NATIONAL SPATIAL DEVELOPMENT FRAMEWORK (NSDF)

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MINISTER
AGRICULTURE, LAND REFORM AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

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I, Angela Thoko Didiza, the Minister of Agriculture Land Reform and Rural Development gives notice in terms of section 13(1) of the SPLUMA of the approval of the National Spatial Development Framework by Cabinet on the 23 March 2022 in terms of section 13(5) of the SPLUMA.

The approved National Spatial Development Framework (NSDF) can be accessed on the Departmental website through the following address: http://www.dalrrd.gov.za.

(Signed)

MRS A T DIDIZA (MP)
Minister: Agriculture, Land Reform and Rural Development

DATE: 19/01/2023

NATIONAL SPATIAL DEVELOPMENT FRAMEWORK

March 2022

Agriculture, Land Reform and Rural Development
Planning, Monitoring and Evaluation

2030 NDP

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* *Editorial note*: GenN 1581 in *GG* 47979 of 1 February 2023 replaced by GenN 1594 in *GG* 47999 of 1 February 2023.

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This National Spatial Development Framework, as adopted by Cabinet on the 23rd of March 2022, is the first of its kind to be compiled in South Africa. Prepared in accordance with the provisions of the Spatial Planning and Land Use Management Act, 2013, this was done in a highly consultative and collaborative way.

The invaluable contributions, inputs and guidance from officials from national sector departments, provincial officials tasked with planning, development, human settlements and cooperative governance, municipal officials, government agencies and associations, professional bodies, Non-Governmental Organisations, technical experts in a wide range of fields, and members of the public, are hereby gratefully acknowledged.

Abbreviations and Acronyms

AIR	Arid-Innovation Region
BEPP	Built Environment Performance Plan
CBA	Critical Biodiversity Area
CBO	Community-Based Organisation
CEF	Capital Expenditure Framework
CIB	Central Innovation Belt
CoGTA	Departments of Cooperative Governance and Traditional Affairs
CSIR	Council for Scientific and Industrial Research
CSP	Cities Support Programme
DAFF	Department of Agriculture, Forestry and Fisheries (former)
DALRRD	Department of Agriculture, Land Reform and Rural Development
DEA	Department of Environmental Affairs (former)
DEFF	Department of Environment, Forestry and Fisheries (former)
DFFE	Department of Forestry, Fisheries and the Environment
DHS	Department of Human Settlements
DMRE	Department of Mineral Resources and Energy
DoE	Department of Energy (former)
DORA	Division of Revenue Act
DoT	Department of Transport
DPME	Department of Planning, Monitoring and Evaluation
DRDLR	Department of Rural Development and Land Reform (former)
DWS	Department of Water and Sanitation
ESA	Ecological Support Area
GVA	Gross Value Added
HDA	Housing Development Agency
HSMSP	Human Settlements Master Spatial Plan
ICT	Information and Communication Technologies
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IGRFA	Intergovernmental Relations Framework Act, 2005
IGR	Intergovernmental Relations
IPAP	Industrial Policy Action Plan
IPF	Industrial Policy Framework
ITMP	Integrated Transport Master Plan
IUDF	Integrated Urban Development Framework
LUMS	Land Use Management System
M&E	Monitoring and Evaluation
MEC	Member of the Executive Council
MFMA	Municipal Finance Management Act, 2003
MIIF	Municipal Infrastructure Investment Framework
MinMec	Ministers' and MECs' Forum
MPRDA	Mineral and Petroleum Resources Development Act, 2002
MSA	Municipal Systems Act, 2000
MSDF	Municipal Spatial Development Framework
MSP	Master Spatial Plan
MTSF	Medium Term Strategic Framework
NATMAP	National Transport Master Plan 2050
NDoT	National Department of Transport

NDP	National Development Plan 2030
NGO	Non-Governmental Organisation
NGP	New Growth Path
NIP	National Infrastructure Plan 2050
NPAES	National Protected Areas Expansion Strategy
NPC	National Planning Commission
NPO	Non-Profit Organisation
NRRA	National Resource Risk Area
NSAA	National Spatial Action Area
NSDF	National Spatial Development Framework
NSDP	National Spatial Development Perspective
NSTETR	National Spatial Transformation and Economic Transition Region
NUSTETR	National Urban Spatial Transformation and Economic Transition Region
NT	National Treasury
NTP	National Transport Plan
PFMA	Public Finance Management Act, 1999
PICC	Presidential Infrastructure Coordination Committee
PGDS	Provincial Growth and Development Strategy
PGM	Platinum Group Metals
PHSHDAs	Priority Human Settlements and Housing Development Areas
PLTF	Provincial Land Transport Framework
PRASA	Passenger Rail Agency of South Africa
PSDF	Provincial Spatial Development Framework
RDP	Reconstruction and Development Programme
RSDF	Regional Spatial Development Framework
SACN	South African Cities Network
SADC	Southern African Development Community
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency SOC Ltd
SANParks	South African National Parks
SDF	Spatial Development Framework
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEIAS	Socio-Economic Impact Assessment System
SEZ	Special Economic Zone
SIP	Strategic Infrastructure Project
SKA	Square Kilometre Array
SPLUMA	Spatial Planning and Land-Use Management Act, 2013
SOE	State-Owned Enterprise
StepSA	Spatial and Temporal Evidence Platform for SA
SWSA	Strategic Water Source Area
TOD	Transit-Oriented Development
TWG	Technical Working Group

Glossary of Terms

Apartheid

A political system and its associated set of laws and policies focused on the social, economic and spatial separation of different ethnic and racial groups. Spatially, Apartheid involved the physical separation of 'the four racial groups', according to the Population Registration Act of 1950, into so-called 'Group Areas' in accordance with the Group Areas Act of 1950. At the macro, national level, a system of ethnically-based 'Bantustans' for Black South Africans was also established.

Bantustan

Areas reserved for African occupation under the Apartheid government. Approximately13% of the total area of South Africa was divided into ten such Bantustans, which were given some degree of self-rule, but subject to the wishes and needs of the Apartheid government. While these areas were reincorporated into South Africa at the dawn of democracy in 1994, they still suffer the consequences of long-term neglect, isolation and poverty.

Biodiversity

The variability among living organisms from all sources, including, terrestrial, marine and other aquatic ecosystems, and the ecological complexes of which they are part. It also includes diversity within species, between species, and of ecosystems.

Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs)

These are natural areas of critical importance for ecological sustainability and should be kept in their natural, or at least semi-natural state. The management objective of CBAs is for identified areas to be maintained in a natural or near-natural state, with no further loss of habitat. Degraded areas should be rehabilitated. Only low-impact, biodiversity, and sensitive land uses are appropriate. Areas identified as ESAs should be kept in at least a 'semi-natural condition', ie with their basic ecological functioning still intact.

City

A human settlement characterised by (1) large and generally diverse communities of people living at high residential densities, (2) a wide range of economic sectors and employment opportunities, and (3) high-intensity business and commercial areas.

Climate Change Adaptation

The process of adjustment to actual or expected climate change and its effects.

Climate Change Mitigation

The use of new technologies and renewable energies with the aim of (1) making older equipment more energy-efficient, and/or (2) changing management practices or consumer behaviour to reduce the emission of greenhouse gasses.

Concentration

The act/process of drawing/bringing people and/or activities closer together, or the outcome of such acts/processes ie (1) a higher density of people, and/or (2) a higher intensity and mix of activities in a specific area or place. Generally, such concentration supports the development and sustenance of 'agglomeration economies'. This can take the form of 'urbanisation economies' (where cost decreases as the total output of an urban area increases) or 'localisation economies' (where costs decrease as firms in a specific industry increase output).

Decentralisation

The flow of people and economic activities from an urban centre or node to outlying (suburban and/or peri-urban) areas or nodes.

Densification

The process of increasing the number of people living in a specific area or place, to ensure that (1) better use is made of movement infrastructure, services, ICT networks, and amenities by a greater number of people, and (2) the need for spatial expansion of existing settlements, grids, networks and services is reduced.

Development Corridor

An integrated linear network of dense infrastructure, economic activity and residential development built on and along a major road and/or railway line that (1) bind(s) it together and (2) act(s) as *(a)* form-giving and structuring spine(s). Development corridors typically fulfil a variety of multiple, complex and interrelated functions, such as:

(1) the movement of people and freight; (2) retail and trade; (3) the flow of information; (4) the provision of basic services, such as water and gas; and (5) tourism. Supportive functions may also be located in corridors, eg logistics. Development corridors generally include both a human settlement and economic component, ie (1) higher-density, transit-oriented mixed-use residential development, and (2) industrial, retail, entertainment and office development adjacent to, or along, the main transport routes.

Diversification

The process of introducing and/or allowing a greater mix of land-uses in an area, to: (1) boost local people-to-people service economies; (2) stimulate co-production of knowledge, innovation and jobs; (3) reduce the need for motorised travel, and shorten travel distances; (4) bring more vibrancy and life to an area; (5) enhance social interaction and cohesion; and (6) make better use of land.

Ecological Footprint

A measure of the load' imposed by a given population on natural systems. The bigger the footprint, the greater the impact.

Ecological Infrastructure

Ecological infrastructure refers to naturally functioning ecosystems that generate or deliver valuable services to people, eg water catchments, wetlands, riparian zones, coastal dunes, kelp beds and/or spawning grounds. Ecological infrastructure consists of a network of interconnected structural elements in the landscape and seascape.

Ecological Infrastructure Network

Refers to and emphasises the interconnected ecological infrastructure as a single concept in the national space.

Economic Sectors

A description of (1) the type/kind of economic activities in a country or region, or (2) the kinds/types of activities in which the population of a country or region are active/employed. The following five categories/sectors of economic activity are generally used in such descriptions: (1) the 'primary sector', which includes agriculture, mining and other natural resource-based industries; (2) the 'secondary sector', which entails manufacturing, engineering and construction; (3) the 'tertiary sector', meaning service industries; (4) the 'quaternary sector', which refers to intellectual activities involving education and research; and (5) the 'quinary sector', which refers to high-level decision-making in government and industry. [†] In some instances, including this NSDF, the last two sectors are included in the definition of the tertiary sector.

Ecosystem

The dynamic and complex interplay of animal, plant, and micro-organism communities and their non-living environment (soil, water, climate and atmosphere) as a functional unit.

Ecosystem Services

The beneficial services that nature provides to people. Ecosystem services are typically grouped into four broad categories: (1) 'provisioning', including the production of food and water; (2) 'regulating', including the control of climate and disease; (3) 'supporting', including nutrient cycles and oxygen production; and (4) 'cultural', including spiritual and recreational benefits.

Evidence Mapping

A structured process of seeking, ordering, and making sense of relevant published and unpublished research, ie 'evidence', to inform the preparation and review of policy and legislation.

[†] From: http://www.businessdictionary.com/definition/economic-sector.html.

Food Security

A condition of having reliable access to a sufficient quantity of affordable and nutritious food through locally-grown produce and/or imports. Food security exists when people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

Human Settlement

A place where people live, work, study, relax and play. A settlement can range in size from (1) a small number of dwellings grouped together, to (2) a large city or groups/conglomerations of cities tied together through dense transport and communication networks.

