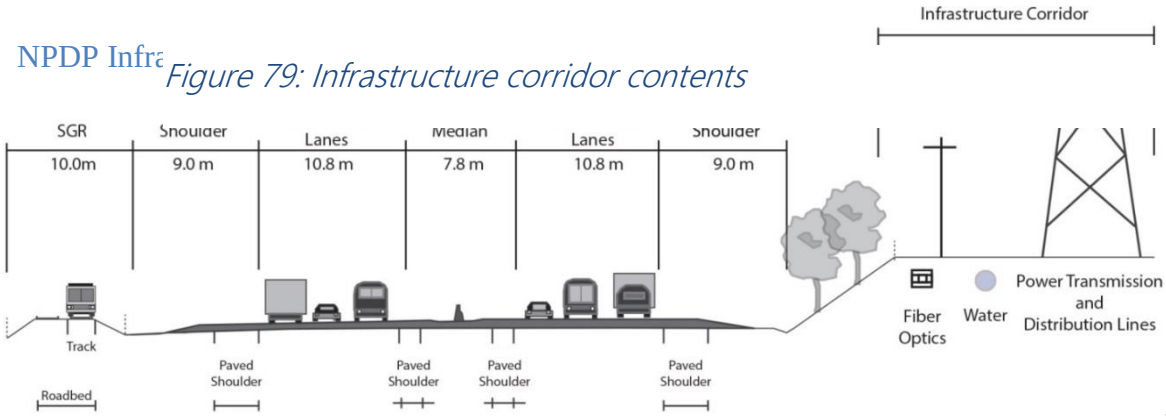
Mapping illustrates how Uganda is well networked with water resources. Distribution will be improved by concentrating populations into urban centers or cooperative agricultural villages and by utilizing infrastructure corridors for the efficient distribution of water across Uganda.

10.2 Power Plant Distribution

The mapping of power plants emphasizes Uganda's dependence on hydroelectricity which is unstable and cannot provide for growing demand into the future. As such the NPDP recommends additional power stations based on fossil fuels at each of the major growth poles. These facilities, marked on the map, will allow Uganda to provide an acceptable level of electricity for these cities and will ease the challenge of power distribution.

NPDP Infra

Figure 79: Infrastructure corridor contents



11. Implementation of the NPDP

A common problem in Uganda and other developing countries is that there are many Plans, Policies and Projects but implementation is weak. This can be attributed to institutional and systemic weaknesses among state and non-state actors. In order to redress these weaknesses for the National Physical Development Plan, the ensuing sections of the Plan deal in some detail with the implementation mechanisms which must be strengthened, including expanding the capacity of MDAs and LGs, if it is to be implemented.

This plan is emphasizing the management of continuous planning at both the national and lower levels of government, and the compliance mechanisms which are required to actualize development programs and budgets to implement the NPDP.

The objective is therefore **to place the physical aspect of planning development, in a more central role within Government policy-making, definition and execution of national projects in urbanization, infrastructure, transportation, and wealth creating sectors.** Specific projects of national importance have been developed and will be proposed here, along with proposals for the means by which they can be aligned with the National Development Planning and budgeting process.

The first objective for the implementation of the NPDP therefore is to integrate it with the National Development Planning process.

The integration of the NPDP with the National Development Planning process entails that it is seen as part of the Comprehensive National Development Planning Framework (CNDPF) policy, approved by Government in 2007. This is a tool to articulate the country's strategic development objectives and priorities and lead them to medium and short term plans.

CNDPF is comprised of 4 principal elements:

A. Uganda Vision 2040

In April 2013 Government launched Uganda Vision 2040 whose aspirations are to transform Uganda from a predominantly low-income country to upper middle-income country within 30 years. The NPDP structure is aligned with that of Vision 2040.

B. NDPs

The Government of Uganda's annual budget and the NDP are increasingly harmonized due to the fact that, planning and budgeting need to be aligned if the NDP is to be implemented. The budget is the main tool by which Government allocates resources to implement its plans and address emerging policy priorities. The Linkage between the NDP and the Budget is operated by Budget Framework papers and the MTEF translation of policies into implementable plans. When the NPDP with its priorities, is integrated into the NDP, and the sector investment plans, it will be implemented as part of these other frameworks.

C. Medium Term Expenditure Framework (MTEF)

The Medium Term Economic Framework has the following functions

- The MTEF is a framework linking policies and plans to the budget.
- MTEF rationalizes plan with finances in an integrated manner.
- Sets realistic fiscal policy and macroeconomic targets.
- Reduces the imbalance between what is affordable, available and expenditure requirements.
- It also underpins the **annual** national **Budget Framework Paper (BFP),** which is the Government budget strategy document linking Government's overall policies and the budget.

When the NPDP and its projects re integrated into the NDP preparation, its projects will become part of those which the NDAs will incorporate into the MDF and the annual BFPs.

D. The Annual Budget

The Government's revenue and expenditure prepared annually.

E. NPDP – the new arrival - how it fits in

The way in which the NPDP fits into the framework for linking policies and plans to the budget is suggested in the following diagram:

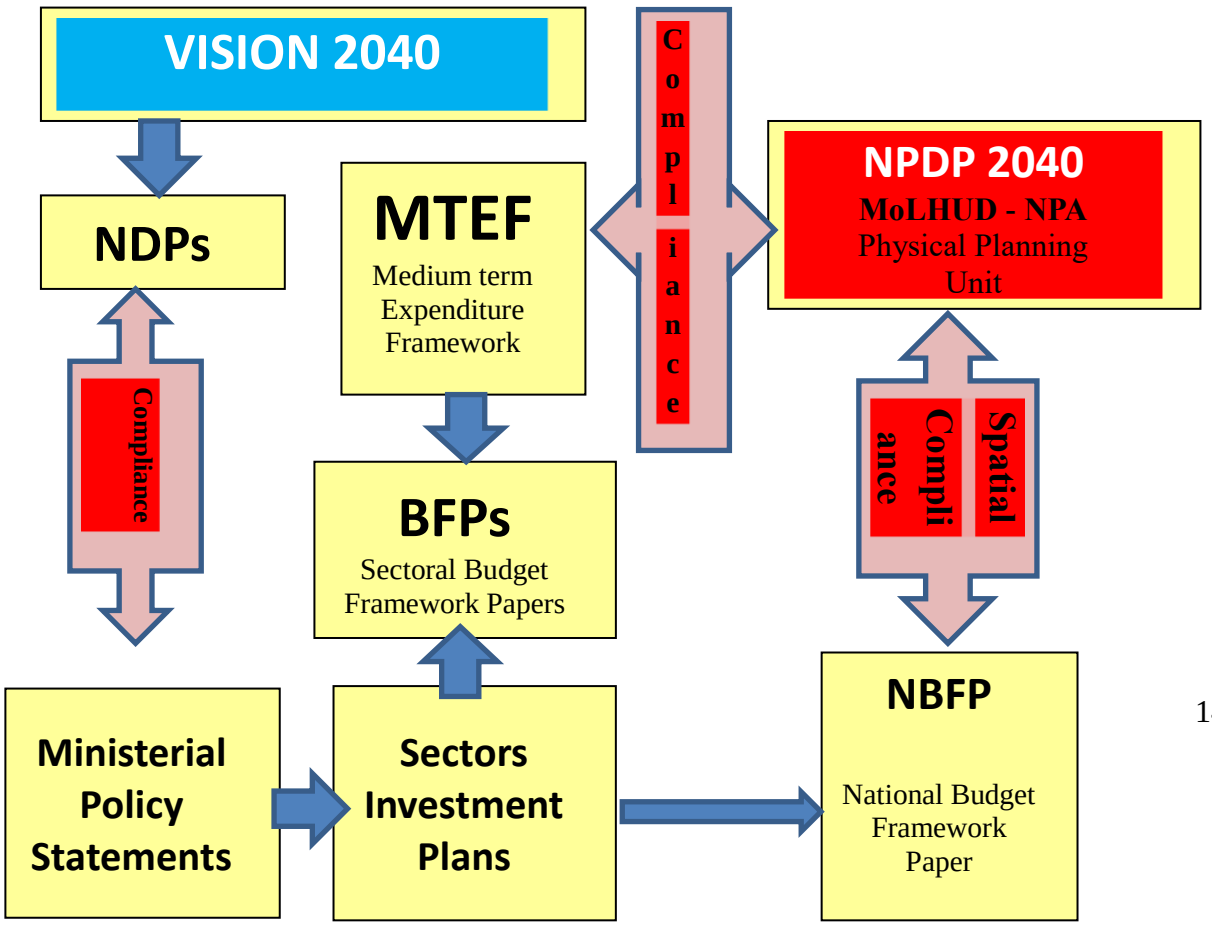


Figure 80 The NPDP and the CNDPF

11.1 Objectives for linking National Physical and Development Plans

The implementation of the NPDP will be in line with the overall Comprehensive National Development Planning Framework and Uganda Vision 2040. The specific objectives of the implementation process are the following:

1. To guide the execution of the NPDP and its projects by indicating what will be done, by whom and when. To align it with planning, budgeting, financing and implementation of NDPs.
2. To advise the relevant MDAs, which are the implementers of the Plan, on how to use NPDP documents and GIS data base.
3. To support political will, commitment and sense of ownership of the Plan by MDAs.

4. To use efficiently the existing institutional and implementation instruments such as the national planning policy and budgets documents like SD / IPs (Sector Development / Investment Plans).
5. To emphasize the need to have a well-coordinated and shared responsibility within Government and the private sector, development partners, civil society and other non-state actors.
6. To suggest new administrative tools for Monitoring and Compliance for the NPDP provisions
7. To establish advanced management of information for decision making.
8. To clarify roles and responsibilities of actors, and effective partnerships with non-state actors.
9. To increase human resource capacity and create a conducive working environment for Planning at all levels.

11.2 Specific actions which are proposed to achieve the national planning objectives:

1. A joint MoLHUD - NPA Physical Planning Unit is recommended to be established to plan, catalyze and track physical and spatial implications of national projects and programs in Infrastructure, Energy, Minerals, Oil and Gas, Transport, Education and Health, Agriculture, Industry, Trade and Tourism. It is recommended that functions of this unit be established through Governmental regulations.
2. MoLHUD - NPA Physical Planning Unit will check physical compliance of key national projects and programs, before any investment decision is taken.

3. MoLHUD - NPA Physical Planning Unit will be the channel for the flow of information and reports on NPDP implementation by MDAs, using the National Spatial Data Infrastructure (NSDI).
4. The strengthening of the Physical Planning functions within MDAs and LGs has to be supported for purposes of improving efficiency and operationalizing the NPDP implementation .
5. The alignment of budgeting for national projects will be realized through ensuring harmonization of the NPDP with the NDP.
6. The Office of the Prime Minister (OPM) Delivery Unit will work with the MLHUD - NPA Physical Planning Unit to implement the NPDP by ensuring that the projects and activities of all MDAs comply with it.
7. A key component of the NPDP implementation framework will be annual sector and district reviews together with the NDP annual reviews.
8. Implementation of the NPDP will be tied to NDPs and the strategic plans of MDAs and LGs through long term, medium term and annual plans and budgets.

11.3 NDPIII Preparation timetable and process

The current NDP (NDP II) is coming to an end (June 2019) and the NDP III will set the agenda for the next five years, therefore NDP III must be in place by September 2019 to inform the budget process for 2020/21.

11.3.1 Inputs to the production of NDP III

The Vision 2040:

NDPII Mid Term Review (MTR).

The National Physical Development Plan.

On-going local and international planning and studies.

Sector Investment Plans and Higher LG Development Plans.

Other stakeholder plans.

11.3.2 Aligned Objectives

- Vision Priorities.
- NDP Objectives & Indicators.
- District Development Plans / Municipal Development Objectives & Indicators.
- Sector Objectives & Indicators.

11.3.3 Iplementation Modalities

- Improve capacity of human resource and institutions.
- Address challenges of Procurement processes, resource mobilisation.
- Constitute a multi-sectoral core team.
- Establish national consultations.
- Constitute a MoLHUD & NPA Physical Planning Unit

11.3.4 The NDP III proposals will cover:

- Development of a detailed macro-economic strategy.
- the Sector Development Plans / Sector Investment Plans and Local Government Development Plans reviewed and aligned to NDPIII priorities.
- Well addressed cross cutting issues like population, social protection, human rights, gender, culture and national values, environment etc.
- Development of appropriate instruments of monitoring and evaluation.
- Aligning issues of Physical Planning through the NPDP.
- Development of real timelines.