Infrastructure

The basic equipment, utilities, productive enterprises, installations, and services essential for the development, operation, growth, sustenance and continued viability of human settlements and economic activities. Infrastructure includes items such as: (1) roads, railway lines and stations, airports, and harbours; (2) utility lines and related structures for the provision of water, sanitation, electricity and drainage services; and (3) information and communications technology grids/networks. A distinction is often made between (1) 'engineering infrastructure', such as roads, electricity, sewerage and water services; and (2) 'social infrastructure', which includes facilities at which social services, such as health, education, community, welfare support, citizen registration, and cultural facilities are offered/provided.

Land Use Pattern

A general description of how (1) land is used in a specific geographic area, or (2) one or more types of land use is/are distributed across a specific geographic area. In the context of the NSDF, the national land-use pattern is a high-level description of how the (1) population, (2) settlements, (3) economic activities, and (4) natural areas are distributed and systemically related across and within the country as a whole.

Land Reform

The process of correcting the historical imbalances in the ownership of, and access to land. It entails three types of intervention by the State: (1) 'land restitution', meaning the redress of wrongs committed during the Colonial and Apartheid Eras; (2) 'land redistribution', meaning the provision of land for residential and economic purposes to those who do not have the means to access land; and (3) 'tenure reform', meaning the provision of security of tenure to those who do not have it due to historical or other reasons.

National Development Paradigm

The overarching set of ideas and beliefs and its associated legal and policy framework, setting out how (1) a country should be developed, (2) its economic relations should be structured, (3) the benefits of its economic system should be shared, and (4) its natural resources should be used and managed.

National Protected Areas Expansion Strategy (2016)

This is a strategy with the goal of achieving cost-effective protected area expansion for improved (1) ecosystem representation, (2) ecological sustainability and (3) resilience to climate change. As such, it (1) sets protected area targets, (2) maps priority areas for protected area expansion, and (3) makes recommendations on mechanisms for achieving these objectives.

National Social and Economic Interactions

The dense series of social and economic activities that take place in a country.

National Spatial Development Framework

A national spatial planning instrument with a long-term horizon that (1) is mandated by the Spatial Planning and Land Use Management Act, 2013 (SPLUMA), (2) has to be

aligned with the National Development Plan (NDP), and (3) is adopted by Cabinet as official national spatial development policy for implementation throughout the country. As such, it provides: (1) an overarching spatial development framework including a set of principle-driven spatial investment and development directives for all three spheres and sectors of government, meaning 'where, when, what type, and how much to invest and spend throughout the country'; and (2) a set of strategic spatial areas of national importance from an ecological, social, economic and/or ICT or movement infrastructure perspective to be focused on and targeted by government and the private sector in the pursuit of strategic national development objectives and/or the prevention or mitigation of national crises.

National Spatial Development Logic

The approach to, and the way in which national space is used and managed in pursuit of the objectives of the prevailing 'national development paradigm'.

National Spatial Development Pattern

The outcomes of the 'national spatial development logic' of a country in national space. As such, it entails (1) questions related to where, how, and for whom settlements are built, and (2) aspects related to land-tenure and land-use mix, density, intensity and distribution in settlements.

Natural Resource Foundation

The natural resources of a country, consisting of both (1) ecosystem services, and (2) sensitive and important ecological systems. These resources need to be defined, mapped and protected, preferably by law, and their utilisation carefully managed for the benefit of the ecological system and the sustenance of future generations.

National Ecological and Biodiversity Management Areas

A spatial planning category defined for the purpose of the NSDF. It consists of all **Critical Biodiversity Areas** and **Strategic Water Source Areas**.

Node

Nodes are concentrations/clusters of mixed land-uses. Ideally, such nodes should include high-density residential land-uses and public transport and inter-modal transport facilities. In accordance with national legislation and international protocols, nodal development must also adhere to and advance the principle of 'universal access', which refers to the conscious act of ensuring that all spaces and facilities are accessible to all people at all times, irrespective of their age, gender or disability.

Polycentric System

A functionally integrated system of settlements/nodes of varying size that co-exist and collaborate in mutually beneficial ways, and in doing so, enhance the resilience of the system and its constituent parts. The system allows the provision of a series of economic, social and other services by harnessing, strengthening and optimising (1) the unique qualities of the settlements/nodes in the system, and (2) the connections between them.

Protected Area

An area of special natural, ecological, architectural or historical interest that is protected by law. The protected areas referred to in this NSDF are those areas that are officially classified as such in terms of the National Environmental Management: Protected Areas Act (Act 57 of 2003).

Region

A distinguishable geographic area that does not necessarily correspond with administrative boundaries, which may exist at **supra-national** or sub-national scale, and (1) which is home to distinct topographical, economic, ecological, social, cultural, linguistic and/or historical features, attributes, characteristics or traditions, (2) whose inhabitants share similar ideological views, positions, concerns, or aspirations, and/or (3)

which is systemically bound together by regular social interactions and/or economic transactions, that are, in turn, enabled, facilitated and enhanced by road, rail, harbour, port and ICT infrastructure and networks. Regions are in many cases governed by formal structures, and their social, economic, cultural and linguistic ties and connections strengthened by formal and informal economic, social and cultural structures, bodies and associations.

Resilience

The capacity of a system (human or ecological) to respond to a disturbance by (1) resisting damage, and (2) recovering rapidly.

Rural Area

Generally regarded as areas outside cities and towns. Economic activities in these areas (1) are in most cases intrinsically tied to the use and/or beneficiation of natural resources, and (2) typically consist of agriculture, fishing, agro-processing, forestry, nature conservation, eco-tourism and/or mining. In South Africa, there are rural areas that are densely populated, but without (1) the distinct and diverse nodal areas of dense economic activity, or (2) the wide range of supporting, enabling and life-enhancing amenities typically associated with urban areas. These rural areas are a remnant of colonial and Apartheid spatial planning and the creation of the Bantustans.

Rural Development

The process of improving the quality of life and economic well-being of people living in a rural area by planned interventions in (1) the ownership and use of land in the area, (2) the provision, maintenance and upgrading of transport and communication infrastructure, both in the area, and between the area and other rural and urban areas it is systemically connected to, (3) the type and intensity of economic activities in the area, (4) the quantity and quality of social, education, welfare and safety and security services in the area, and (5) the 'presence' and capacity of the State as institution in the area.

Rural Edge

A line that is used to delineate a systemically integrated area/region that has distinct rural qualities, often related to natural resources and unique ecosystems, that need to be protected from 'intruding uses' that may disrupt or destroy these qualities and/or systems. Typically, the delineation of such an edge would be accompanied by (1) a description of the kinds of activities that are permitted within the area/region, and (2) the procedures to apply for uses that are not specified as such. The line may (1) be hard and statutory, meaning it has 'binding legal power' in terms of a/the municipality's land use management system, or (2) be seen as 'soft' or 'fuzzy', meaning that it is not seen as a hard, impenetrable line, but is considered when planning for, or assessing proposals for land-use change and/or land development within the delineated area.

Ruralisation

The process by which: (1) people choose to remain in rural areas because there are viable economic opportunities, move back to towns and villages in rural areas from urban areas, and/or build/renovate houses in these areas as 'homes' for their current needs, or with a view to retirement; and (2) the State plans for the development of rural areas in a systemic and holistic way as economically viable, ecologically-significant, and productive quality living spaces, as opposed to colonial and Apartheid times in which the little investment that was made in these areas was focused on advancing White economic interests in urban areas, and/or the lives and life chances of White people living in rural towns.

Settlement (also known as 'Human Settlement')

A settlement refers to a place where people live, work, study, play and relax. A settlement can range in size from a small number of dwellings grouped together, to a large city or groups/conglomerations of cities tied together through dense transport and communication networks.

Socio-Economic Impact Assessment System (SEIAS)

A recently introduced government instrument that seeks to enhance the process of formulating policies, Acts and regulations by ensuring (1) alignment of such interventions with national priorities, (2) mitigation of risks, (3) anticipation of unintended consequences, and (4) minimisation of costs and maximisation of benefits.

Space Economy

The spatial manifestations and outcomes of the economic interactions and transactions that (1) are generated in a geographic space, (2) take place in that space, and/or (3) flow through that space. The size, nature, scale and scope of the space economy of a place/area is related to (1) its locational, spatial, ecological, economic, social, institutional, infrastructural, mineral, soils and topographical attributes, culture, and history, (2) its level of connectedness to, and relations with other places/areas, and (3) the attributes and space economies of those places it is connected to, or transacts with.

Spatial Planning

The process of making strategic decisions as to: (1) how and for what purpose public, communal and privately-owned land in an area (ie a precinct, town, province, country or continent) is to be used and developed in an ecologically responsible, socially acceptable, and financially viable way; (2) how the land portions in the area are to be connected to each other through transport and communication infrastructure, and provided with basic service infrastructure (water, electricity and sanitation) and social services (education, health, safety and security and welfare); and (3) how the area (precinct, town, province, country or continent) is to be systemically connected to other such areas through transport and communication networks.

Spatial Transformation

The carefully and collaboratively planned and well-managed process of (1) locating infrastructure, (2) providing social services, and (3) allowing, placing and incentivising economic activities in settlements in such a way that the segregated spatial patterns inherited from colonial and Apartheid times are broken down, and the inefficiencies, injustices and inequalities in access to economic and other opportunities resulting from these past patterns are corrected.

Strategic Water Source Areas

Strategic Water Source Areas (SWSAs) can be described as 'water factories' that support growth and development needs that are often a long distance away from these areas. SWSAs contribute significantly to the overall surface and ground water supply of the country. SWSAs were identified and mapped by the Water Research Commission in 2015. Only 13% of the total extent of SWSAs was formally protected in 2017 (Nel et al, 2017).

Stressed Catchments

'Water stress' occurs when the amount of water used exceeds 10% of renewable resources. Water stress depends on a range of factors and is not simply a shortfall in water availability in relation to the amount of water required. Water deficits are not necessarily experienced in the same way in a Water Management Area, nor at all times, nor in the same place over time. In some cases, the deficits do not imply that consumptive use exceeds the available water, but that the allowances made for the implementation of the ecological component of the reserve cannot be fully met at present levels of use. Stressed catchments are also impacted upon by 'water demand/requirement', which refers specifically to the 'beneficial, effective and efficient use of water', which can be improved through, for example, a reduction in water loss.

Supra-National

The term refers to: (1) 'regions', organisations and structures that are created 'above the nation state' by two or more countries, eg the African Union (AU) and the Southern

African Development Community (SADC), to attend to matters of mutual concern and/or that lie outside the control/reach of a single country; and/or (2) agreements, protocols, policies, plans and investment frameworks prepared for these bigger supra-national entities.

Sustainable Development

Development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The definition of sustainable development usually includes social, economic, institutional, natural resource, and ecological dimensions/components. Development is only sustainable if the ability of natural systems to provide natural resources and ecosystem services is sustained.