11.4 Transmitting the NPDP to lower levels of government:

As Physical Planning covers the whole country

Includes a monitored Action Plan (see above), institutional and legal basis for implementation through a joint working arrangement between NPA and the Physical Planning and Urban Development governance systems at the MoLHUD. However, implementation of an NPDP which is integrated with the NDP also contributes the following the Local Government planning:

1. Being integrated with the NPDP, the National Development Plan will be transmitted down through the Physical Planning systems to lower levels of government. This will also assist with integration of Economic Development and Physical Planning at Local Government levels.
2. Physical Planners at the Land Sector's 21 Ministerial Zonal Offices (MZOs) will be able to access the NPDP in the Land Information System so that Titles cannot be registered without their uses being permitted and compliant with national level planning.
3. Specific proposals for strengthening the Physical Planning System in Uganda, in particular to ensure implementation of the NPDP according to its priorities. It includes also a proposal for increasing the technical planning capacity of government professionals, mainly in the field of GIS and data management and update. The proposals are informed by the Base Line Study of the Physical Planning System, which was prepared in parallel to the NPDP.

11.5 Specific Actions for strengthening the Physical Planning system:

Transmitting and strengthening the NPDP/NDP at lower levels of government

11.5.1 Extension of Physical Plans to cover the whole country

The coverage of Physical Pans at sub-national level is sporadic. Until the 2010 Act it was limited to a relatively small number of gazette urban councils. There were no approved Regional or District Plans, and as yet there are still none at sub county or parish level. Therefore the Physical Planning System needs to be greatly scaled up. It is proposed that this be done over the period of NDP3 and 4, such that by 2030 there are plans to cover the entire country. The infrastructure corridors, certain areas of natural resource exploitation should be prioritized as given in Figure 37 above.

11.5.2 Planning of Rural and Urban Settlements

Planning of all Rural and Urban Settlements, peri-urban and rural areas is greatly needed. Therefore, the capacity of physical planning units which can prepare plans at district, municipality, sub-county and town council levels (e.g. being based at the MZOs), must be strengthened.

11.5.3 Regional and Metropolitan levels of planning and governance regions

The lack of regional governments in Uganda makes it difficult to implement regional-level plans, although this level of coordination, which lies between the national and

district levels is important. Sub-national growth nodes, significant transport links and services which cover several Districts, but which are too small to be seen at national level need to be prioritized at sub-national level. Most MDAs have their own but differing regional networks. In the case of the Ministry of Lands Housing and Urban Development there are 21 Ministerial Zonal Offices (MZOs) which can be used for Regional Planning, but the geography of each of the other MDAs' regions is different. A common regional organization is needed for coordination.

Metropolitan Areas

Likewise Figure 37 identifies sub-national clusters of urban growth which, if not planned, could in time become merged into single agglomerated urban areas. Agglomeration per se, the covering of large areas with undifferentiated, badly serviced, sprawling urban development must be avoided. Planning a group of closely connected but well contained growth nodes which are closely linked but with protected areas, agriculture etc. between them, as "Special Planning Areas" will be a way to avoid sprawling metropolitan growth. "Special Planning Areas" may lead to a metro-type of governance of those areas, to be established well before the problems which now confront Greater Kampala for example, arise.

11.5.4 Linking Physical and Development Planning at LG levels

Amalgamation of Economic Development and Physical Planning in dedicated unit at Local Government level

Physical and Economic Development Planning need equally to be integrated at Local Level as well as national level. Physical Planning has generally remained under the Engineer's Department, which is a long outdated. It is a remnant of the days when the Public Works Engineer developed plans for constructing the towns for colonial period administration and trading. At that time it had no strategic function.

Improved dissemination of National plans and projects to LG level

The communication of national level plans and projects to lower levels is weak: therefore it is difficult for other factors to be able to plan for and take advantage of, for example, planned new infrastrcuture until it is seen on ground. The mullti-level Phsycial Plannin System can help to remnedy this if integrated with the NDPs.

11.6 The technical systems which are needed to implement the NPDP

11.6.1 The role of Spatial Data Systems

Geographical Information Systems (GIS) have revolutionised the capacity for physical and spatial planning. GIS can be used to store, analyse, validate, maintain, integrate spatial and geographical data and share it with different levels of Government and other stakeholders. Coordination of spatial plans between ministries, regions, agencies and local governments is necessary for the preparation, implementation and monitoring of physical plans in all levels.

In order to achieve that potential, there is a need for an organized spatial data structure and collaboration between various MDA's and stakeholders, which was being set up in Uganda at the time of preparation of the NPDP: the Uganda Spatial Data Infrastructure (UGSDI).

Successful implementation and execution of the NPDP therefore requires an understanding of these, now widely used and available, Geographical Information Systems. GIS has been used for the analysis and preparation of the Maps for the NPDP. The systems and workflows for the collection, maintenance and integration of data constitute a large part of the technical basis of the NPDP. These are extremely important for its implementation, which will be a collaborative effort by the many

actors, the ministries, departments and agencies of government, the private sector and civil society which are needed to implement the NPDP as the physical and spatial component of the NDP.

Key GIS systems within the MoLHUD are the Physical Planning and Urban Management Information System (PPUMIS), and the Land Information System. These are being connected to the GIS units within other MDAs by the forthcoming Uganda Spatial Data Infrastructure (UGSDI).

At present there is a lack of capacity to fully disseminate national projects to local government levels. Plans delivered in GIS format provide a powerful instrument for transmission of planning data -from the national level planning to lower levels, and vice versa. When installed in the PPUMIS, the NPDP will be accessible to lower level plans and development, because the PPUMIS is being linked to local government offices[1]. This will help to ensure that the NPDP and NDP, and any national level project as it comes into the system, are incorporated in the preparation and adjustment of Physical Plans on other levels across the whole country. In addition, by linking the PPUMIS to the Land Information System, Land Titles in all areas cannot any more be issued without compliance with the NDP and NPDP.

Under the Uganda Spatial Data Infrastructure (UGSDI) Policy, the NPA will manage the system through its own spatial data unit. A number of core data sets which should be available freely, are specified, along with their custodian ministries. These ministries, most of which already have their own GIS Units, will constitute the backbone of the Technical Committee for the UGSDI[2].

The nominated core data sets for the UGSDI are given in Annex A.

The above are also the key data sets as identified in the Matrix below, which is organized around the Pillars of Vision 2040 and the NDP. The Matrix therefore shows which ministries and core data sets constitute the basis of the different pillars of the NPDP.

11.6.2 The role of Physical Planning in the implementation of integrated economic, social and spatial National Development Planning with the UGSDI

The UGSDI will enable the different MDAs and other sectors to see how their projects interact, and any conflicts or synergies which need to be considered, as revealed by the overlay/combination of different data sets. However, the bigger question of how these conflicts or relationships can be dealt with, in the context of long term demographic, economic growth and the land use balance sheet projections, are the remit of expert physical planners, guided by the parameters and principles in the NPDP.

The NPDP is therefore effectively a Guide to how to understand and work with the inter-relationship between the core layers of the UGSDI, within the 20 year perspective of the Plan and Vision 2040, and taking the Land Use Balance Sheet into account.

11.6.3 The operational system for National Physical Planning at the MoLHUD: the "Physical Planning and Urban Management Information System (PPUMIS)"

The NPDP spatial data, which was based on spatial data collected from MDAs at the time of preparation, is stored and will be continuously developed using the PPUMIS in the Directorate of Physical Planning and Urban Development at the MoLHUD. Through the UGSDI, the PPUMIS will in future access the up-to-date core data sets including the cadaster (land ownership) data in the Land Information System, all of

which comprise the thematic Maps of the NPDP. Thus, national level physical planning will be continuously updated according to the principles set out in the NPDP. This will be used by the NPDP-NDP Planning Unit to check *physical* compliance of projects during monitoring and compliance which will be combined/integrated with economic and social planning as described above.

The PPUMIS, as with the LIS, is based on open source software and is oriented for QGIS open source GIS, which enables the user to acquire many tools and capabilities such as data visualization; data management, editing, analyzing, data sharing, and layout composition and printing of maps.

11.6.4 Spatial data for the NPDP

The data that was collected as part of the NPDP Current Situation and baseline study was constructed with reference to the NPDP pillars. For each subject, the relevant layers were collected checked and validated. The NPDP data that was collected as part of the Current Situational Analysis for the NPDP is given in ANNEX B.

12. The NPDP Action Plan

As outlined in Chapter 1, the NPDP uses the concept of pillars, which are related to Vision 2040 and the NDPII, in order to deconstruct and analyze the complex planning issues of Uganda, for data collection and later on for planning.

12.1 Basis of the Action Plan

The NPDP Information and Planning Matrix (Annex C) is the tool which has been used for specifying the Action Plans and for guiding the relevant MDA's on the spatial implications for the NPDP of the activities for which they are responsible. Action Plans are always in a context of wider plans, but their target is to coordinate the physical aspect of development of defined and financed projects and their time tables of implementation. The NPDP here specifies future planning and development activities for three time horizons, aligned with NDPs time table (NDP III, IV, V and VI). All activities are related to a hierarchy of planning from the national level to concrete development in the local context.

The matrix, in Annex C, is dynamic, flexible and updated as needed. It is suggested that building and monitoring of the matrix will be within the responsibility of the proposed MOLHUD-NPA Physical Planning Unit.

12.1.1 MDAs whose activities have major spatial implications

The Action Matrix shows which MDAs (from the list of those below whose activities have major spatial implications) should be involved in performing and coordinating the activity; and what should be done under which NDP

The Office of the Prime Minister

The Ministry of Finance and Economic Planning

The National Planning Authority

The Uganda Bureau of Statistics

The Uganda Investment Authority

The Ministry of Water and Environment

The National Water and Sewage Corporation (NWSC)

The National Forestry Authority

The Climate Change Unit

The Ministry of Local Government

The Ministry of Education and Sport

Skilling Uganda

The Ministry of Science and Technology

The Ministry of Health

The Ministry of Justice

The Ministry of Trade, Industry and Cooperatives

The Ministry of Agriculture, Animal Industries and Fisheries

The Ministry of Energy and Mineral Development

Uganda Electricity Generation Company Limited

Uganda Electricity Transmission Company Limited

Uganda Electricity Distribution Companies

The Petroleum Authority of Uganda

The Ministry of Tourism, Wildlife and Antiquities

Uganda Tourism Board

Uganda Wildlife Authority

The Ministry of Lands Housing and Urban Development

The Ministry of Works and Transport

The Uganda National Roads Agency

Uganda Railways Corporation

Civil Aviation Authority the Marine Regulatory Authority

The Ministry of ICT

The Uganda Communications Corporation

12.1.2 NPDP Development Stages

All the key projects for NDPIII-VI have been put on 6 maps.

The first 3 maps show the accumulation of projects for each time horizon, aligned with NDP phases. The projects are of a national scale and importance and applicable to the sectors of settlement, tourism and Agriculture. The other 2 maps show infrastructure projects in transportation and utility infrastructure.