Theory of Change

A story/narrative of how things, settings, institutions or situations can and will be changed through a well-planned and sequenced set of actions and interventions to bring about a desired goal, situation or state of affairs.

Town

A place (1) where people, economic activities and social services are geographically concentrated in a distinct and identifiable area, (2) that has a legally enshrined form of local/municipal government.

Township

This term has two meanings in the South African context. Firstly, it is a colloquial name given to residential townships which were established during the Colonial and Apartheid Eras for temporary occupation by Black South Africans on the outskirts of towns and cities, and where only the most basic of amenities and infrastructure were provided. During colonial times, these townships were called 'locations', and sometimes still are, albeit increasingly less so. Secondly, it is the legal name given to new human settlements and extensions to existing settlements in planning legislation, eg 'Sunnyside Extension 3', dating back to the first Town Planning Ordinances passed in the early 1900s, and also appearing in the more recent Spatial Planning and Land Use Management Act (2013) (SPLUMA).

Transit-Oriented Development (TOD)

A planned intervention that promotes higher density and mixed-use land development close to significant transit routes that has been developed in accordance with the principles of **Universal Design**. TODs aim to (1) make the best use of land located along such routes, (2) increase ridership/use of public transport on the routes, and (3) promote sustainable urban development.

Urban Area

Urban areas are spaces/areas characterised by: (1) large and often diverse communities, generally living at high residential densities; (2) a broad mix of employment opportunities, many of them related to the sale, maintenance and repair of goods, and the provision of personal, financial and social services to those who live in the area; and (3) nodes and precincts with high-intensity retail, business, entertainment, education and government-related facilities and activities, and high-density residential land-uses.

Urban Development

The process of improving the quality of life and economic well-being of people living in an urban area by planned interventions in: (1) the ownership, access to, and use of land in the area; (2) the provision, maintenance and upgrading of transport and communication infrastructure, both in the area, and between the area and other urban and rural areas it is systemically connected to; (3) the type and intensity of economic activities in the area; (4) the quantity and quality of social, education, welfare and safety and security services in the area; and (5) the 'presence' and capacity of the State as an institution in the area.

Urban Edge

A line that is used as a border to distinguish between (1) an area/region that is regarded as part of a city or town, and (2) the surrounding natural or rural area. Its primary purpose is to 'contain the urban' by not allowing urban development and/or providing municipal services outside/beyond the line. As in the case of a 'rural edge', the line may (1) be hard and statutory, meaning it has 'binding legal power' in terms of a/the municipality's land use management system, or (2) be seen as 'soft' or 'fuzzy', meaning that it is not seen as a hard, impenetrable line, but is considered when planning for, or assessing proposals for land use change and/or land development within the area.

Urban Region

This term refers to a geographically large and growing, and functionally integrated built-up area that has the same characteristics as an **Urban Area**.

Urbanisation

The process of migration of people from rural to urban areas, leading to an ever-growing percentage of a country's population being born in its urban *vis-à-vis* its rural areas.

Universal Access

The removal of cultural, physical, social and other barriers that prevent people with disabilities from safely entering, using or benefiting from the various systems of society that are available to other citizens and residents. The absence of accessibility, or the denial of access, is the loss of opportunities to take part in the community on an equal basis with others.

Universal Design

Universal design is the design of products, environments, programmes and services to be safely usable by all persons to the greatest extent possible without the need for adaptation or specialised design. Assistive devices and technologies for particular groups of persons with disabilities where these are needed must also respond to the principles of universal design. Universal design is, therefore, the most important tool to achieve **Universal Access**.

Water Scarce Regions

This construct refers to: (1) the 'climate capability' of a region, which is a function of the moisture supply, climate constraints, and physiological capacity of a region; and (2) the impact of climatic factors on the capability to grow an agricultural crop in a region within a growing season. For the purposes of the NSDF, areas described as 'Water Scarce Regions' fall within the 'low to low-moderate' climate capability ranges.

Executive Summary

This *National Spatial Development Framework (NSDF),* the first of its kind, seeks to make a bold and decisive contribution to bringing about the peaceful, prosperous and truly transformed South Africa, as articulated in the *Freedom Charter, the Reconstruction and Development Programme and the National Development Plan.* It does so in full recognition of:

- The *stranglehold* that the unjust *national spatial development paradigms, logics* and *patterns* of the past have placed on our many attempts at breaking the back of poverty, unemployment and inequality;
- The valuable, and often *hard lessons* we have learnt over the last twenty-seven years in our pursuit of national reconstruction, inclusive economic growth and spatial transformation; and
- The *necessity* for decisive, collaborative and targeted *State action in national space,* to drive our country towards *the shared, inclusive and sustainable future* we desire and require.

In accordance with this *transformative agenda,* and guided by the Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA), the NSDF consists of *seven interrelated parts:*

- **Part One** (1) provides an *overview of the background to,* need for, and role of the NSDF, (2) locates it within the context of the National Development Plan (NDP), and (3) sets out the NSDF's *theory of change* to move the country from where we are, to the South Africa we want and need;
- **Part Two** provides an overview of the *process* that was followed in the compilation of the NSDF, including (1) the data that was gathered and processed, (2) the work-sessions that were held, and (3) the consultations and engagements that were undertaken;
- **Part Three** provides a *high-level overview of a series of significant national spatial development dynamics, challenges and opportunities* that impact upon and shape both (1) the national development landscape, and (2) our ability to realise our national development goals;
- **Part Four** (1) sets out the *national spatial development vision* of a shared and just South Africa, (2) specifies the *'shifts'* that must be made in the *national spatial development logic* based on the objectives and directives of the NDP and the SPLUMA principles, to enable a radical, transformative and decisive change in our national spatial development pattern, (3) lists the six *national spatial development levers* to give spatial expression to the national spatial development vision, and support the shifts that need to be made in accordance with the new national spatial development logic, (4) provides the five *national spatial outcomes* required to *achieve* the *national development objectives,* as outlined in the NDP, and *realise* the *national spatial development vision* and desired *national spatial development pattern,* as outlined in the NSDF, and (5) gives an indication as to what life would be like in our country by 2050 if the vision is pursued, the necessary shifts are made, and the six *national spatial development levers* are appropriately and effectively used;
- **Part Five** puts forward (1) the *NSDF* Main-Frame, the five *NSDF Sub-Frames* and related *national spatial investment guidance*, and (2) a series of *National Spatial Action Areas,* which will inform, direct and guide infrastructure investment and development spending decisions by government and the private sector, and enable us to achieve the *desired national spatial development pattern* for South Africa in 2050, and in doing so, realise our national development objectives, as set out in the NDP;
- **Part Six** deals with the *implementation* of the NSDF and outlines (1) the approach, (2) role-players involved, and (3) actions required to achieve our *national spatial development vision;* and
- **Part Seven** provides a *summary of and conclusion* to the NSDF.

While the NSDF recognises the challenges involved in bringing about the necessary changes in planning, budgeting and implementation in and between the three spheres of government, it is also very clear as to the *necessity of focused and sustained cooperative intergovernmental planning, budgeting and implementation* in realising our desired and shared future.

Part One
Introduction

1.1 Setting the scene

In his first State of the Nation Address in 2018, President Cyril Ramaphosa, in recognition of the exemplary struggle, conquest and spirit of our former President Nelson Mandela, stated:

'In celebrating the centenary of Nelson Mandela, we are not merely honouring the past, we are building the future. We are continuing the long walk he began, to build a society in which all may be free, in which all may be equal before the law and in which all may share in the wealth of our land and have a better life. We are building a country where a person's prospects are determined by their own initiative and hard work, and not by the colour of their skin, place of birth, gender, language or income of their parents'. [‡]

Transitioning a country like South Africa with its dreadful history and stubbornly persistent legacy of the past into a better place for all, is no easy task, as was clearly articulated in the 2017-report by the *High-Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change,* where it states the following:

'Colonialism and Apartheid have left South Africa with a deeply divided and inequitable distribution of people and economic activity. This spatial inequality traps disadvantaged communities in poverty and underdevelopment, creates inefficient cities and robs poor, rural people of secure livelihoods. The Panel makes recommendations that seek to break this damaging spatial pattern that is built on past laws, which marginalised the Black majority to the outskirts of the cities and to Bantustans, to preserve key assets, economic opportunities and the wealth of the country for the White minority. The legacy of spatial inequality appears intractable despite the National Development Plan and the Spatial Planning and Land Use Management's (SPLUMA's) focus on it. This issue needs an integrated solution that goes beyond the mandate of any one government department or specific level of government'. [§]

The importance of *space* and *land,* and their densely interwoven connections to economic development and livelihoods, was also recognised in the *Reconstruction and Development Programme (RDP)* in 1994, where it was argued that:

'No political democracy can survive and flourish if the mass of our people remains in poverty, without land, without tangible prospects for a better life. Attacking poverty and deprivation must therefore be the first priority of a democratic government'. [**]

1.2 The National Transformation Logic & Space

Encapsulated in the three preceding powerful statements is a *'national transformation logic'* with a distinct *spatial dimension* (see **Figure 1**), which can be expressed as follows:

Our new, post-Apartheid **'national development paradigm'**, which includes (1) a set of progressive national economic, social, ecological and spatial development objectives, values and ideals, and (2) an enabling and supporting national legal and policy framework, seeks to bring about a new, post-Apartheid future. Realising this desired future, however, requires a new, post-Apartheid **'national spatial development logic'** and **'national spatial development vision'**.

Our current **'national spatial development pattern'** is an outcome of the **'national development paradigms'** and the **'national spatial development logics and visions'** of (1) the Colonial and Apartheid Eras, as well as (2) the first nearly three decades of democracy. This **'national spatial development pattern'** is an enabler, driver and facilitator of a multitude of **'national social, economic and ecological interactions'**. These interactions, in turn, (1) shape the **'national spatial development pattern'**, either reinforcing and sustaining it, or changing it, and (2) confirm, or question the objectives, values, ideals, laws and policies that constitute the new, post-Apartheid **'national development paradigm'**, and prompt its amendment, as and where required.

[‡] State of the Nation Address by the President of the Republic of South Africa, Mr Cyril Ramaphosa, 16 February 2018, Parliament.

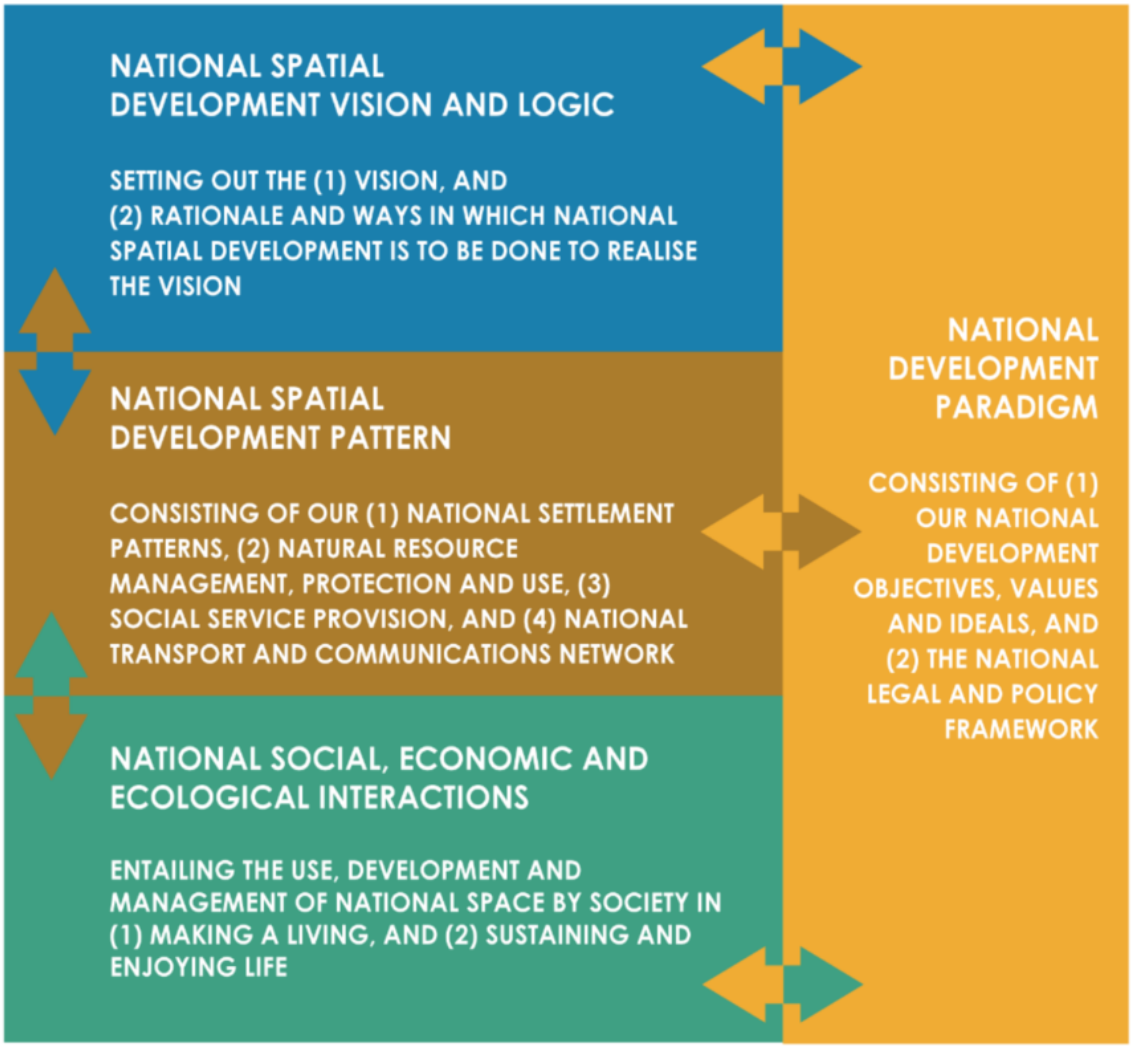
[§] Report of the High-Level Panel on the Assessment of Key Legislation and the Acceleration of Fundamental Change. (2017). Page 32.

[**] As quoted in The National Development Plan (2012). Page 24.

Moving from our current, undesirable **'national spatial development pattern'** to the desired new, post-Apartheid **'national spatial development pattern'**, requires well-planned, targeted and sustainable interventions in all four the components of the **'national transformation logic'**, in accordance with a credible and robust **'theory of change'**, which the NSDF puts forward.

Before getting to the NSDF's **theory of change** and the targeted, coordinated and integrated *(1) infrastructure investment* and *(2) social and economic development expenditure* it requires, it is important to get a sense of (1) what *has* been done, and (2) what we need to *start doing, stop doing, do more of, and do less of.* This is done in the following section (**section 1.3**), which in turn is followed by a section (**section 1.4.3**) in which the NSDF's theory of change is set out.

Figure 1:
The National Transformation Logic



1.3 Taking Stock: National Spatial Development and the need for a NSDF

In this section, the following are considered: (1) where we come from and what needs to be undone; (2) what we have done and accomplished; and (3) what more, or what else still needs to be done and undone. This assessment is used to decide what changes we need to make, and the way in which the NSDF intends doing so.

1.3.1 Where do we come from and what needs to be done and undone?

In engaging the issues of 'space', 'spatial planning' and 'land', it is important to recognise the *spatial objectives and logic* of the *Colonial* and *Apartheid Eras,* and their different, but equally divisive, underlying *social, economic and ecological logics.*

(a) The Colonial Era

In terms of the **colonial national development paradigm**, all economic activities (hunting, farming and mining) were done on land annexed by force, or through unfair 'deals' that benefitted the colonial empire. The resulting **national spatial development logic** consisted of railroads connecting mines and large farming clusters in the interior to harbours at the coast. From here, (1) commodities were exported, and (2) imports (primarily manufactured goods) were received and carried by rail into the interior. This logic laid the foundation for the country's infrastructure development pattern.

With the discovery of gold and diamonds, largely unplanned settlements sprang up. In accordance with the prevailing **colonial development paradigm**, these settlements were developed with only the benefit of the colonists in mind. The indigenous population was (1) forcefully removed from their land to make place for the colonial economic activities and related settlements, and (2) economically coerced through unfair tax systems and loss of land, to provide labour to White-owned farms, mines and industries to make a living.

Land-use and land development decisions were also made only with the benefit of the colonists in mind. Spatial planning legislation and policy was *ad hoc* and responded to the immediate needs for regulation, order, and colonial exploitation and accumulation. In the rapidly-emerging towns and cities, the resulting **national spatial development pattern** consisted of *racially-separated settlements* in which White people enjoyed (1) a privileged status, and (2) by and large, decent housing conditions. Black people were denied choice, dignity and respect, and (1) treated as objects to support production by providing their labour at very low wages, and (2) forced into so-called *'locations'* on the outskirts of these settlements.

(b) The Apartheid Era

The coming to power of the National Party in 1948, and the subsequent introduction of the racist **national development ideology/paradigm** of *'Apartheid'* brought about a new, meticulously conceived and constructed, all-encompassing set of laws and policies focused on systematic racial segregation, exclusion and suppression. These laws and policies (1) built on, (2) reinforced the exclusionary and exploitative **national spatial development logic**, and (3) entrenched and deepened the unjust and fragmented **national spatial development pattern** of the Colonial Era. However, *in contrast to* (1) the *earlier settler logic,* 'a new country' was now being crafted for the exclusive use, advancement and enjoyment of a White 'South African' minority, and (2) the *earlier Colonial Era,* indigenous Africans were now not only viewed as a source of cheap labour, but also an increasingly vocal and numerically superior threat to 'the new country' and its White minority. To overcome this threat and 'develop' the country in accordance with, and in support of the ideology of Apartheid, (1) the *use* of land and (2) the *spatial relation* of land-uses to each other, became of the utmost importance. The resulting 'survive, suppress and rule' Apartheid **national spatial development logic** entailed the location of 'labour' as far away as possible from the country's economic hubs, but still within 'economically-feasible exploitation distance', ie as far away as the cost of rudimentary mass transport would permit. This hideous pursuit at one point even entailed the Apartheid planners considering '... *locating the next Soweto in the Karoo and transporting 'labour' on a daily base by high-speed train to the then Pretoria-Witwatersrand-Vaal Triangle industrial and mining core*' [††]. At the same time, increasingly draconic measures were introduced to destroy any Black economic endeavour that could compete with White mining, farming, manufacturing and retail activities and interests. Again, land was paramount in this pursuit, with (1) areas

[††] Personal communication. Mr Bokkie van der Hoven. 12 May 1995.

reserved for Black South Africans being placed ever-further away ('on the periphery') of areas of opportunity ('the core'), (2) large-scale forced removals of Black South Africans from where they were trying to access the opportunities offered by urban South Africa, or trying to set up businesses in these areas, and (3) areas set aside for Black occupation denied of any amenity or opportunity for economic activity.

In contrast to the earlier Colonial Era, **national spatial development planning** became the key means and driver for the creation and deepening of the segregated and unequal Apartheid State and country: *It was a country solely planned and built for the enjoyment and advancement of a small White minority.* The Black majority, in turn, were either (1) temporarily housed in *'locations/townships',* or (2) forced to stay in ethically-based Bantustans/homelands, and their movement to and from these rural areas to urban areas forcefully regulated through deeply oppressive measures, including the infamous *'passbook system'.* Apartheid spatial planning and land allocation was not, as in colonial times, a reactive response to land-related crises as and when they arose; it was a *core component and driver* of the creation and organisation of the racist **national spatial development logic** of the Apartheid State.

Over time, White South Africans who owned land in towns and cities in Apartheid South Africa, gained 'property', ie *'land with a monetary value and with the potential to increase such value'.* This occurred through (1) the carefully planned parcelling, surveying and registration of such land, (2) the servicing of this land with service, social, transport and communication infrastructure, and (3) the protection of the value and amenity of such 'properties' and the suburbs in which they were located through town planning legislation and building regulations. From this base, largely created and sustained by public investment, White South Africans were able to access opportunities in towns and cities, attend well-resourced, good schools, and enter the job market in these, or similar such places. In doing so, reproducing and entrenching the **unjust social, economic, ecological and spatial development pattern** of wealth and privilege developed under the Apartheid system.

Black South Africans, in turn, who were able to get access to land, or retain access to land, were at best left with land that had little value to start with and quickly dwindled in value, due to (1) the spatial location of such land, and (2) the low spatial quality and lack of complimentary land-uses, amenities and economic activities in surrounding areas. It was a case of planned, orchestrated and forcefully implemented *'negative, destructive spatial planning'.* It actively disempowered Black South Africans, making them worse off, and destroyed the attributes and potential for any increase in property value that might have accrued to them.

This is the dreadful **national spatial development pattern** that democratic South Africa inherited in 1994 – the outcome of more than 300 years of unequal spatial investment and planning. It was, however, also *the spatial platform* (1) *on which*, and (2) *from which* the country's space economy and society had to be transformed and a new country built.

1.3.2 What have we accomplished and what more needs to be done?

Over the past twenty-eight years, government has introduced several Acts, policies and programmes aimed at redressing the spatial legacies of colonial and Apartheid rule. In most cases, these were directed at the municipal level, with the newly created municipalities expected to pit their limited *'local'* planning and financial powers against the spatial legacy of *centrally-orchestrated and implemented* Apartheid spatial planning and land-use allocation. In most instances, the impacts were minimal. Old patterns were often reinforced, as new developments (such as RDP housing) were built in peripheral areas on *'readily available and cheap land'.* At the same time, the privileged spaces of Apartheid largely remained 'as is', with the racial integration that took place, focused on former White suburbs and new middle-to-higher income (1) *extensions* to larger towns and cities, and/or (2) *gated/barricaded enclaves* primarily located in secondary cities and metropolitan areas.