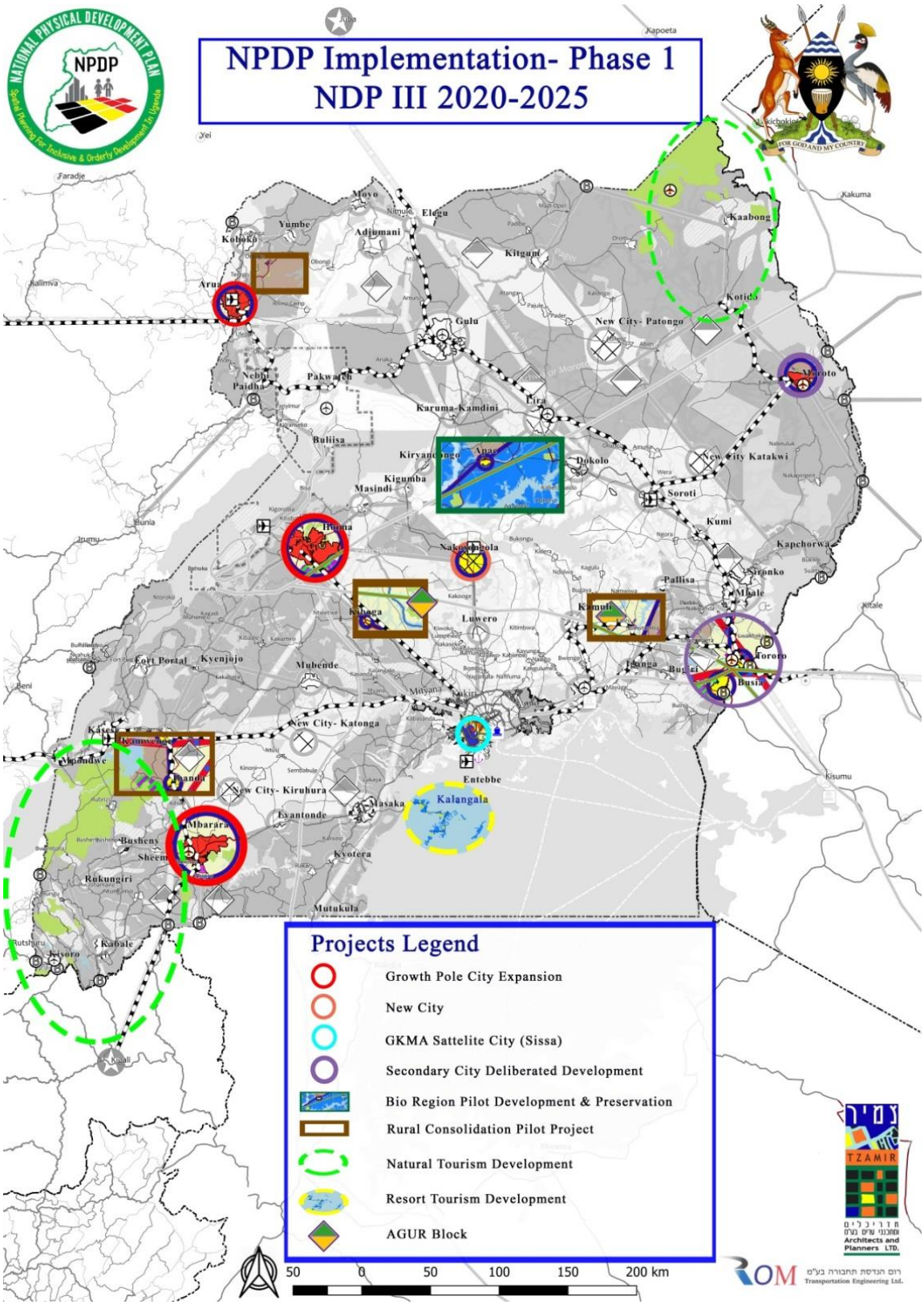


Figure 81: NDP III SETTLEMENTS, TOURISM AND AGRICULTURE PROJECTS

12.1.3 NDPIII Main settlement, agriculture development and tourism and locations:

- Urban Expansion: Arua, Hoima, Mbarara, Busia/Tororo/Malaba, Moroto; starting new town at Nakasongola and Kampala Satellite at Sissa
- Rural consolidation projects: Ibanda, Kamuli, Kiboga, West Nile; Pilot AGUR Blocks at Central region and Eastern Region
- Tourism development Foci: South West and North East; Resprt Development Sese Islands
- Bio-Region pilot at Apac

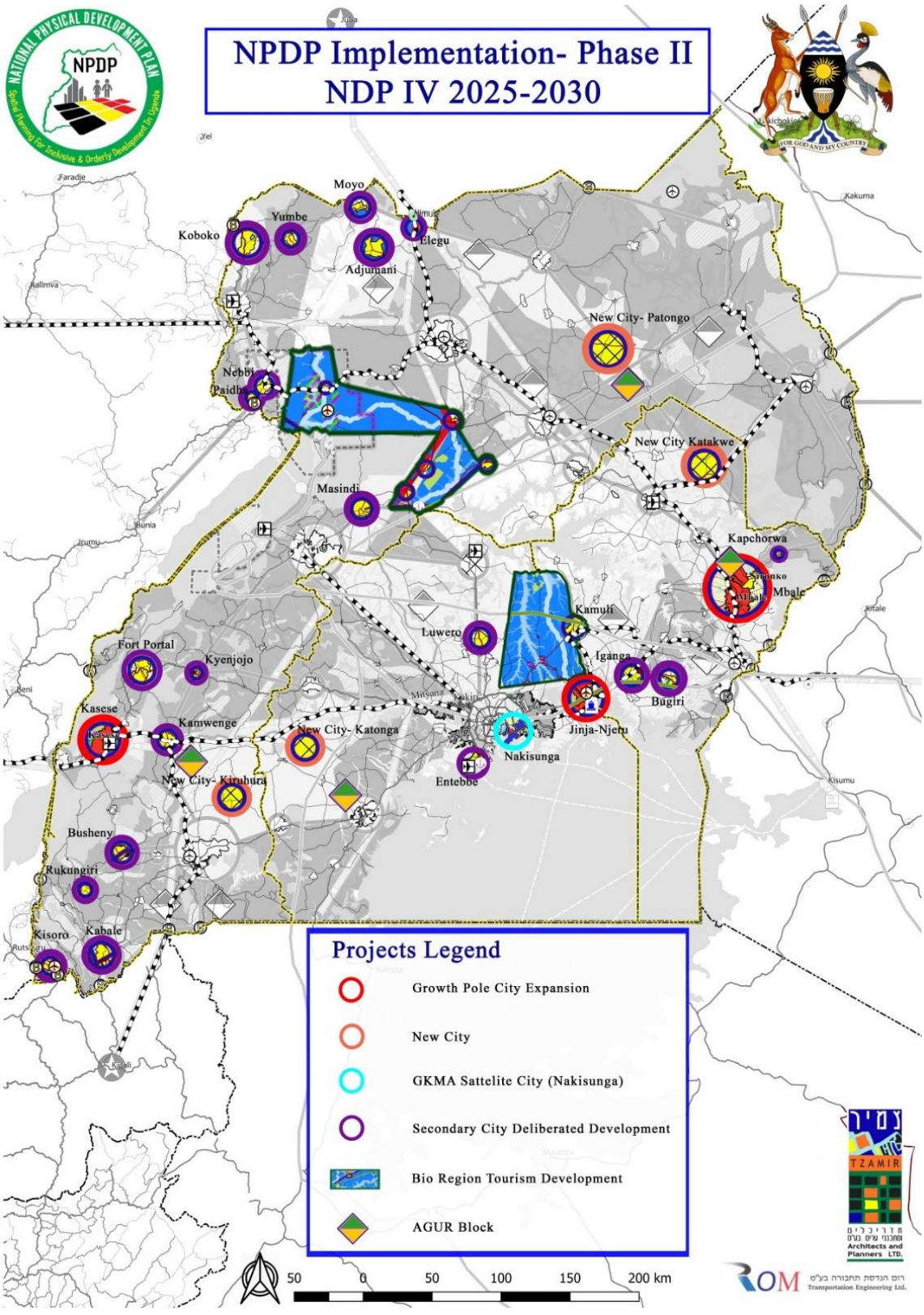


Figure 82: NDP IV SETTLEMENTS, TOURISM AND AGROCULTURE

12.1.4 NDP IV Main settlement, agriculture development and tourism and locations:

- Urban Expansion: Kasese, Jinja-Njeru, Mbale; Kisoro, Kabale, Bushenyi, Kamwenge, Fort Portal, Kenjojo, Nebbi, Paidha, Kiboko, Yumbe, Moyo, Adjumani, Elubo, Masindi, Luwero, Iganga, Bugiri, Kapchorwa, Entebbe; starting new town at Patongo, Kitakwe, Katonga, Kiruhura and Kampala Satellite at Nakisunga
- Rural consolidation projects: roll out locations to be decided based on outcome of pilots in NDPIII; AGUR blocks
- Tourism development Foci:
- Bio-Region pilot at Masindi Port to Pakwach, and Jinja to Lake Kyoga

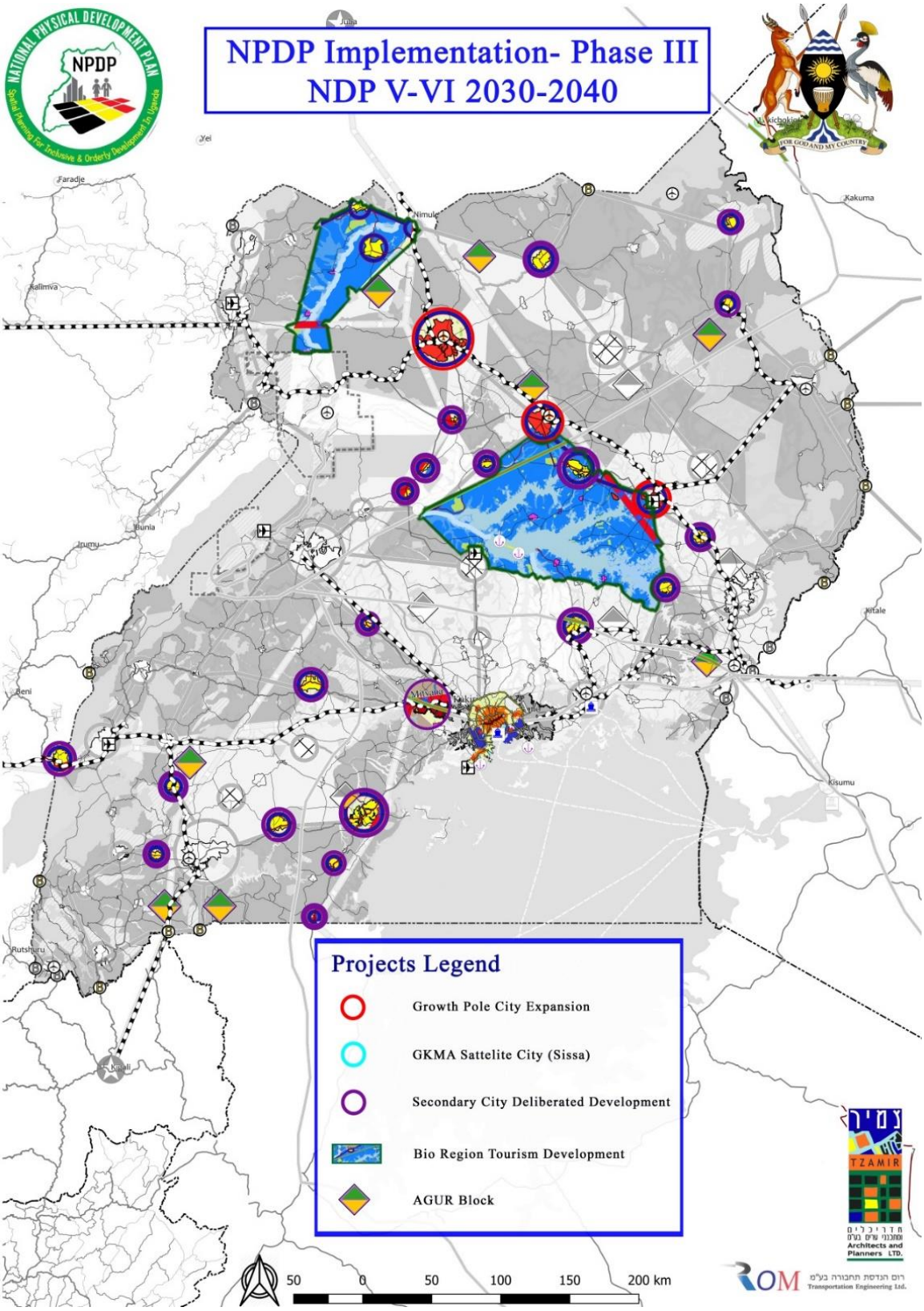


Figure 83: NDPV-VI SETTLEMENTS TOURISM AND AGRICULTURE

12.1.5 NDP V-VI Main settlement, agriculture development and tourism and locations:

- Urban Expansion
- Rural consolidation projects: roll out locations to be decided based on outcome of pilots in NDPIII; AGUR blocksa
- Tourism development Foci:
- Bio-Region pilot at Pakwach to Moyo, and Lake Kyoga