In the national sphere, the *Reconstruction and Development Programme Office* explored the idea of a *National Spatial Development Framework (1*995-1996). Resistance from national sector departments and provincial governments who did not want their infrastructure investment and development spending proposals interfered with, resulted in this initiative not progressing beyond a draft set of 'proposed investment maps'. Following on from this, the Office of the Deputy President (and later the Presidency) introduced the *National Spatial Development Perspective (NSDP)* (1999-2007), which sought to rationalise, harmonise and integrate the investment and spending proposals of all government sectors and spheres. The NSDP, in turn, was criticised (1) as being *'neo-liberal, urban-focused and anti-rural'*, and (2) of *'taking a too narrow a view of development potential'.* The NSDP was never used as envisaged and fell out of favour.

Not much happened in the national planning space after the demise of the NSDP until (1) the publication of the *Green Paper on National Strategic Planning* in 2009, (2) the appointment of the first *National Planning Commission (NPC)* in 2010, and (3) the subsequent preparation and adoption of the *2030-National Development Plan (NDP)* in 2012, to which the discussion now turns.

(a) The 2030-National Development Plan (NDP)

The NDP, is an *all-encompassing comprehensive national development plan* that is grounded in:

- The ideals of the Freedom Charter;
- The tenets of the RDP; and
- The principles and directives of our Constitution.

The NDP (1) speaks to the multitude of *needs and challenges* facing the country, their underlying causes, and the factors inhibiting change, and (2) provides *detailed guidance* on responding to all of these. To address these challenges, which are all located in the *inherited colonial and Apartheid space economy,* the NDP puts forward a series of proposals resting on *'six pillars'*, ie:

- Uniting all South Africans around a common programme to achieve prosperity and equity;
- Promoting active citizenry to strengthen development, democracy and accountability;
- Bringing about faster economic growth, higher investment and greater labour absorption;
- Focusing on the key capabilities of people and the State;
- Building a capable, and developmental State; and
- Encouraging strong leadership throughout society to work together to solve problems.

The NDP recognises that *overcoming our triple challenges of inequality, unemployment, and poverty lies in transforming our physical space*. In doing so, it recognises that tackling the triple challenges means:

- Fundamentally *disrupting and undoing* inherited and persisting (1) colonial and Apartheid economic, social and spatial investment logics, and (2) their resultant spatial forms and land-use patterns, which in turn impede inclusive economic growth and spatial transformation;
- Making radical changes *in* and *to* space; and
- Introducing a *national inclusionary economic growth and spatial transformation-focused investment and spending logic* that all spheres and sectors of government

can (1) *buy into*, (2) *jointly and cooperatively drive forward*, and (3) be *individually and collectively assessed on* in terms of the outcomes of their actions.

The NDP furthermore recognises that while transformation-focused action is required throughout our country, and in every sector and sphere of government, it is only through *radical and decisive intervention* that is *coherently and cooperatively planned for, and managed at the national scale,* that we stand a chance at (1) disrupting the Apartheid spatial logic and space economy, and (2) overcoming the inequities, isolation, fragmentation and costly and disruptive travel distances brought about by colonialism and Apartheid.

It is especially Chapter 8 of the NDP – *'Transforming Human Settlement and the National Space Economy'* – that makes specific reference to the need for a *'national spatial development framework'.* Such a framework, it holds, must optimise, integrate and coordinate the energies and economic impacts of the strategic interventions in national space. Such *'national spatial framing',* in turn, is recognised as of crucial importance, given the significance of *space* and *access to land* in (1) bringing about *transformation at scale*, and (2) ensuring that *people and places benefit* from this intervention. In addition to this, the Chapter also includes a *'proposed national schema for spatial targeting'* (see **Figure 2** below) and (1) sets out a series of directives for such a framework, and (2) proposes that it be provided for in national legislation.

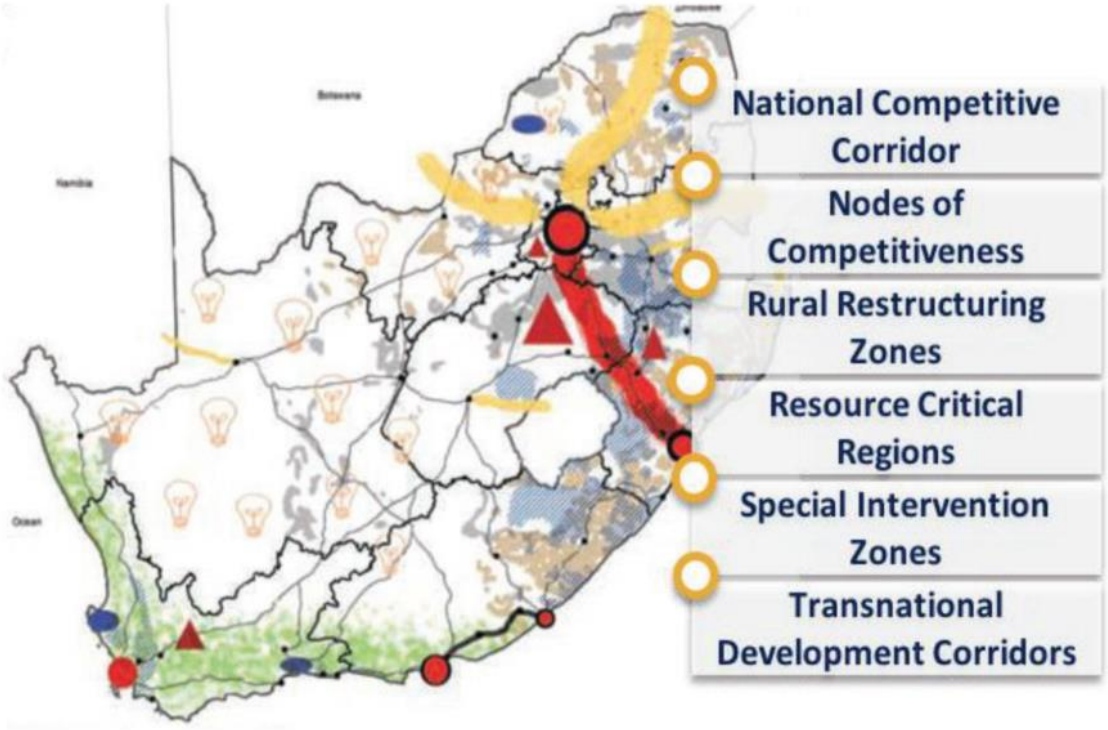
Following on from this guidance, government prepared spatial and land-related policy and legislation that speaks to and gives further expression to (especially) Chapter 8 of the NDP. These instruments, which cover (1) settlement planning, (2) place-making, and (3) land-use and land-use management, are the *2016-Integrated Urban Development Framework (IUDF)* and the *Spatial Planning and Land Use Management Act, 2013 (SPLUMA).*

(b) The Integrated Urban Development Framework (IUDF) [‡‡]

The IUDF, South Africa's national urban policy, takes as one of its key drivers the NDPs requirement that South Africa should see meaningful and measurable progress in the pursuit of more *functionally integrated, balanced and vibrant settlements.* It builds on and responds to a variety of Chapters in the NDP, but notably so Chapter 8. This is evident in its guiding vision of *'liveable, safe, resource-efficient cities and towns that are socially integrated, economically inclusive and globally competitive, and where residents actively participate in urban life'.*

[‡‡] Summarised from the IUDF, the publication '*South Africa's national urban development policy – the IUDF',* both published by CoGTA and the publication '*Localising the New Urban Agenda: South Africa Discussion Document*' (2018).

Figure 2:
The NDPs National Schema for Spatial Targeting



The IUDF puts forward a 'new *deal'* for South Africa's cities and towns, which it sees as being on a continuum, ranging from the very large metropolitan regions to the smallest towns in rural South Africa. This new deal entails (1) maximising the potential of urban areas, and (2) integrating planning, budgeting and investment in such a way that it improves and enhances urban form and improves the performance of urban areas. The IUDF makes a strong case for:

- Working with and sharing the urban spaces built up during colonial and Apartheid times; and
- 'Retrofitting' our urban spaces to optimise their footprint and produce compact, coordinated and well-connected cities and towns.

The IUDF puts forward *'four strategic goals'* for all urban areas, ie (1) spatial integration, (2) inclusion and access, (3) growth, and (4) governance, and proposes *'nine policy levers'* to achieve these goals. These are:

- Integrated urban planning and management;
- Integrated transport and mobility;
- Integrated and sustainable human settlements;
- Integrated urban infrastructure;
- Efficient land governance and management;
- Inclusive economic development;
- Empowered active communities;
- Effective urban governance; and
- Sustainable finances.

The IUDF furthermore introduces three *'cross-cutting priorities'* that are to be used in the conceptualisation and implementation of the nine policy levers. These are: (1) rural-urban interdependency, (2) urban resilience, and (3) urban safety. While making strong,

guiding statements in the pursuit of shared, inclusive, resilient and liveable urban settlements, the IUDF cautions against a one-size-fits-all approach. Instead, it recognises that South Africa has different types of cities and towns that perform different roles and, as such, have different needs and requirements.

The IUDF has a multi-faceted *implementation plan,* including a set of short-term interventions. These require the active participation of a range of stakeholders, including all three spheres and sectors of government, the private sector, Non-Governmental Organisations (NGOs), Non-Profit Organisations (NPOs) and local community organisations. The IUDF is also being used to prepare South Africa's *'Localisation Framework'* for implementation of the global Urban Agenda – in this way advancing the global pursuit of *SDG Goal 11: 'Make cities and human settlement inclusive, safe, resilient and sustainable'.*

(c) The Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA)

SPLUMA was introduced to *'provide a framework for spatial planning and land use management'* in South Africa. As such, it not only seeks to attend to and rectify the fragmented, unequal and unfair Apartheid planning system inherited from the Apartheid era, but also its consequences in space. As in the case of the IUDF, this means the active pursuit of (1) *spatial transformation* and (2) *social and economic inclusion* to ensure *equal access for all* to the services, amenities and opportunities that *well-planned, well-functioning and well-managed* urban and rural settlements offer. Core in this regard is the introduction of single, uniform spatial planning and land use management systems in municipal areas that include places previously excluded from such systems. Being framework legislation, it seeks to provide *'principles, guidance and norms and standards'* for planning in the provincial and municipal spheres of government. The five *'principles',* which must be adhered to, pursued, and observed in all actions undertaken in terms of the Act, are *'spatial justice, spatial sustainability, efficiency, spatial resilience and good administration'.*

SPLUMA furthermore:

- Mandates the preparation of *'Spatial Development Frameworks'* (SDFs) by all three spheres of government, including the *'National Spatial Development Framework';*
- Provides for the preparation of *'Regional Spatial Development Frameworks';* and
- Distinguishes between (1) *spatial planning* and (2) *land use management,* and establishes a link between the two.

Being located within the Constitutional realm of cooperative governance, these frameworks are not positioned in a hierarchical order, but instead as interdependent planning instruments that require high and sustained levels of intergovernmental collaboration and integration in their preparation, review and implementation.