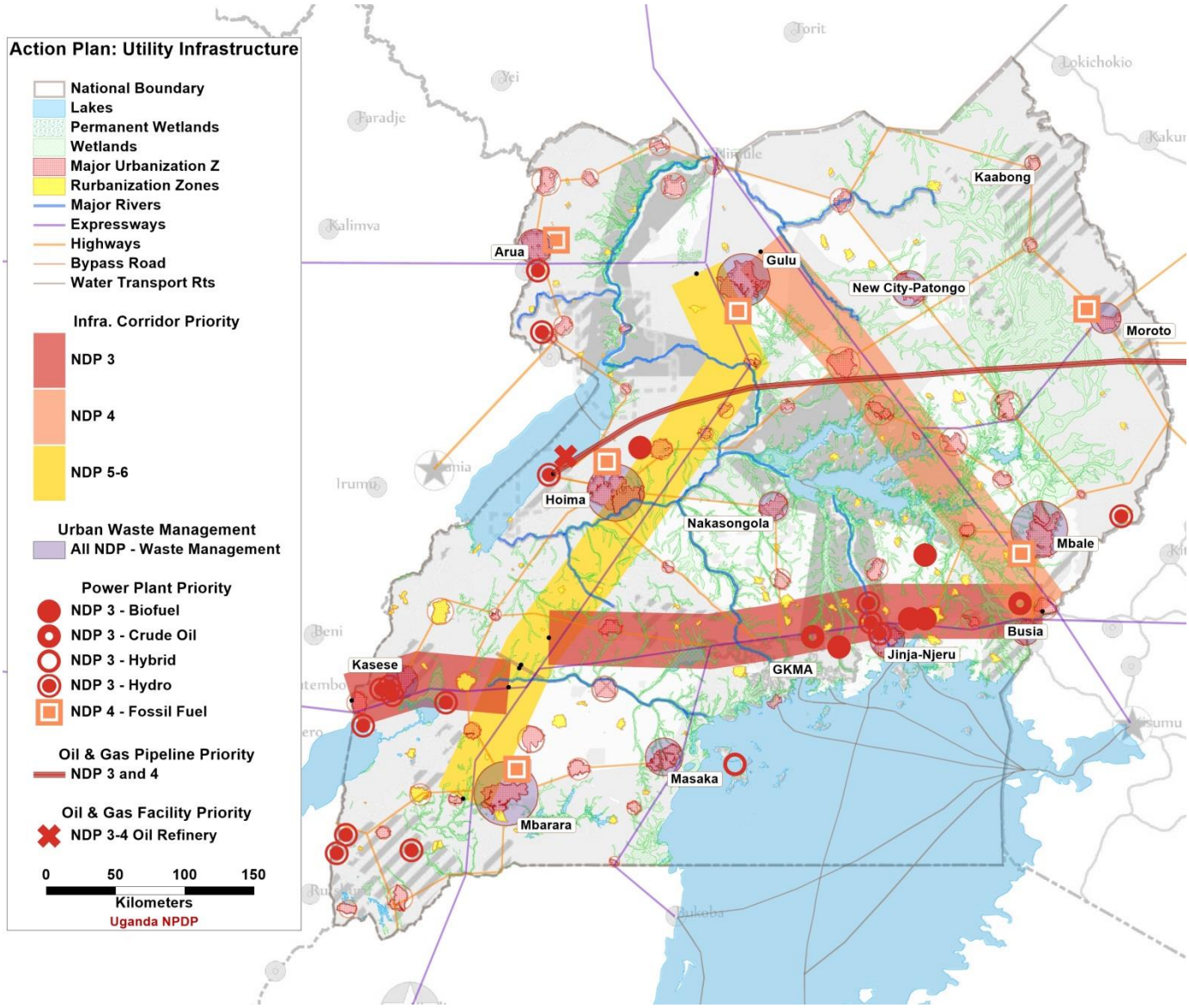


Figure 84: NDP 3-6 UTILITY CORRIDORS AND POWER PROJECTS

12.1.6 Utility Corridor, Power Plant, Oil and Gas and pipeline priorities:

NDP III Busia to Kasese Corridor

Bio-Fuel, Crude Oil, Hybrid and Fossil Fuel Power Plants

Refinery Phase 1 and East African Crude Oil Pipeline

NDP IV Busia to Gulu Corridor

Fossil Fuel generation at major urban centers

Refinery Phase II and Export Products Pipeline

NDP V-VI Mbarara to Gulu Corridor

12.1.7 Legend for the Action Plan: Pillars, Maps and Data Layers

The Following Table shows which MDAs are responsible for which spatial/physical factors which are the key spatial determinants of the NPDP. The Table shows, by use of colour coding, which Pillars of the NPDP each MDAs activities are coming under. It lists also the data layers for the NPDP of which each MDA is the custodian. Core layers of the UGNSDI are listed underlined and in bold. Where there is a core layer that is NOT forming part of the NPDP it is in italics, underlined bold.

The table show the outline of what each MDA will need to consider during the next four NDPs, in order to achieve the development stages which are shown in Figures 33 – 37 above.

PILLARS	NPDP MAP NUMBERS	DATA LAYERS/CUSTODIANS
1 ENVIRONMENT 2 HUMAN CAPITAL DEVELOPMENT 3 ECONOMY 4 PUBIC SERVICES – EDUCATION, HEALTH 5. SETTLEMENT 6. TRANSPORTATION 7 UTILITY INFRASTRUCTURE 8. GOVERNANCE	1 SETTLEMENTS 2 AGRICULTURE AND NATURAL RESOURCES 3 TOURISM AND ENVIRONMENT 4 TRANSPORT ROADS 5 TRANPSORT RAIL 6 TRANSPORT AIR 7 TRANSPORT MARINE 8 UTILITIES 1	Data Layers are all of those used to form the NPDP Maps They are listed under the MDAs which are their custodians Those that are underlined are also the core data sets for the UGSDI – those in italics are not part of NPDP

Figure 85: Key to the Action Matrix

The Table columns are organized as follows:

Column 2: The main MDAs responsible for physical factors which form the NPDP,

Column 1: The pillars of Vision 2040 and the NDP which their activities come under,

Column 3: The spatial data sets which each MDA is responsible for, and

Column 4: In which NPDP thematic Maps they are used

Column 5-7: The major projects under the NDP3-6 which each MDA will carry out to implement the physical aspect of the NPDP/NDP

12.2 The Action Plan: matrix for implementation of the NPDP:

Figure 86: The Action Matrix for the implementation of the NPDP by MDAs: Data sets and actions per NDP per MDA and Pillar

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
	MWE					
1.1.5 1.1.8		Water Resources: Lakes, Major Rivers River Nile 1km buffer	3	National Water Resource Masterplan and National Water Policy including long term planning of catchment and ground water utilization and re-cycling based on NPDP settlement Projections		
1.2.4		Victoria Islands Bio-Region Kyoga Bio-Region Nile Bioregion Lake Victoria 300m buffer	3	Develop Phase 1 of Bio-Regions	Develop Phase 2 of Bio-Regions	Develop Phase 3 of Bio-Regions
1.1.6		Permanent and seasonal	3	Develop appropriate	Develop	Develop

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		Wetlands		ecosystem and livelihood projects	appropriate ecosystem and livelihood projects	appropriate ecosystem and livelihood projects
7.5			8	With MOWT, MEMD and MLHUD and related MDAs, Update infrastructure and design guidelines for corridors plan, demarcate and gazette land for infrastructure corridors phase 1	With MOWT, MEMD and MLHUD and related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 2	With MOWT, MEMD and MLHUD and related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 3
7.3.2			8	SNDPII water programmes	SNDPII water programmes	
1.1.8			2	Water Resource monitoring	Water	Water Resource

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					Resource monitoring	monitoring
7.3.1 7.3.3 7.3.4			2	National Water for Production masterplan referring to required Agricultural Irrigation and yields and climate change projections and industrial sites in urban centers		
7.3.4			2	With MAAIF Large and small scale irrigation projects focus Karamoja	Large and small scale irrigation and industrial site water supply projects	Large and small scale irrigation and industrial site water supply projects
7.3	NWSC	Bulk water systems	2	Gazette Water Reserves to 2040 based on NPDP Projections	Develop and Maintain water reserves	Develop and Maintain water reserves

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
7.3.2			8	Plan and implement trunk water supply pipelines to 2040 based on NPDP settlement Projections	Implement and maintain trunk water supply pipelines	Implement and maintain water supply pipelines
1.1.4 1.2.3	NFA	Central Forest Reserves Land cover	3	Demarcate buffer belts, build fences and patrol roads	Demarcate buffer belts, build fences and patrol roads	Demarcate buffer belts, build fences and patrol roads
1.2.4			3	Develop Phase 1 of Forests in Nile and Victoria Islands Bio-Regions	Develop Phase 2 of Bio-Regions	Develop Phase 3 of Bio-Regions
1.1.2	CLIMATE CHANGE DEPARTME	Climate change impact analysis on Urban areas, Eco systems and agriculture				

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
	NT					
	MOES					
4.2.1,2		Universities,	1	Plan for and implement university level education in each new city to 2040 based on NDP Urban expansion phases, optiond according to specialist productive businesses in each location.	and implement university level education in settlements to 2040 based on NPDP settlement Projections	and implement university level education in settlements to 2040 based on NPDP settlement Projections
4.2	SKILLING UGANDA	TVEI	1	Elaborated education and skills development with focus on Karamoja; and projected economic growth areas	Focus on projected economic growth areas	Focus on projected economic growth areas
	MST					

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		Research/ science and technology Centers		Plan for and implement Phase 1 of research and Technology hubs in in each new city to 2040 based on NDP Urban expansion phases		
	MOH					
4.1.1		Regional Hospitals and HCIV	1	Prepare and implement twenty-year plan for major hospital in each city based on NDP Urban expansion locations	Adjust and implement plans for Hospital in each city	Adjust and implement plans for Hospital in each city
4.1.1			1	Increase hospital beds by 20%	Increase hospital beds by 30%	Increase hospital beds by 30%
2.1			1	Work with NGOs to introduce birth control	birth control measures to	birth control measures to

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				measures to modify population growth rates	modify population growth rates	modify population growth rates
	MOJ					
		Justice and Social protection facilities		Develop Justice and social protection facilities based on NDP Urban expansion locations	Develop Justice and social protection facilities based on NDP Urban expansion locations	Develop Justice and social protection facilities based on NDP Urban expansion locations
	MITC					
3.2.1		Industrial Parks Meat processing Milk Factories	1	Prepare and implement Industry and Trade development plan with	Implement programme of development	

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		Robusta hulling		estate in each city based on NDP Urban expansion locations	of industrial estates	
1.1.7		Natural Resource exploitation development	2	With MEMD seek FDI for, Mineral development iron ore, vermiculite, limestone, marble, cobalt at locations shown on NPDP	With MEMD seek FDI for, Mineral development iron ore, vermiculite, limestone, marble, cobalt at locations shown on NPDP	With MEMD seek FDI for, Mineral development iron ore, vermiculite, limestone, marble, cobalt at locations shown on NPDP
3.2.3		Border Crossings Burundi Roads DRC Roads Kenya Roads	4	Develop Border crossings and markets at borders as identified in the NPDP	Develop Border crossings and markets at	Develop Border crossings and markets at borders as

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		Rwanda Roads TZ Roads			borders as identified in the NPDP	identified in the NPDP
3.3.4		AGUR blocks	2	With MAAIF and MOTWA Establish specific investment plan for AGUR Blocks Initiate 2 Agur pilot blocks in locations shown on above NPDP Development Stages	With MAAIF and MOTWA Initiate two more AGUR blocks to give one exemplar in each region in locations informed by NPDP	With MAAIF and MOTWA Initiate more AGUR blocks in remaining locations informed by NPDP
	MAAIF					
1.1.1		Land Use Balance sheet: Land Covert	2	Develop agricultural land use monitoring, detail and	Continue monitoring of	Continue monitoring of

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				update land use balance sheet in NPDP	national land use balance sheet	national land use balance sheet
1.1.1		Soils	2	Continue with soils mapping to refine crop clustering policy		
3.3.4		Agur Blocks	2	With MITC and MOTWA Establish specific investment plan for AGUR Blocks Initiate 2 Agur pilot blocks in locations shown on above NPDP Development Stages	With MITC and MOTWA Establish specific investment plan for AGUR Blocks Initiate 2 Agur pilot blocks in locations shown on NPDP Map	With MITC and MOTWA Establish specific investment plan for AGUR Blocks Initiate 2 Agur pilot blocks in locations shown on NPDP Map