(d) Summary

Assessing what has been done and accomplished over the last twenty-eight years in terms of the **National Transformation Logic** (**section 1.2** and **Figure 1**), the verdict clearly is that *much has been done:*

With regard to the **national development paradigm**, the (1) Constitution, and (2) Cabinet-adopted NDP provide the foundation, and strategic direction for government to respond to our *inter-related triple challenges* of *inequality, unemployment* and *poverty.* These are supported by a series of (1) enabling acts and policies, (2) solid sector plans and programmes, and (3) strategic infrastructure investment plans, strategies and programmes, which include the New Growth Path, the Industrial Policy Framework (IPF) and associated Industrial Policy Action Plans (IPAPs), the Strategic Infrastructure Projects (SIPs), the Operation Phakia programme, the National Transport Master Plan 2050 (NATMAP 2050), the Priority Human Settlements and Housing Development Areas (PHSHDAs), and the Special Economic Zones (SEZs) programme.

With regard to the **national spatial development logic**, Chapter 8 of the NDP, the IUDF and SPLUMA frame, mandate, allow and guide the changes that need to be made in:

- *Our space economy,* in terms of (1) what we do, and where and why we do it, (2) which resources we use, and how we use them, and (3) who participates in, and benefits and gains from these activities; and
- *Our settlements,* in terms of (1) how, and with what outcomes in mind we plan and invest as a country, (2) how and where we provide which services, and (3) how we sustain these services.

This they do by enabling:

- The *use of spatial development planning to integrate and optimise* all public and private sector infrastructure and investment spending proposals in space, both (1) in *the national interest,* and (2) to the *advantage of local spaces* and those who live, work, study, play and relax in these spaces; and
- The *radical, decisive and sustainable transformation of our settlements* into productive, liveable and resilient places for all, through (1) wise spatial planning and land-use planning, development and management, and (2) the provision of access to land, economic opportunities, and all the other amenities and opportunities that good, quality settlements offer.

However, when considering the **national spatial development pattern**, and the **national social and economic interactions**, and as echoed in numerous government reports, academic papers and the printed and social media, despite these components being in place, ***the stubborn persistence of the colonial and Apartheid spatial development patterns suggests that something is amiss***. While much has been done and achieved in the ambit of legislation and policy, not that much change has been (1) *felt* in the daily lives of people, or (2) *seen* on the ground.

Leading on from the **National Transformation Logic**, as set out in **section 1.2**, it would follow that this *'change-deficit'* could be due to:

- There being a **new national development vision**, as provided by the NDP, but *not* a new and/or broadly accepted **post-Apartheid national spatial development vision**;
- The **enabling and supporting legislation and policy** *not* being adhered to and/or implemented (1) in the way that they are meant to be, including *not* in an integrated, coordinated and targeted way, and/or (2) without a *collective, national focus* on the crucial issues of *'land'* and *'space'*;
- *Not* enough time having passed for the necessary transformatory changes to have been made in terms of the **legal and policy framework**, and/or their effects to be felt in space (notably in the case of the 2013-SPLUMA and the 2016-IUDF); and/or
- The **national spatial development logic** *not* having changed from its earlier colonial and Apartheid versions, and/or its transition to a **post-Apartheid national spatial development logic** not being actively pursued and/or enforced.

Lending from a large evidence base of government reviews, reports, assessments and academic papers, notably the 2017-High-Level Panel Review, the 2018-World Bank Report on South Africa and the 2019-Report by the Presidential Advisory Panel on Land Reform and Agriculture, ***it is argued that all of the above explanations are at play***. At the same time, another possibility is put forward, ie that *while there is agreement as to what we want to move from in terms of **past national spatial development patterns**, there is not clarity and/or agreement as to what we want to move to, and what the **desired post-Apartheid national spatial development pattern** should look like.* Without such spatial clarity and guidance, public investments are made in

accordance with (1) *sector-driven* objectives, targets and outcomes, and/or (2) *place/territorially-based* concerns and challenges, without consideration for *their national transformative impact.*

It is here where the NSDF seeks to intervene and make a difference...

Given the newness of an intervention like the NSDF for our country, international precedent and experience with such national-level planning instruments are briefly engaged before moving onto the NSDF.

1.3.3 International Precedent and Experience

Internationally, *national spatial planning* with typically a *twenty to thirty-year time horizon* has primarily been a feature of:

- *Smaller European countries,* notably the Netherlands and Denmark, and more recently Ireland, Albania, Serbia, Slovenia, Iceland, Estonia, Wales, Scotland, Portugal and Romania;
- *Developmental states in Asia,* notably China, Singapore, Malaysia and South Korea; and
- *African countries* at two different stages, ie (1) shortly after independence, and, in more recent times, (2) before or during a rapid growth phase as in the case of Ghana, Kenya, Uganda, Rwanda, Ethiopia, Namibia, Botswana and Tanzania.

In most cases, such planning is associated with (1) more unitary states where the mandate and role of national planning in such arenas is either not, or less contested, and (2) countries where such planning is viewed in a favourable light, due to its link to national economic planning and growth, *especially the triggering of such growth.* The mood of the time and the ideological home of the national governing party is also important. For example, in times of greater national and/or global support for State involvement in the economy, and/or tighter monetary conditions, such planning has generally been more welcomed. Likewise, the support for spatial planning, and especially national spatial planning, has (1) *ebbed* in accordance with the election of more pro-market, neo-liberal parties, and (2) *risen* with the election of parties that hold a more favourable view of state or developmental intervention in the economy.

The mere existence of such national spatial plans, strategies or frameworks has not necessarily meant that they (1) were implemented, or (2) had the desired impact. In many cases, the notion of one 'super-plan' imposing itself on the mandates of other sectors in the national tier of government and/or in sub-national tiers of government has not been welcomed. Furthermore, given that such instruments often have coordinating, integrating and guiding functions, and do not have their own budgets, they have struggled to secure buy-in and support. In other cases, (1) failure to fund, or (2) deliberately withholding funding from the entity responsible for the preparation and/or implementation of the plan/strategy/framework, for whatever reason, has seen it have little else but a life on paper and/or a website. Finally, the power, status and 'popularity' of the department or entity responsible for the instrument and/or the politician(s) responsible for or involved with it, has played an important role in its acceptance and use.

Where such instruments have worked, this has in most instances been due to:

- The entity preparing it, managing to secure *strong support from the outset* of the preparation process for the instrument both in and outside of government;
- *Political will,* coupled with decisive and capable *State action*;
- A strong and vocal *technical lobby of planners, researchers and academics* supporting it; and/or
- A clear, *tangible need* for it and a prevailing sense amongst the population at large that it could make a meaningful difference in (1) the fortunes of the country, and (2) their lives.

Judging from (1) the sustained active and constructive engagement during the compilation of the Draft NSDF, (2) the largely positive feedback made on the Draft NSDF by a wide range of State and non-State stakeholders during the compulsory sixty-day public commenting period, as prescribed in section 13(4)*(b)* of SPLUMA, and (3) the unwavering support for the framework provided by politicians in all three spheres of government, there clearly is very strong all-round backing for the NSDF. Equally so, there is a high level of buy-in to, and enthusiasm for the NSDF on the side of practising planners, planning academia and the organised planning profession. Coupled with (1) the urgent need for global and national economic recovery, (2) the urge for, and the push from our youth for a new and better future, (3) the long overdue imperative to craft, embrace and rapidly transition towards a low-carbon future, and (4) the global desire to *'build back better'* after the devastation left by the COVID-19 pandemic, the scene is clearly set for the NSDF to make the major transformative and developmental contribution it was conceived, conceptualised and compiled for.

1.4 The NSDF as Tool for National Spatial Development and Transformation

1.4.1 The NSDF's Mandate

In terms of *government policy,* Chapter 8 of the NDP calls for the preparation of a *'national spatial development framework'*. In terms of *legislation,* section 5(3)*(a)* of SPLUMA provides for, and sections 13(1) and (2) of the Act mandate the Minister to, '... *after consultation with other organs of state and with the public, compile and publish a national spatial development framework'* and review it at least once every five years.

1.4.2 The NSDF's Purpose, Focus and Content

Section 13(3) specifies that the NSDF must consider:

- All policies, plans and programmes of public and private bodies that impact on spatial planning, land development and land use management;
- Any matter relevant to the coordination of such policies, plans and programmes that impact on spatial planning, land development and land use management; and
- All representations submitted to the Minister in respect of the framework.

Section 14 sets out the content of the NSDF, and indicates that the framework must:

- Give effect to the development principles and norms and standards set out in the Act;
- Give effect to all relevant national policies, priorities, plans and legislation;
- Coordinate and integrate provincial and municipal SDFs;
- Enhance spatial coordination and land use management activities at national level;
- Indicate desired patterns of land use in the country; and
- Take cognisance of any environmental management instrument adopted by the relevant environmental management authority.

Section 12(1), which also deals with the SDFs of provincial governments and municipalities, specifies that the NSDF must:

- Interpret and represent the spatial development vision of the national sphere of government;
- Be informed by a long-term spatial development vision statement and plan;
- Represent the integration and trade-off of all relevant national sector policies and plans;
- Guide planning and development across all sectors of the national sphere of government;

- Contribute to a coherent, planned approach to spatial development in the three spheres of government;
- Provide clear and accessible information to the public and private sector, and provide direction for investment purposes;
- Include previously disadvantaged areas, areas under traditional leadership/authorities, rural areas, informal settlements, slums and landholdings of State-Owned Enterprises (SOEs) and government agencies, and ensure their inclusion and integration into the spatial, economic, social and environmental objectives of the national sphere of government;
- Address historical spatial imbalances in development;
- Identify the long-term risks of particular spatial patterns of growth and development and the policies and strategies necessary to mitigate those risks;
- Provide direction for strategic developments and infrastructure investment, promote efficient, sustainable and planned investments by all sectors, and indicate priority areas for investment in land development;
- Promote a rational and predictable land development environment to create trust and stimulate investment;
- Give effect to national legislation and policies on mineral resources, and the sustainable utilisation and protection of agricultural resources; and
- Consider, and where necessary, incorporate the outcomes of substantial public engagement in the framework.

Section 12(2)(a) specifies that the three spheres of government must *participate* in the spatial planning processes that impact on each other, so as to ensure that their plans and programmes are coordinated, consistent and in harmony with each other.

Section 12(2)(b) specifies that the NSDF must *guide and inform* the exercise of any discretion of, or any decision taken in terms of the Act, or any other law relating to land use and development of land by the national sphere of government.

Section 12(3) specifies that the NSDF must *contribute to and give spatial expression* to national development policy and plans, as well as integrate and give spatial expression to policies and plans emanating from the various sectors of national government, and may include any *'Regional Spatial Development Framework'*.

Section 12(6) specifies that the NSDF must *outline specific arrangements for prioritising, mobilising, sequencing and implementing* public and private infrastructural and land development investment in the priority spatial structuring areas identified in the framework.

In **summary**, and as indicated in **Figure 3** (below), the NSDF *must,* within the broader 'family' of strategic and sector plans of government:

- Target and direct all infrastructure investment and development spending decisions by *all national sector departments and SOEs*;
- Guide and align plan-preparation, budgeting and implementation *in* and *across the three spheres, and between the sectors of government*;
- Frame, guide and coordinate *provincial, regional and municipal spatial development frameworks*; *and*
- Together with other stakeholders, notably those in the Department of Forestry, Fisheries and the Environment (DFFE) and representatives of coastal provinces and municipalities, (1) clarify the interface of spatial planning with marine planning, and (2) ensure that the NSDF is both informed by, and informs marine spatial planning processes and products.