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
3.3.1		Strategic Agricultural zones (SAZs) Mixed crops farmlands	2	With LGs and MoLHUD establish boundaries of SAZs in Regional and District plans		
3.3.2			2	With MoLHUD pilot four rural consolidation projects, one in each region SAZ; establish one incorporated village per year	With MoLHUD roll out rural consolidation projects in SAZs countrywide; establish 50 incorporated village per year	With MoLHUD roll out rural consolidation projects in SAZs countrywide; establish 100 incorporated village per year
3.3.1		Secondary Agricultural Lands (SAL)	2	With LGs and MoLHUD establish boundaries of SALs in Regional and District plans		
3.3.1		Crops	2	Increase commercial farming	Increase	Increase

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				and reduce subsistence farming by 10% Increase yields by 50%	commercial farming and reduce subsistence farming by 10%	commercial farming and reduce subsistence farming by 10%
7.3.1			8	With MWE Initiate Regional Irrigation Project in Karamoja	With MWE initiate Large and small scale irrigation projects countrywide	With MWE initiate Large and small scale irrigation projects countrywide
	MEMD					
7.5		Infrastructure Corridors	8	With MoWE, MEMD and MLHUD and related MDAs, Update infrastructure and	With MoWE, MEMD and MLHUD and	With MoWE, MEMD and MLHUD and

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				design guidelines for corridors plan, demarcate and gazette land for infrastructure corridors phase 1	related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 2	related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 3
1.1.7		Vermiculite, Iron Ore, Marble, Limestone, cobalt: Natural resources blocks	2	Prepare infrastructure and conditions for and seek FDI for, Mineral development iron ore, vermiculite, limestone, marble, cobalt at locations shown on NPDP	Prepare infrastructure and conditions for and seek FDI for, Mineral development iron ore, vermiculite, limestone,	Prepare infrastructure and conditions for and seek FDI for, Mineral development iron ore, vermiculite, limestone, marble, cobalt at locations shown

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					marble, cobalt at locations shown on NPDP	on NPDP
7.1	UEGCL	Generation sites	8	Continue Nuclear energy development and select and gazette site. Continue development of geo-thermal energy sites Continue development of hydro sites. Continue development of other renewable energy generation sites Plan for fossil fuel energy generation at growth poles	Procure and implement Nuclear energy generation Continue development of geo-thermal energy sites Continue development of hydro sites. Continue	Continue development of geo-thermal energy sites Continue development of hydro sites. Continue development of other renewable energy generation sites Implement fossil

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					development of other renewable energy generation sites Implement fossil fuel generation at growth poles	fuel generation at growth poles
7.1	UETCL	Transmission routes	8	Prepare and implement transmission network development plan based on NPDP Projections and gazette ROWs also as part of infrastructure corridors	implement transmission network development plan based on NPDP Projections	implement transmission network development plan based on NPDP Projections also as part of

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					and gazette ROWs also as part of infrastructure corridors	infrastructure corridors
7.1	UEDCL / REA	Electricity Distribution systems	8	Plan and implement development according to NPDP settlement Projections	Plan and implement development according to NPDP settlement Projections	Plan and implement development according to NPDP settlement Projections
	PAU	Oil in Uganda				
7.2		Refinery	2	Build and operate Refinery at KIP	Develop downstream	Develop downstream

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					petro-chemicals at KIP	petro-chemicals at KIP
7.2		Oil and Gas Pipelines Proposed pipelines northern and southern routes	8	Plan and gazette pipeline ROWs. Complete Hoima-Tanga Pipeline	Complete finish products export pipeline	
1.1.7		Oil exploration and exploitation zones	2	Long term oil and gas plan including transport and storage to 2040; Develop existing areas and explore new	Develop existing areas and explore new	Develop existing areas and explore new
	OPM					
2.1.3		Refugee Settlements	1	Plan for and service refugee settlements, integrating with other settlements and services systems.	Implement long term refugee settlement	Implement long term refugee settlement strategy

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				Prepare long term refugee settlement strategy	strategy	
	MOTWA					
3.5		Tourism Strategic Regions Tourism Roads Tourism sites	3	Prepare a tourism oriented regional plan for the south west: (Kabale, Kisoro and Kanungu districts).	Implement tourism strategic plan for Prepare a tourism oriented regional plan	Prepare a tourism oriented regional plan
3.5.1			3	Prepare a tourism oriented plan for Tourism in Kotido-Kaabong corridor in Karamoja	Implement tourism-oriented plan for Tourism in Kotido-Kaabong	Implement tourism-oriented plan for Tourism in Kotido-Kaabong corridor in Karamoja

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					corridor in Karamoja	
2.2.4			3	Update tourism development zones and include cultural heritage and conservation sites	Update tourism development zones and include cultural heritage and conservation sites	Update tourism development zones and include cultural heritage and conservation sites
3.5.4			3	Antiquities preservation		
		Kyoga and Victoria Islands Bio-Regions	3	Develop Tourism component of Phase 1 of Bio-Regions	Develop Tourism component of Phase 2 of Bio-Regions	Develop Tourism component of Phase 3 of Bio-Regions
	UTB	Tourism sites	3			

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
3.5.2, 3		Hotels lodges concentrations	3	Pilot resort and business tourism at Kalangala and Entebbe waterfronts	Implement resort and business tourism at Kalangala and Entebbe waterfronts	Implement resort and business tourism at Kalangala and Entebbe waterfronts
3.5			3	Campaign for Uganda as leading global tourism destination	Campaign for Uganda as leading global tourism destination	Campaign for Uganda as leading global tourism destination
3.5 1.1.7			2	Develop Tourism infrastructure in Oil and Gas areas		
1.1.3 1.2.1 1.2.2	UWA	National Parks; Wildlife Reserves	3	Develop Wildlife Reserves; Demarcate buffer belts, build fences and patrol	Develop Wildlife Reserves;	Develop Wildlife Reserves; Demarcate buffer

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
3.5.5				roads	Demarcate buffer belts, build fences and patrol roads	belts, build fences and patrol roads
1.2.4		Kyoga and Victoria Islands Bio-Regions	3	Develop Wildlife content of Phase 1 of Bio-Regions	Develop Wildlife content of Phase 2 of Bio-Regions	Develop Wildlife content of Phase 3 of Bio-Regions
1.1.2		Climate change impact analysis		Analise impact of climate change on Parks and Reserves and implement remedial measures	implement remedial measures	implement remedial measures
	MOLHUD					
	URBAN DEVELOP					

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
	MENT					
5.1		Urban Settlement rings Urban Centers, Towns Proper GKMA Urbanization Zones Major Urbanization	1	Prepare an urban expansion strategy for Uganda. Urban Expansion projects: Jinja-Njeru, Mbale, Kamwenge, Kyenjojo, Fort Portal, Kasese, Entebbe, Kabale, Luwero, Kapchorwa, Nebbi-Paidha, Moyo, Koboko, Adjumani, Rukungiri, Yumbe, Masindi, Kabale, Kisoro, Busheny-Ishaka, Iganga, Bugiri, Busia and Tororo.	Continue and extend urban expansion projects	₩
5.1			1	Pilot projects: Expansion of Hoima, Mbarara and Arua.		
5.1			1	Pilot project: First Kampala satellite town.	Pilot project: Second	

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					Kampala satellite.	
5.1			1	Pilot project: Nakasongola new town.	4 New Cities	
	PHYSICAL PLANNING					
5.1, 5.2		Rurbanisation zones	2	Demarcate Rurbanisation zones in District and Sub County Plans	Demarcate rurbanisation zones in District and Sub County Plans	Demarcate rurbanisation zones in District and Sub County Plans
5.2		Rural Settlements	2	With LGs and MAAIF establish boundaries of SAZs and SALs in Regional and District plans		

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		Planning System Development Stages	All	Prepare different levels of Plans based on Figure 37	Complete different levels of Plans based on Figure 37	Continually monitor and update all levels of plans
5.2.4			2	With MAAIF and during systematic adjudication and certification (SLAAC), pilot four rural consolidation projects, one in each region; establish one incorporated village per year	With MAAIF and during Systematic Adjudication and Certification (SLAAC)roll out rural consolidation projects countrywide; establish 50 incorporated village per year	With MAAIF and during Systematic Adjudication and Certification (SLAAC)roll out rural consolidation projects countrywide; establish 100 incorporated village per year

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
7.5		Infrastructure Corridors	8	With MoWE, MEMD and MOWT and related MDAs, Update infrastructure and design guidelines for corridors plan, demarcate and gazette land for infrastructure corridors phase 1	With MoWE, MEMD and MOWT and related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 2	With MoWE, MEMD and MOWT and related MDAs, plan, demarcate and gazette land for infrastructure corridors phase 3
	HOUSING					
5.2		Housing development	1	Prepare and implement a comprehensive housing improvement Plan	implement a comprehensive housing improvement Plan	implement a comprehensive housing improvement Plan

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
5.2			1	Urban housing-retrofitting stage 1	Urban housing-retrofitting stage 1	Urban housing-retrofitting stage 1
			1	Rural Housing retrofitting investments Stage 1	Rural Housing retrofitting investments Stage 1	Rural Housing retrofitting investments Stage 1
	SURVEYS AND MAPPING, LAND REGISTRATION	Land Tenure cadastral maps Rwanda Birder DRC Borders Kenya Border Burundi borders National Boundary		Continue SLAAC to demarcate 3m plots in rural and peri-urban areas, focus on SAZs, Infrastructure corridors and land for natural resource exploitation.	Continue SLAAC to demarcate 6m plots in rural and peri-urban areas, focus on SAZs, Infrastructure corridors and land for	Continue SLAAC to demarcate remaining plots in rural and peri-urban areas, focus on SAZs, Infrastructure corridors and land for natural resource

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					natural resource exploitation.	exploitation.
	MOWT					
6.1,2,3 7.5			4-7	Update National Multi-Modal Transport Masterplan	Update National Multi-modal Transport Masterplan	Update National Multi-modal Transport Masterplan
7.5			8	With MoWE, MEMD and MLHUD and related MDAs, Update infrastructure and design guidelines for corridors plan, demarcate and gazette land for infrastructure corridors	With MoWE, MEMD and MLHUD and related MDAs, plan, demarcate and gazette land	With MoWE, MEMD and MLHUD and related MDAs, plan, demarcate and gazette land for infrastructure

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				phase 1	for infrastructure corridors phase 2	corridors phase 3
6.1.2	UNRA	Expressways	4	Expressway network implementation: Entebbe to Malaba and secure ROWs for remaining network	Expressway network implementation: Kampala to Kasese and Rwanda	Expressway network implementation: Malaba to Nimule and Nimule to Kyenjojo
6.1.1		UNRA Roads	4	Develop according to NMMT Masterplan and NPDP	Develop according to NMMT Masterplan and NPDP	Develop according to NMMT Masterplan and NPDP
6.1.3	URC	Passenger/cargo Railways,	5	SGR Cargo and passenger	SGR Cargo	SGR Cargo

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		SGR DRC SGR		network implementation: Kampala to Malaba	network implementation Kampala to DRC and Rwanda	network implementation Kampala to S Sudan and DRC
6.1.3		Existing m gauge network	5	Rehab existing m gauge network before replacing with SGR		
6.1.3		Light Rail network	5	Plan and develop light rail transport in GKMA	Continue Light Rail development in GKMA	Continue Light Rail development in GKMA
6.2.1, 2	CAA	Airports, airfields	6	Study existing aviation facilities in Uganda and update CAA Masterplan.	Develop Aviation facilities	Develop Aviation facilities according to

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				Complete Hoima and make detailed plans for international airports	according to masterplan	masterplan
6.2.1				Preservation of ROW: New GKMA Airport		
6.3	MRA	Ports and Landing sites, water transport routes	7	Prepare and implement phase 1 of National Marine Transport Master Plan – Port Bell, Bukasa Port	implement phase 2 of National Marine Transport Master Plan	implement phase 2 of National Marine Transport Master Plan
6.3				Undertake Marine survey and Plan Lake Victoria marine transport routes		
6.3				Inland Waterway facility and ferry rehabilitation program	Inland Waterway facility and	Inland Waterway facility and ferry rehabilitation

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					ferry rehabilitation program. Plan for Bridge replacement for suitable inland waterway routes	program. Bridge replacement for inland waterway routes
	MICT					
7.4		ICT Hubs / wireless zones	8	Develop ICT network and connectivity development plan with UCC	Update ICT network and connectivity plan focused on connection to households, industry and	Update ICT network and connectivity plan focused on connection to households, industry and

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					businesses	businesses
7.4	UCC	ICT / Fiber Network	8	Extend National ICT Backbone combined with Private sector fiber networks with UCC	Extend National ICT Backbone combined with Private sector fiber networks with UCC	Extend National ICT Backbone combined with Private sector fiber networks with UCC
	MOLG					
8.2		LG Admin boundaries	1	Prepare and implement Long term plan to 2040 for status of urban councils according to base on NPDP settlement Projections	implement Long term plan to 2040 for status of urban councils according to	implement Long term plan to 2040 for status of urban councils according to based on NPDP

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					based on NPDP settlement Projections	settlement Projections
	UBOS					
2.1.1		*Social demographic data*		Develop and Monitor population projections		
2.1.2		*Economic Demographic data*		Develop and Monitor economic output and labor force per sector		
	PRIVATE SECTOR /					

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
	PSFU					
3.3	3.3	Commercial Agriculture	2	With LGs and MAAIF focus investment and finance on growth of commercial farming in SAZs.		
3.3.4		AGUR Blocks	2	With MeMD, MAAIF and MOTWA attract hi-tech / agric, tourism and leisure investments to AGURs	With MeMD, MAAIF and MOTWA attract hi-tech / agric, tourism and leisure investments to AGURs	With MeMD, MAAIF and MOTWA attract hi-tech / agric, tourism and leisure investments to AGURs
3.2		Manufacturing industry	1	Attract Investment to value addition in the value chain related to crop clusters and industrial estate locations. Bring manufacturing to	Attract Investment to value addition in the value chain related	Attract Investment to value addition in the value chain related to crop

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				expanding and new urban centers and industrial estates.	to crop clusters and industrial estate locations.	clusters and industrial estate locations.
3.4		Oil exploitation, exploration and downstream	2	Bring finance and investment to further oil and gas exploitation and exploration; and to downstream facilities at KIP	Bring finance and investment to further oil and gas exploitation and exploration; and to downstream facilities at KIP	Bring finance and investment to further oil and gas exploitation and exploration; and to downstream facilities at KIP
3.4		Mineral development iron ore, vermiculite, limestone,	2	Partner with GoU in exploration, production	Partner with GoU in	Partner with GoU in exploration,

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
		marble, cobalt		agreements for large-scale mining projects in locations identified in NPDP	exploration, production agreements for large-scale mining projects in locations identified in NPDP	production agreements for large-scale mining projects in locations identified in NPDP
3.5.1,2, 3		Tourism Facilities, resorts	3	Bring investors to develop tourism infrastructure, resorts and hotels	Bring investors to develop tourism infrastructure, resorts and hotels	Bring investors to develop tourism infrastructure, resorts and hotels
3.1.2		Real estate residential,	5	Continue to develop financial models and investment in large scale	investment in large scale affordable	investment in large scale affordable

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
				affordable housing, including urban and rural retrofitting	housing, including urban and rural retrofitting	housing, including urban and rural retrofitting
3.1.2 3.2.1 5.1.1-5		CBDs, commercial centers, new towns, industrial sites	5	Bring investment to growth centers and cities as identified in NPDP.	Bring investment to growth centers and cities as identified in NPDP.	Bring investment to growth centers and cities as identified in NPDP.
7.1.- 7.4		Infrastructure	4-7, 8	Work with GoU to Identify and invest in PPPs for water, energy generation, transmission and distribution, roads, rail, air and marine transport	invest in PPPs for water, energy generation, transmission and distribution,	invest in PPPs for water, energy generation, transmission and distribution, roads, rail, air and marine transport

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
					roads, rail, air and marine transport	
	NGOs					
?		Land Sector NGOs		Work with MAAIF, MoLHUD to support SLAAC and Planning of rural and peri-urban areas.		
4.1		Health Sector	1	Work with GoU to introduce birth control measures to modify population growth rates		
7.3.1-4		Water and Sanitation	8	Partner with MoWE to develop accessible clean water and effective sanitation systems		

PILLAR	MDA	Key Data Layers of which they are the custodians	NPDP MAP No.	NDP3 Actions	NDP 4 Actions	NDP 5-6 Actions
7.1		Energy	8	Partner with Sector agencies to expand renewable energy systems and reduce CO2 emissions		

13. Conclusion

The NPDP will first begin to be implemented during the preparation of the next National Development Plan. The identified Ministries will be requested to include the updated physical and spatial factors for which they are the "custodians", and which form the NPDP, in their Sector Development Plans for NDP III.

As integrated with economic and social planning, the "physical" will be continuously and periodically adapted and adjusted according to circumstances, based on the principles that have been developed in the NPDP.

This "organic" Plan will be transmitted down through the levels of the Planning System to inform and align Local Government Plans and Projects with the National Plan. This will give coherence, motivation and a stronger focus for national development.

In parallel, as the UGSDI comes into effect, its Technical Committee will comprise the main agencies which form the NPDP and smooth the coordination task. As key members, and in close coordination with the NPA, the Directorate of Physical Planning and Urban Development at the Ministry of Lands Housing and Urban Development will have the task of checking new developments with the long-term projections and principles on which the NPDP is based, and advising on compliance.

By these means it is expected that the objectives of orderly and sustainable development of land, and greater efficiency and synergy between the projects of different MDAs, will accelerate the growth of Uganda towards the objectives of Vision 2040.

14. ANNEX A: Core Data sets for the Uganda Spatial Development Infrastructure

Core Data sets for the UGSDI

Dataset	Description	Custodian
Cadastral Information	Shows the boundaries of parcels of land defined by cadastral registers.	Ministry of Lands Housing and Urban Development
Geodetic control	Shows the location, type of geodetic control points in the country.	Ministry of Lands Housing and Urban Development
Geographic Names	Names of areas, localities, towns, or settlements, or any geographical or topographical feature of public or historical interest	Ministry of Local Government
Orthoimagery	Ortho-rectified image data of the Earth's surface, from either satellite or airborne sensors	Ministry of Lands Housing and Urban Development
Elevation	Digital elevation models for land, and water surface. Includes terrestrial elevation, bathymetry	Ministry of Lands Housing and Urban Development

	and shoreline.	
Transportation	Road, rail, air and water transport networks and related infrastructure.	Ministry of Works and Transport
Hydrography (surface water networks)	Hydrographic elements such as water bodies (such as Lakes and Rivers) and items related to them, including river, basins and sub-basins, wetlands	Ministry of Water and Environment
Administrative Boundaries	Units of administration separated by administrative boundaries	Uganda Bureau of Statistics
Human Health and Safety	Location of health facilities, Spatial distribution of dominance of pathologies (allergies, HIV, Malaria, cancers, respiratory diseases, etc.), data indicating the effect on health (infant motility, birth complication, epidemics) or well-being of humans (armed conflicts, famine, natural hazards)	Ministry of Health
Settlements	Geographical location of buildings, built-up areas and associated attributes	Ministry of Lands Housing and Urban Development
Education	Location Education institutions and attributes associated by Ministry of Education and Sports	Ministry of Education and Sports
Energy Resources	Energy resources including Oil and gas, hydropower, bio-	Ministry of Energy and Mineral development

	energy, solar, wind, etc., where relevant including depth/height information on the extent of the resource	
Soils	Soils and subsoil characterized according to depth, texture, structure and content of particles and organic material, stoniness, erosion, where appropriate mean slope and anticipated water storage capacity	Ministry of Agriculture, Animal Industry and Fisheries (Kawanda Research Institute)
ICT Infrastructure	Locations of infrastructure including overhead and underground	Ministry of ICT
Direct Justice and Social Protection	Location and description of Justice and Social protection institutions such as police stations, courts, remand homes, remand homes, prisons etc.	Ministry of Justice and Constitutional Affairs[i]
Agriculture datasets	Agriculture potential, agro-ecological zones etc.	Ministry of Agriculture, Animal Industry and Fisheries
Land cover	Vegetation cover, wetlands, etc.	Ministry of Water and Environment (NFA)
Utilities	Location and Description of Utility Infrastructure (Electricity, Water and Gas)	NWSC and UMEME respectively
Social economic demographic	Social –economic status	Uganda Bureau of Statistics

data		

Figure 87: Core Data sets for the UGSDI

15. ANNEX B: GIS datasets used for the NPDP Current Situational Analysis

Pillar	Sub Pillar	Layer Name	Subject	Acquisition source and Custodian	Year Update	Layer type
1	Environment					
1.1	Geophysics	Topography layer	Heights layer based on SRTM			Raster
		Contour Lines	Contour Lines/ DTM.			line
		Soils	Soils types			polygon
1.2	Ecology					
		Forests	Forests.		2015	polygon

		Wetlands	Wetlands		2015	polygon
		Lakes	Water Resources.		2015	polygon
		Rivers/ Major Rivers	Rivers		2015	line
		Main_Rivers Basin	Water Basins		2015	polygon
		Floods_Epicenters	Flooded areas		2014	Point
1.3	Natural resources					
		Cobalt	Mining and Minerals		2014	Polygon
		Copper	Mining and Minerals		2014	Point
		Gold	Mining and Minerals		2014	Point
		Iron	Mining and Minerals		2014	Point
		Phosphate	Mining and Minerals		2014	Point

		Limestone	Mining and Minerals		2014	Point
	_	Metallic_minerals	Mining and Minerals		2014	Point
		Mineral_Potential	Mining and Minerals		2014	line
		discoveries	Oil & Gas		2015	Polygon
		licensed_areas	Oil & Gas		2015	Polygon
		OIL_IN_UGANDA	Oil & Gas		2015	Polygon
		OIL_PIPELINE	Oil & Gas		2016	line
		proposed_pipieline_northern_ route	Oil & Gas		2015	line
		proposed_pipieline_southern_ route	Oil & Gas		2015	line
		PROPOSED_REFINERY_LAND	Oil & Gas		2015	Polygon
1.4	Sustainability &					

	Nature Protection					
		protected_areas	Protected areas.		2015	polygon
		National Parks and forests	Nature Reserves		2015	polygon
2	Human Capital					
2.1	Demography	Demography indicators by District	Population and Demographic characteristics (In attribute table)		2014	polygon
		Labor Force- By areas/ settlements	Labor Force- By areas/ settlements			polygon
2.4	Education and skills	Education and skills				
		Schools	Education institutes (by Level/type).		2010	point
		Tertiary_Schools	Universities, Science and		2010	point

			Innovation centers			
		District (Literacy data)	Literacy		2014	polygon
3	National economy					
3.1	Macro economy					
		Banks	Financial Services		2010	point
		Businesses	Financial Services		2010	point
		Industrial_Estate	Industrial sites		2010	Point
3.2	Wealth creation Sectors					
		Agriculture_land_cover	Agriculture areas	RS based on landset 30m, 2005	2008	Polygon
		Coffee_Factories	Agriculture areas		2014	Point

		Coffee_hulling	Agriculture areas		2014	Point
		Maize_trading	Agriculture areas		2014	Point
		Cotton_Ginneries	Agriculture areas		2014	Point
		MILK_Factories	Agriculture areas		2014	Point
		Tea_Production_Zones	Agriculture areas		2014	Polygon
		Livestock_LTU_density	Livestock Density		2014	Polygon
		UG_FarmingSystems_PMA	Farming Systems		2014	Polygon
		Agri_processing_Sites	Planned agriculture centers		2015	Polygon
		uga_irrigation-schemes_may08	Irrigation Schemes		2008	Polygon
		Irrigation_points	Irrigation location sites		2006	Point
		LargeIrr	Irrigation facilities		2006	Point
		Travel_Destinations	Tourism Development Areas and facilities, Tourist attractions		2011	Point

		Uganda_National_Parks_and_ Forests	National Parks		2015	Polygon
		Cobalt	Mining and Minerals		2014	Polygon
		Copper	Mining and Minerals		2014	Point
		Gold	Mining and Minerals		2014	Point
		Iron	Mining and Minerals		2014	Point
		Phosphate	Mining and Minerals		2014	Point
		Limestone	Mining and Minerals		2014	Point
		Metallic_minerals	Mining and Minerals		2014	Point
		Mineral_Potential	Mining and		2014	line

			Minerals			
		Shopping centers	Trade, Commercial Sites and Facilities existing and planned.		2014	point
4	Public Services					
4.1	Health	Health Center	Hospitals and Health institutes.		2010	Point
4.2	Education	Schools	Education institutes (by Level/type).		2010	point
		Tertiary_Schools	Universities, Science and Innovation centers		2010	point
4.3	Central & local Governmental Services					
		Regions	Regions		2016	Polygon