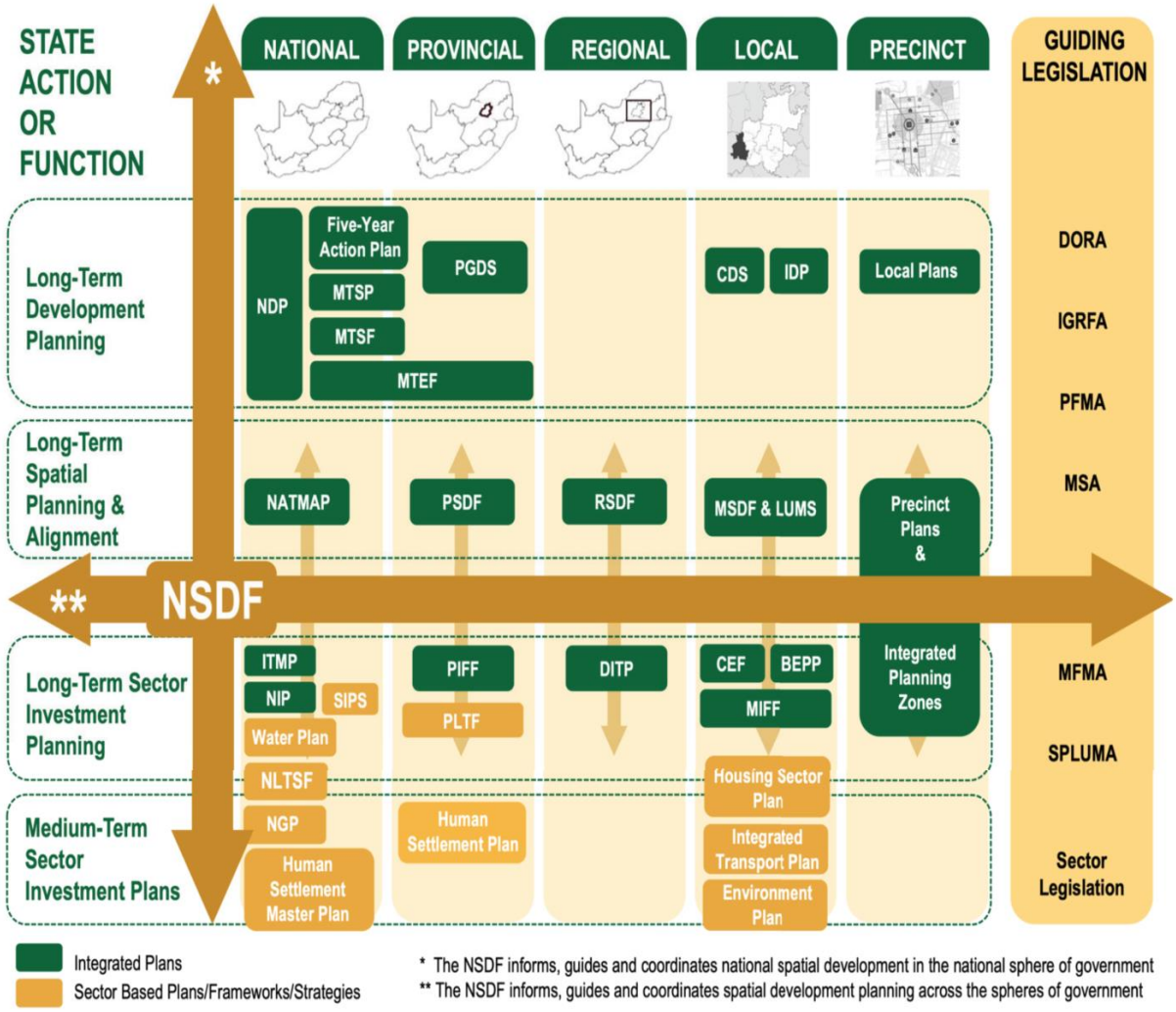
1.4.3 The NSDF's Theory of Change

Based on (1) the **national transformation logic** as set out in **section 1.2**, (2) the gaps and explanations as identified in the stock-taking exercise in **section 1.3**, and (3) the legal requirements regarding the NSDF as set out in **section 1.4.2**, the NSDF's **theory of change** to move our country to the desired post-Apartheid future, is as follows:

- **Step 1:** The existing **national development paradigm**, including the Constitution, the NDP and the existing legal and policy framework, notably SPLUMA and the IUDF, is used to:
    - Articulate a *compelling and persuasive* **post-Apartheid spatial development logic** and identify the *'shifts'* from the old and existing logics that this *new logic* requires; and
    - Craft a *strong and credible* **post-Apartheid national spatial development vision**;
- **Step 2:** The new logic and vision is used together with an analysis of the *current and unfolding 'national spatial development landscape',* to develop a set of *national spatial development levers* and craft a *desired* **post-Apartheid national spatial development pattern**;
- **Step 3:** The **post-Apartheid national spatial development pattern** is used to indicate what actions, interventions and priority actions are required to ensure a transition to this desired pattern;
- **Step 4:** The **post-Apartheid national spatial development pattern** and interventions and priority actions are used to prepare clear *implementation guidance* for realising the desired national spatial transformation; and
- **Step 5:** The spatial development guidance, tasks and actions as set out in the NSDF are implemented, and (1) movement towards the realisation of the desired **post-Apartheid national spatial development** pattern monitored and assessed by a joint intergovernmental structure, and (2) corrective measures taken as and where required.

The outputs of these steps provide the structure for this document, as set out in **section 1.5**.

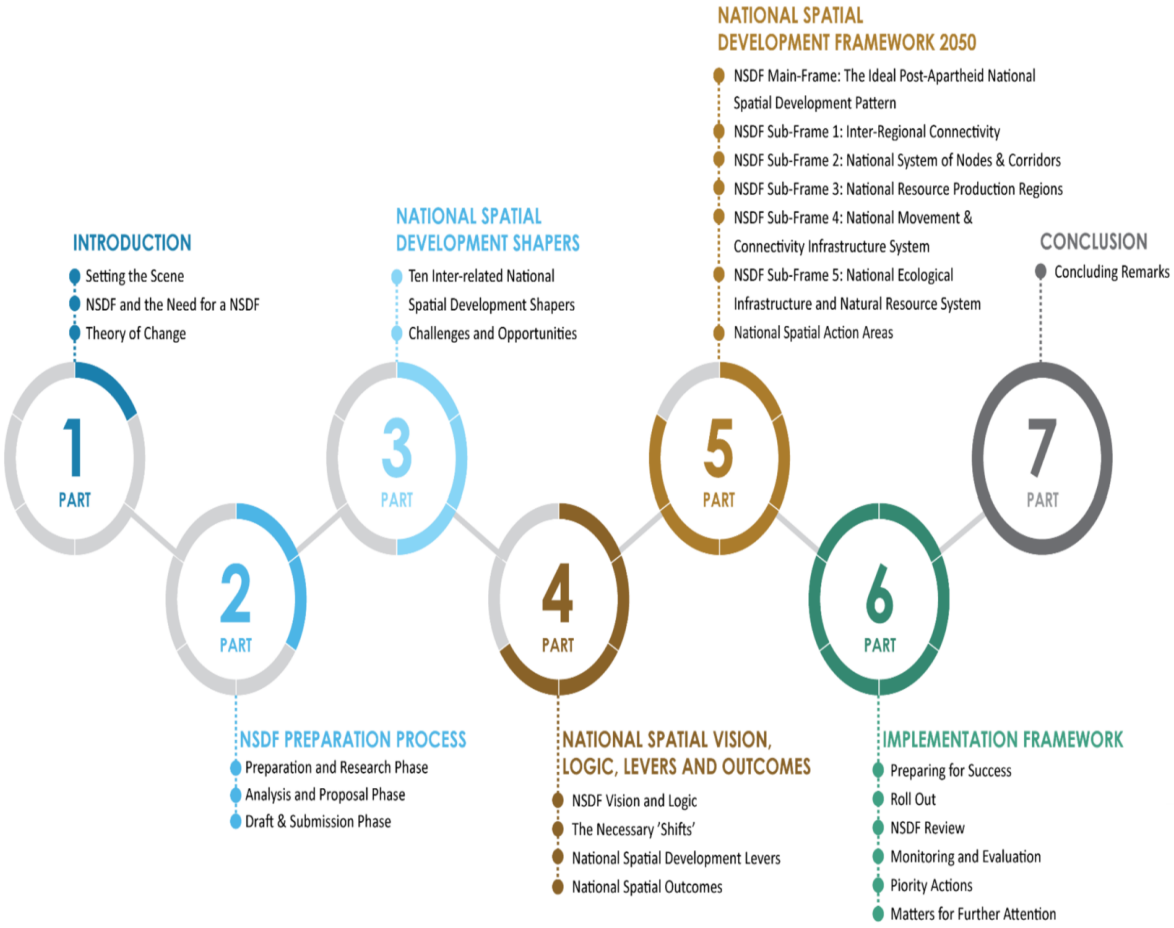
Figure 3:
The Role of the NSDF within the 'Family' of Strategic and Sector Plans of Government



1.5 Document Structure

This document has the following **seven parts:**

Figure 4:
Document Structure

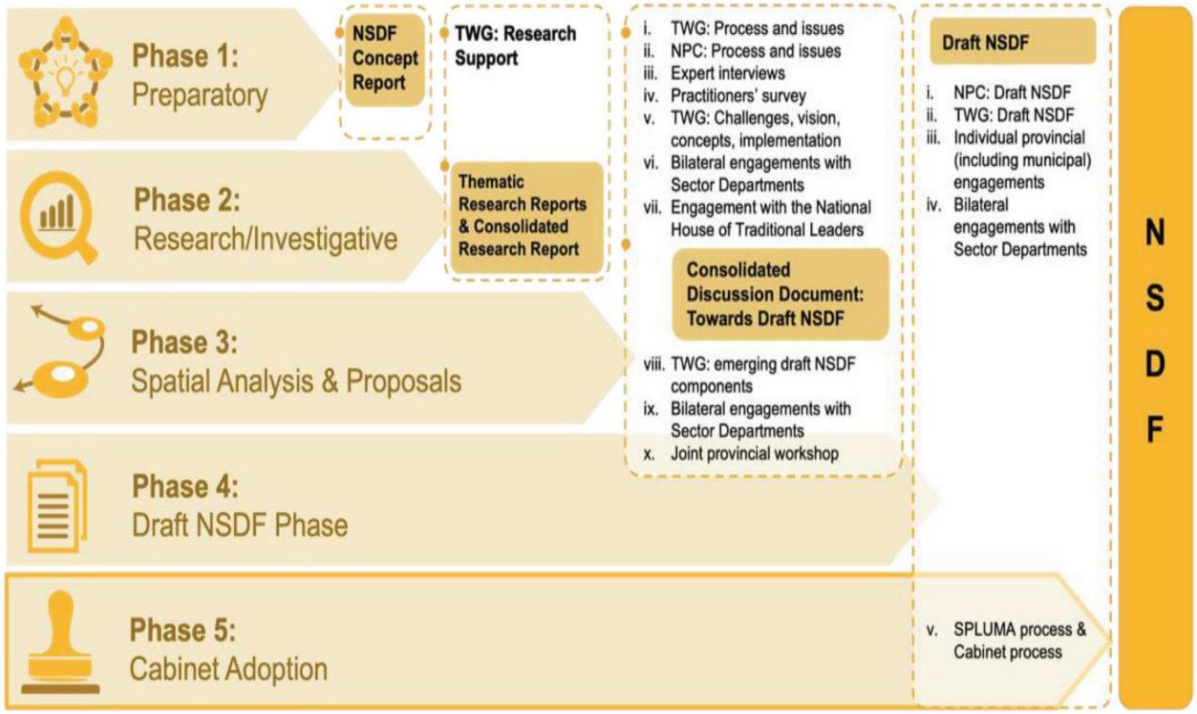


Part Two
The NSDF Preparation Process

2.1 Introduction

The process of preparing the first NSDF for South Africa started in April 2014. The (1) formulation of the Draft NSDF took place during Phases 3 and 4 of the process, and (2) the revision, amendment and finalisation of the 'final' NSDF in Phase 5, as indicated in **Figure 5**.