		Districts	Districts borders.		2016	Polygon
		Local_Govt_Headquarters	Government institutes and offices locations- by type- Main, Local.		2014	point
5	Settlements					
5.1	Urbanization	Towns	Towns location		2012	Point
	_	Build_up_areas	Build up areas	RS based on landset 30m	2015	Polygon
5.4	Land Use	Landcover	Land Cover	RS based on landset 30m	2015	Polygon
6	Infrastructure					
6.1	Transportation					
		Infrustructure Corridor	General Infrastructure		2015	Polygon

			corridor			
		Roads	Roads		2015	line
		Expressways_Plan	Planned roads with status		2015	line
		Railway	Railway.		2015	line
		Airports	Airports, existing and planned.		2014	point
		Airfields	Airfields		2014	point
		Landing_sites	Ports and Lake Transport existing and planned.		2015	Point
		Water_trspt_routes	Water routes.		2015	line
6.1	Utilities					
		Generation_Sites_MOE_2013	Energy Infrastructure: production and supply, power		2013	Point

			plants.			
		Electricity_Distribution_Lines	Transmission lines existing and planned.		2013	line
		Grid_Demand_2012	Electricity demand		2012	Polygon
		Town_Electric_Status.shp	Towns electric connection status		2012	Point
		See sections 1.6.2.5-12	Oil and gas pipelines and facilities		2012	line
		NBI_transmission_sites	ICT Transmission sites		2016	Point
		NBI2	ICT cables existing and planned.		2016	line
		ICT_Phase1-4 (4 Layers)	ICT- NDP Plan		2015	line
		Private_fibre_network	ICT cables - fiber network		2016	line

		NBI_transmission_sites	Telecommunicatio n centers.		2016	Point
		See sections 1.6.2.5-12	Oil and gas pipelines and facilities		2012	line
		NBI_transmission_sites	ICT Transmission sites		2016	Point
		NBI2	ICT cables existing and planned.		2016	line
		ICT_Phase1-4 (4 Layers)	ICT- NDP Plan		2015	line
		Private_fibre_network	ICT cables - fibre network		2016	line
		NBI_transmission_sites	Telecommunicatio n centers.		2016	Point
		Private_fibre_network	High tech and ICT concentration locations.		2014	

7	Governance					
		National_Boundary	Borders			Polygon
		County	County border, Population data		2014	Point

Figure 88: NPDP GIS database

16. ANNEX C: NPDP Information and Planning Matrix

In the Matrix, the activities are tied to the subjects or issues, represented by the pillar and sub pillar. They are divided into two sets of horizontal rows:

- first two rows are for **data bases and planning**,
- the second two rows are for **sectoral development and specific projects**.

The columns show the relevant data sets for each MDA and the main projects for implementation under NDP 3, 4 and 5-6.

C1. Pillar 1: Environment

Pillar 1 : Environment **Sub Pillar 1.1:** Natural Resources Sector		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
1.1.1. Geology & Soils. 1.1.2. Climate Change. 1.1.3. Fauna & Wild Life. 1.1.4. Flora & Forests. 1.1.5. Lakes & Rivers. 1.1.6. Wetlands. 1.1.7. Minerals & Oil + Gas. 1.1.8. Water Resources.	Data Bases Management	UBOS MOWE NFA UWA	Update 1.1.1-1.1.8	Update 1.1.1-1.1.8	Update 1.1.1-1.1.8
	Sector Plans & Policies	MOWE NFA UWA	Climate Change Impact Analysis on 1.1.3-1.1.6,1.1.8	Update Impact Analysis	Update Impact Analysis

Pillar 1 : Environment **Sub Pillar 1.2:** Nature Protection Sector		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	**Activities**				
1.2.1. Natural Parks	Data Bases	UBOS MOWE NFA UWA	1.2.1-1.2.4	1.2.1-1.2.4	1.2.1-1.2.4
1.2.2. W.L. Reserves.	Sector Plans & Policies	UBOS MOWE NFA UWA	Update Preservation Policies	Update Preservation Policies	Update Preservation Policies
1.2.3. Central Forests Reserves.	Sector Development of 1.2.1-1.2.2-1.2.3	UBOS MOWE NFA UWA	Develop : • Buffer Belts. • Fences. • Patrol Roads.	Develop : • Buffer Belts. • Fences. • Patrol Roads.	Develop : • Buffer Belts. • Fences. • Patrol Roads.
1.2.4. Bio Regions.	Bio Regions (BR) Special Development Projects	UBOS MOWE NFA UWA	Kyoga BR Dev. Phase 1	Kyoga BR Dev. Phase 2	Kyoga BR Dev. Phase 3

Pillar 1 : Environment **Sub Pillar 1.3:** Environmental Quality Sector		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	**Activities**				
1.3.1. Compliance & enforcement	Data Bases	UBOS NEMA MOWE	Yearly Update of 1.3.1-1.3.5		
1.3.2. Air Pollution. 1.3.3. Waste Management.	Sector Plans, Policies & Regulations	UBOS NEMA MOWE	Update Policy & Regulations	Update Policy & Regulations	Update Policy & Regulations
1.3.4. Fresh Water Quality. 1.3.5. Biodiversity.	Sector Development	UBOS NEMA MOWE	See Infrastructure Pillars		

C2 Pillar 2: Human Capital Development

Pillar 2 : Human Capital **Sub Pillar 2.1:** Demography & Population Sector		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	**Activities**				
2.1.1. Population Growth. 2.1.2. Labor Force. 2.1.3. Refugees Movements.	Data Bases	UBOS NPA MGLS	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
	Sector Plans & Policies	NPA MGLS NGO'S	(a) Birth Control Program. (b) Family Planning Program	Update (a), (b)	Update (a), (b)
	Sector Development	MGLS MOES NGO'S PSF	Elaborated Education Dev. & Skills Dev. For Karamoja and Northern Region	Continue & Add Western & Central Regions	Continue All Regions

Pillar 2 : Human Capital **Sub Pillar 2.2:** Culture, Ethnicity & Social Fabric Sector		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	**Activities**				
2.2.1. Equality. 2.2.2. Poverty. 2.2.3. Mind Sets Dev. 2.2.4. Heritage & Culture	Data Bases	UBOS NPA MGLS	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
	Sector Plans & Policies	NPA MGLS NGO'S	Sub Sector Integrative Plan (SSIP)	Update (SSIP)	Update (SSIP)
	Sector Development	MGLS MOES	Implement Recommendations	Implement Recommendations	Implement Recommendations

C.3 Pillar 3 Spatial Economy

Pillar 3 : Spatial Economy Sub Pillar 3.1: Macro Economy		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	Activities				
3.1.1. Financial Services. 3.1.2. Real Sector. 3.1.3. Fiscal & Monetary Development.	Data Base Management	UBOS MOFDED	Update : • Statistics • NSDI	Update : • Statistics • NSDI	Update : • Statistics • NSDI
	Sector Plans & Policies	MOFDED NPA	Sector Plan (SP)	Update SP	Update SP
	Sector Development	MOFDED NPA	Upgrade sub sector Budgets: BFP & MTEF, aligned with NPA		

Pillar 3 : Spatial Economy Sub Pillar 3.2: Industry & Trade Sector		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	Activities				
3.2.1. Industrial Parks. 3.2.2. High-tech Campuses. 3.2.3. International Trade.	Data Base Management	UBOS MOTI	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
	Sectoral Plans & Policies	MOTI NPA PSF	Industry & Trade Dev. Plan	Update	Update
	Sector Development	MOTI NPA MOFDED PSF	National Investment Plan for industry & Trade	Update	Update
	Physical Dev. & Projects	MOTI NPA MOFDED PSF	Establish Hi-Tech parks in each Regional City: Mbarara, Gulu, Mbale, Hoima and Arua, and in each New City. Initiate two pilot AGUR blocks.	Establish industrial parks in all secondary cities. Establish 4 AGUR's, one for each region.	Strengthen industrial parks and Establish 4 Additional AGUR Blocks- 2 in the Northern region and 2 in the central region.

Pillar 3 : Spatial Economy **Sub Pillar 3.3:** Agriculture Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
3.3.1. Agricultural Strategic Zones. 3.3.2. Rural Consolidation. 3.3.3. Yield Development 3.3.4 AGUR's Development	Data Bases Management	UBOS MAAIF	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
	Sector Plans & Policies	MAAIF NPA PSF	Prepare Sector Development. Plan (SDP)	Update SDP	Update SDP
	Sector Development	MAAIF MOFDED PSF	Decrease Subsistence Ag. By 10%. Increase yield by 50%.	Decrease Subsistence Ag. By additional 20%. Increase yield by additional 50%.	Decrease Subsistence Ag. By additional 30%. Increase yield by additional 50%.
	Physical Dev. & Projects	MOLHUD MAAIF NGO's	Initiate two pilot AGUR blocks. Initiate Regional Irrigation project in Karamoja.	Establish 4 AGUR's, one for each region. Complete Regional Irrigation projects country wide.	Establish 4 Additional AGUR Blocks- 2 in the Northern region and 2 in the central region.

Pillar 3 : Spatial Economy **Sub Pillar 3.4:** Oil, Gas & Minerals Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
	Data Base Management	UBOS MOEMD	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
3.4.1. Oil & Gas Production Dev.	Sector Plans & Policies	MOEMD NPA PSF	Prepare Sector Dev. Plan	Update	Update
3.4.2. Oil & Gas Pipeline.	Sector Development	MOFDED MOEMD PSF	Sector Dev. Plan	Update	Update
3.4.3. Minerals Dev.	Physical Dev. & Projects	Private Sector NGO's	Establish: • Marble industry in Karamoja, • Vermiculate industry. • Fertilizers industry around phosphate mines. • Steel industry near iron ore mines. • Oil & Gas Production & Refinery. • Oil & Gas pipeline.	Oil &Gas Export Dev.	Oil &Gas Export Dev.

Pillar 3 : Spatial Economy **Sub Pillar 3.5:** Tourism Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
3.5.1. Nature Tourism. 3.5.2. Resort Tourism. 3.5.3. Business Tourism. 3.5.4. Antiquities Preservation. 3.5.5. Wild Life Preservation.	Data Bases Management	UBOS MOTWA	Update: • Statistics • NSDI	Update: • Statistics • NSDI	Update: • Statistics • NSDI
	Sector Plans & Policies	MOTWA NPA UTB	Prepare a tourism oriented regional plan for the south west (Kabale, Kisoro and Kanungu districts). Complete a sectoral plan for Tourism in Kotido-Kaabong corridor in Karamoja Prepare a Cultural heritage mapping and conservation plan	Update Tourism Sector Plan	Update Tourism Sector Plan
	Sector Development	MOTWA MOFDED UTB	International Campaign to put Uganda on the map as a premier tourist destination to increase volume from 1.5 million to 4 million a year. Pilots of Resort & Business Tourism.	Continue Campaign & Dev.	Continue Campaign & Dev.
	Physical Dev. & Projects	UTB PSF Private Sector	Initiate Projects: 1. Kalangala Resorts. 2. Water Front Dev. Pilot Projects In Kampala & Entebbe. 3. Kalangala Resorts Dev.	• Finance Cultural heritage and conservation. • Develop Business tourism in Urban Centers.	Continue Investment &Dev

C.4 Pillar 4: Public Services –Education, Health

Pillar 4: Public Services **Sub Pillar 4.1:** Health Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
4.1.1. Hospitals Development 4.1.2. Health Services Development.	Data Base Management	UBOS MOH	Update : • Statistics • NSDI	Update : • Statistics • NSDI	Update : • Statistics • NSDI
	Sector Plans & Policies	MOH NPA NGO's	**Sector Dev. Plan** (SDP)	Update SDP	Update SDP
	Sector Development	MOH MOFDED NGO's	Sector Investment Plan	Sector Investment Plan	Sector Investment Plan
	Physical Dev. & Projects		Establish: One new hospital for each new city and for each expanded city. 20% increase in the number of hospital beds.	Establish: One new hospital for each new city and for each expanded city. Increase 30% in the number of hospital beds.	Increase 30% in the number of hospital beds.

Pillar 4 : Public Services **Sub Pillar 4.2:** Education & Knowledge Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
4.2.1. Universities. 4.2.2. Research Centers. 4.2.3. School Systems.	Data Base Management	UBOS MOH	Update : • Statistics • NSDI	Update : • Statistics • NSDI	Update : • Statistics • NSDI
	Sector Plans & Policies	MOH NPA NGO'S	Sector Dev. Plan SDP	Update SDP	Update SDP
	Sector Development	MOES MOFDED NGO's	• Improve Accessibility to secondary and tertiary education and vocational education via reducing distance travelled. • High Priority Investment.	Continue High Priority Investment.	Continue High Priority Investment.
	Physical Dev. & Projects	MOES MOFDED NGO's	Improve Services and roads, power, water etc. for education facilities.	Establish a research university in each new city (outside of GKMA) and in each regional city.	Establish of research universities in all regional cities and major towns.

C.5 Pillar 5: Settlement

Pillar 5 : Settlement **Sub Pillar 5.1:** Urbanization Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
5.1.1. Growth. 5.1.2. Spatial Distribution. 5.1.3. Urban Retrofitting. 5.1.4. Expansion of Cities. 5.1.5. New Cities Development	Data Base Management	UBOS MOLHUD	Complete NSDI + LIS + PPUMIS	Continue	Continue
	Sector Plans & Policies	MOLHUD NPA	Comprehensive Housing Improvement Plan. Urban growth and expansion - a comprehensive strategy	Update Strategy	Update Strategy
	Sector Development	MOLHUD MOFDED	Housing Retrofitting Investments – 1st Stage	Housing Retrofitting Investments - 2nd Stage	Housing Retrofitting Investments 3rd Stage
	Physical Dev. & Projects	MOLHUD MOFDED NGO's	Pilot projects : • Expansion of Hoima, Mbarara and Arua. • Nakasongola. New City in • First Kampala satellite (Ssisa).	Urban Expansion projects: Jinja-Njeru, Mbale, Kamwenge, Kyenjojo, Fort Portal, Kasese, Entebbe, Kabale, Luwero, Kapchorwa, Nebbi-Paidha, Moyo, Koboko, Adjumani, Rukungiri, Yumbe, Masindi, Kabale, Kisoro, Busheny-Ishaka, Iganga, Bugiri, Busia and Tororo. Second Kampala satellite. 4 new cities	Continue Urban Expansion Projects

Pillar 5 : Settlement **Sub Pillar 5.2:** Rural Settlements Sector **Subjects**	**Activities**	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
5.2.1. Growth. 5.2.2. Spatial Sprawl control. 5.2.3. Rural Settlements Retrofitting. 5.2.4. Consolidation of Villages. 5.2.5. New Rural Settlements Development	Data Base Management	UBOS MOLHUD MAAIF	Complete NSDI + LIS + PPUMIS	Continue	Continue
	Sectoral Plans & Policies	MOLHUD MAAIF NPA	• Sprawl Preventing Plan. • Rural Consolidation Investment Plan.	Update & Continue	Update & Continue
	Sector Development	MOLHUD MAAIF MOFDED	Rural Housing Retrofitting Investment - 1st Stage.	Rural Housing Retrofitting Investment - 2nd Stage.	Rural Housing Retrofitting Investment - 3rd Stage.
	Physical Dev. & Projects	MOLHUD MAAIF	Pilot project: 4 Rural Consolidation projects, one in each region. Establish 1 incorporated village each year.	Establish 50 incorporated villages each year.	Establish 100 incorporated villages each year.

C.6 Pillar 6: Transportation

Pillar 6 : Transportation **Sub Pillar 6.1:** Land Transportation Sector		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
6.1.1. Highways. 6.1.2.Expressways 6.1.3. Railways.	Data Bases Management	• UBOS • NSDI • MOWT • UNRA • URC	• Efficiency of data collection program (NTMP 2008-2023) • Centralized transport data collection at MOWT	• Continued data collection at MOWT • Creation of transport base map and GIS systems	• Continued data collection at MOWT • Upkeep of transport base map and GIS systems
	Sector Policies	• MOWT	• National multi modal transport plan • Policy: road network hierarchy • Policy: rail for passenger and cargo transport	• Updated national multi modal transport plan • Updated road and rail policy	• Updated national multi modal transport plan • Updated road and rail policy
	Sector Execution Plans	• UNRA • URC	• Expressways master plan • SGR passenger transport master plan • Regional integrated transport master plans	• Transport master plans for growth poles program	• Update: road, rail development plans • Support of growth poles master plan projects
	Investments & Execution of Projects	• MOWT • UNRA • URC	• Completion of NTMP 2008-2023 road projects • Secure ROW for expressway network • SGR cargo network implementation	• Continued highway network Dev. • Expressway network implementation • SGR cargo network implementation • SGR passenger network implementation	• Continued highway network dev. • Expressway network implementation • SGR passenger and cargo network completion

Pillar 6 : Transportation **Sub Pillar 6.2 :** Air Transportation Sector		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
6.2.1. Terminals. 6.2.2. Air Fields.	Data Bases Management	• UBOS • NSDI • MOWT • CAA	• Field study: existing aviation facilities across Uganda • Improvement of aircraft transport data collection • Development of GIS database for CAA	• Upkeep of facility and GIS database for aviation	• Upkeep of facility and GIS database for aviation
	Sector Policies	• MOWT	• International Air Transport Policy • Domestic Air Transport Policy	• National Air Transport Master Plan • Update of international and domestic policies	• Update of Air Transport Master Plan • Update of international and domestic policies
	Sector Execution Plans	• MOWT • CAA	• Detailed Planning: International airports • Strategic Planning: New GKMA Airport	• Preservation of ROW: New GKMA Airport • Strategic Planning: Domestic airfield improvement program	• CAA Capacity Building Program
	Investments & Execution of Projects	• CAA	• Completion of planned/in progress intl airport Dev. • Continued Airfield capacity building to intl. standards	• Cont. International Airport Dev • Domestic Airport improvement	• Cont. International Airport Dev • Cont. Domestic Airport improvement

Pillar 6: Transportation **Sub Pillar 6.3:** Marine Transportation Sector		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
6.3.1. Lines.	Data Bases Management	• UBOS • NSDI • MOWT • MRA (following creation)	• Establishment of Data base of marine facilities • GIS database establishment	• Consistent Sectoral data collection • Upkeep of GIS database	• Consistent Sectoral data collection • Upkeep of GIS database
	Sector Policies	• MOWT	• Establish a Maritime Regulatory Authority • Inland Water Transport Policy • Port Facility Regulation and Dev	• Capacity building: MRA • Policy: Lake Victoria cargo transport routes	• National Marine Transport Master Plan
6.3.2. Ports.	Sector Execution Plans	• MOWT • MRA (Maritime Regulatory Authority	• Inland waterways development plan • Lake Victoria ferry development plan	• Dev plan supporting Lake Victoria cargo transport	• Update: Inland waterways and Lake Victoria Ferry development plans
	Investments & Execution of Projects	• MRA	• Inland waterway facility rehabilitation program • Ferry rehabilitation program • GKMA port facility developments	• Cont. Inland waterway facility rehabilitation program • Cont. ferry rehabilitation program • GKMA port facility developments	• Cont. Inland waterway facility rehabilitation program • Cont. ferry rehabilitation program

C.7 Pillar 7: Utility Infrastructure - Energy, Water, Oil and Gas, ICT, Infrastructure Corridors

Pillar 7 : Utility Infrastructure Sub Pillar 7.1 : Energy		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	Activities				
	Data Bases Management	• UBOS • NSDI • MEMD • ERA	• Develop GIS and data collection systems	• Manage GIS and data collection systems	• Manage GIS and data collection systems
	Sector Policies	• MEMD • ERA	• National energy policy • National energy master Plan for renewable energy	• National energy policy study: nuclear energy	• Update national energy policy
7.1.1. Power Production	Sector Execution Plans	• MEMD • ERA	• Transmission network development plan • Fossil fuel energy sev. at Growth Pole cities plan • Preservation of lands for energy facilities	• Develop energy efficiency standards • Preservation of lands for energy facilities • Formulate PPP for private investment	• Preservation of lands for energy facilities • Formulate PPP for private investment
7.1.1. Transmission			• Complete in progress		• Implementation of

Pillar 7 : Utility Infrastructure Sub Pillar 7.3 : Water		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	Activities				
7.3.1. Production	Data Bases Management	• UBOS • NSDI • MWE • NWSC	• Gazette water reserves • Develop water resource monitoring Systems	• Manage Gazette of water reserves • Manage water resource monitoring Systems	• Manage Gazette of water reserves • Manage water resource monitoring Systems
7.3.2. Supply to House Holds	Sector Policies	• MWE	• National water policy • National water development master plan • National irrigation master plan	• Policy: renewable water • Policy: protection of water supply systems	• Update National water policy • National water capacity (WRM) master plan
7.3.3. Supply to Industry	Sector Execution Plans	• MWE • NWSC	• Small and large scale irrigation scheme • PPP for water management	• Plan for re-using water resources • Plan for industrial water usage	• Long term planning: catchment and ground water utilization
7.3.4. Supply to Agri	Investments & Execution	• MWE	• Improvement of National water capacity (WRM) • SNDPII water programmes • Transmission grid	• Improvement of National water capacity (WRM) • SNDPII water programmes	• Improvement of National water capacity (WRM) • Transmission grid

- 2040

Oil and Gas Data Bank

Pillar 7 : Utility Infrastructure Sub Pillar 7.4: ICT (Information, Communication. Technology)		MDA's	NDP 3 - 2025	NDP 4 - 2030	NDP 5,6 - 2040
Subjects	Activities				
7.4.1. Production	Data Bases Management	• UBOS • NSDI • MICT • UCC	• Develop GIS and Data collection Systems	• Manage GIS and Data collection Systems	• Manage GIS and Data collection Systems
7.4.2. Supply to House Holds	Sector Policies	• MICT	• Inter-Agency ICT Development Plan	• Develop National ICT awareness strategy • Policy: R&D for ICT applications • National ICT Master Plan	• National ICT Master Plan Update
7.4.3. Supply to Industry	Sector Execution Plans	• MICT • UCC	• ICT network development plan	• Update ICT network plan focused on connection to industry	• Update ICT network plan focused on connection to house holds
7.4.4. Supply to Agriculture	Investments & Execution of Projects	• MICT • UCC	• Extension of National ICT Backbone • Finalize migration to digital broadcasting • ICT for business program	• Cont. extension of National ICT Backbone	• Cont. extension of National ICT Backbone

Pillar 7 : Utility Infrastructure **Sub Pillar 7.5 :** Infrastructure corridors		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
7.5.1 Infrastructure Corridors	Data Bases Management	• UBOS • NSDI • NPA • MOWT	• Develop Gazette lands for corridors • Develop GIS and data collection systems	• Manage gazette lands for corridors • Manage GIS and data collection systems	• Manage gazette lands for corridors • Manage GIS and data collection systems
	Sector Policies	• NPA • MOWT	• Policy: utilization of infrastructure corridors • Regulations and design guidelines for corridors	• Update infrastructure and design guidelines for corridors	• Update infrastructure and design guidelines for corridors
	Sector Execution Plans	• NPA • MOWT	• Preservation of right of way for corridors	• Preservation of right of way for corridors	• Preservation of right of way for corridors
	Investments & Execution of Projects	• NPA • MOWT	• Implementation of infrastructure corridors based on Expressway or SGR implementation	• Implementation of infrastructure corridors based on Expressway or SGR implementation	• Implementation of infrastructure corridors based on Expressway or SGR implementation

C.8 Pillar 8: Governance

Pillar 8 : Governance **Sub Pillar 8.1:** External Relations Sector	**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**

Pillar 8 : Governance **Sub Pillar 8.2:** Public Administration Sectors		**MDA's**	**NDP 3 - 2025**	**NDP 4 - 2030**	**NDP 5,6 - 2040**
Subjects	**Activities**				
8.1.1. Justice & Human Rights. 8.1.2. Rule of Law. 8.1.3. Governmental Services. 8.1.4. L. Government Services.	Data Bases Management	MPS MOLG	Build Data base	Build Data base	Build Data base
	Sector Plans & Policies	MPS MOLG	New Governance Improvement Plan (G.I.P)	Update G.I.P	Update G.I.P
	Sector Development Projects	MPS MOLG	Improve Governance International Rating		
	Physical Planning System Development.	See Sub Pillar 9.3			