Figure 5:
The NSDF Preparation Process



2.2 Preparatory Work and Research Phase

The first two phases of the NSDF compilation process started with the preparation of the *'NSDF Concept Document'* by the then Department of Rural Development and Land Reform (DRDLR), which set the parameters for the remainder of the process. This was followed by an intensive process of research into thematic areas that (1) influence, and (2) are influenced by the spatial legacies and dynamics of the South African social, spatial, economic and ecological landscapes. The *Thematic Research Reports* provided the basic diagnostic for the NSDF and focused on:

- Population dynamics, migration and people;
- Human settlements;
- Social infrastructure;
- Natural resources and the environment;
- Movement and transport;
- The national space economy; and
- Unemployment, labour, education and skills development, with an emphasis on rural development, land reform and agriculture.

At the outset of the compilation process, the NSDF Technical Working Group (TWG) was established as a multi-stakeholder forum including representatives from (1) national sector departments, (2) the nine Premiers' Offices and provincial sector departments involved in planning, (3) SOEs, and (4) relevant government agencies and organisations.

2.3 Spatial Analysis and Proposals Phase

The third phase of the process, ie Spatial Analysis and Proposals, was conducted in a series of workstreams, as set out below.

2.3.1 Foundational Work

The focus of this workstream was to (1) establish the most significant global, national and inter-regional spatial development opportunities and challenges, and (2) develop a draft national spatial vision and set of national spatial development levers. Foundational work was also done in with a view to the *Socio-Economic Impact Assessment System (SEIAS)*-process. Engagements in this phase included (1) NSDF Steering Committee meetings, (2) introductory presentations to the NSDF TWG, (3) expert inputs, (4) bilateral meetings with selected sector departments, and (5) an online survey conducted amongst planning professionals.

2.3.2 Preliminary Sharing and Testing

The focus in this workstream was on *sharing and testing* (1) the list of national *opportunities and challenges,* and (2) *the draft proposals* prepared in the Foundational workstream. With this objective in mind, a *'Consolidated Draft Discussion Document'* was compiled. This document was used in *stakeholder discussions* aimed at sourcing *inputs, comments, criticisms, concerns* and *proposals for improvement* from national and provincial government departments, municipalities, SOEs, the NPC, the South African Local Government Association (SALGA), and stakeholder organisations, such as the South African Cities Network (SACN). Several work-sessions were also held with the NSDF TWG and a focused two-day work-session with provincial officials responsible for the preparation and review of Provincial Spatial Development Frameworks (PSDFs).

2.4 Draft NSDF Phase

This phase entailed (1) *the preparation of the 'first Draft NSDF'* based on the outputs of the previous workstreams and the inputs, comments and proposal made during these phases, and (2) *structured engagement on the Draft NSDF,* as provided for in SPLUMA (see **Figure 6**). These engagements included:

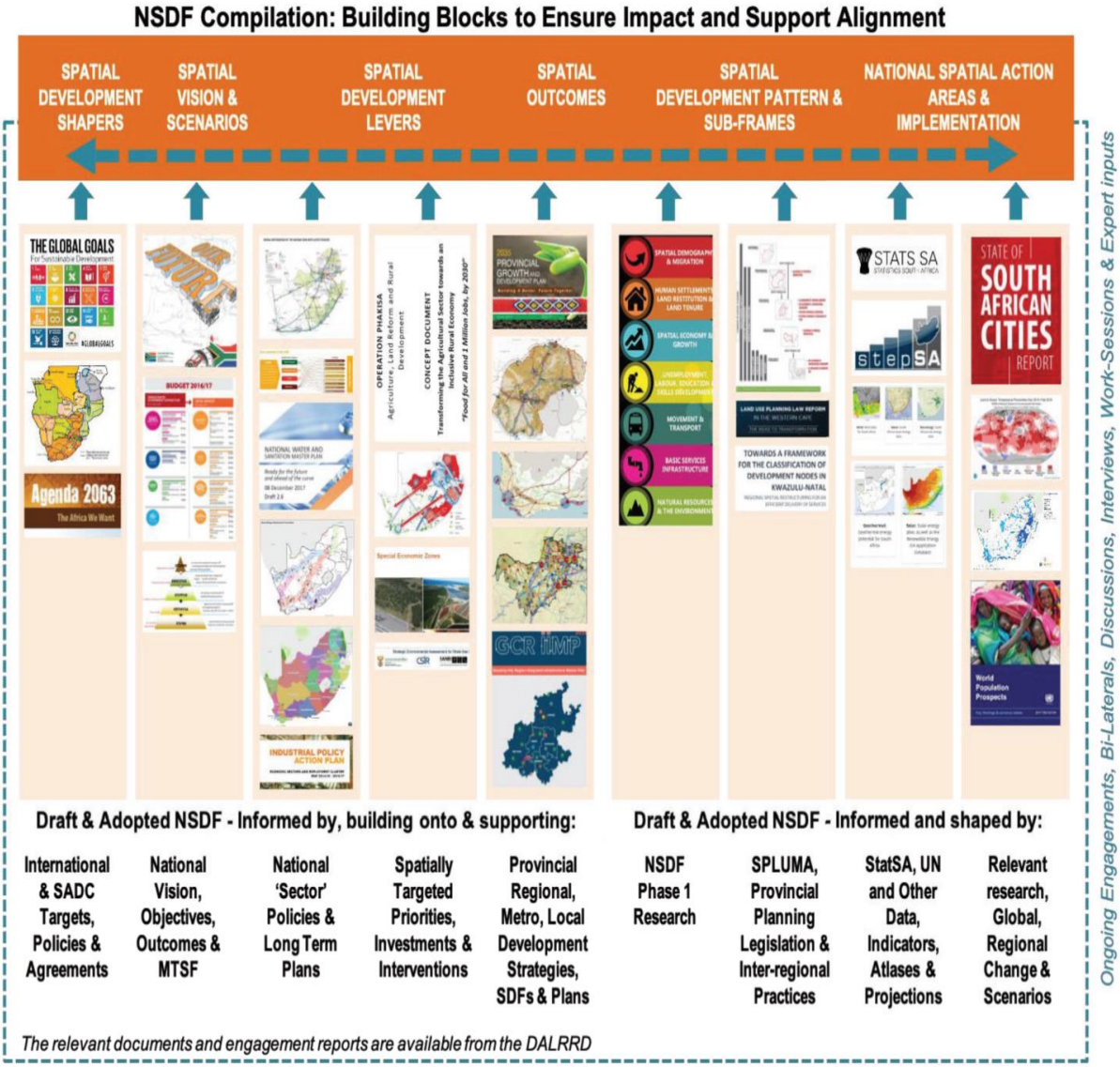
- A presentation to the NPC;
- A presentation to, and work session with the TWG;
- A presentation to the National House of Traditional Leaders;
- Provincial workshops in all nine provinces involving stakeholders from municipalities, provincial departments and the private sector; and
- Bilateral engagements with national sector departments.

The Draft NSDF was revised and amended based on (1) further data-gathering and analyses, and (2) inputs and comments made during the engagement sessions, and written submissions received after the events. The revised Draft NSDF was shared with more than 580 delegates at a national NSDF Indaba and further revisions made based on inputs made during and after the event. In January 2020, it was published for the sixty-day public commenting period, as also referred to in **section 1.3.3** above, and 66 written submissions received from members of the public, private companies, SOEs, academics, NGOs, professional bodies active in the built environment and organs of State. These submissions were, by and large, supportive of the Draft NSDF. In a number of cases, highly constructive proposals for improvement were made. Bilateral meetings were also held with a number of stakeholders and valuable insights gained.

2.5 Finalisation and Cabinet Submission Phase

During this phase, (1) the 'final' NSDF was compiled for Cabinet submission, taking into consideration the comments and inputs made during the previous phases, and (2) the documentation, as required in terms of the SEIAS-process, prepared. This NSDF was subsequently adopted by Cabinet on the 23rd of March 2022.

Figure 6:
NSDF Compilation: Building Blocks to ensure Impact and Support Alignment



Part Three
National Spatial Development Shapers

3.1 Introduction

A wide and diverse range of (1) *national* spatial development realities and (2) *international, national and sub-national* trends, flows and forces impact upon and *shape* both the national development landscape, and our *ability* to realise our national development goals.

Part Three of the NSDF provides some insights into these interrelated *national spatial development dynamics, challenges and opportunities.* It draws on and highlights aspects as raised in and by:

- An extensive diagnostic conducted in the earlier stages of the preparation of the NSDF, and captured in a *'Consolidated Research Report'* (see **section 2.2**);
- Supra-national, national and provincial development plans, policies, frameworks and overviews;
- National discourses, newspaper reports, books and book Chapters, journal and magazine articles, and published and unpublished research reports; and

- Modelled spatial implications of a series of population growth and climate change scenarios.

The NDP objectives, SPLUMA principles and NSDF vision statement were used *in an iterative way as a lens* to (1) 'read' the South African national spatial development and planning landscape, and (2) identify key national spatial development dynamics, challenges and opportunities. From this analysis, nine *'shapers'* of *national spatial settlement and development were* put together. These shapers are discussed in **sections 3.2** to **3.11** below. In each case, the scale and extent of 'the shaper', and its implications for (1) national space, (2) the national space economy, and/or (3) national spatial governance are highlighted, and connections to other shapers highlighted. Interspersed between the nine shapers are a series of thematically-structured *'Info Charts'* under the following themes:

- People and Places;
- Ecologies, Economies and Spaces;
- Institutions and Services; and
- Movements, Connections and Flows.

These charts capture and present in visual form key information pieces and elements, as referred to under the shapers. The section is concluded with a *summary* (see **section 3.12**) of the most significant national spatial development challenges and opportunities extracted from the nine shapers.

3.2 Demographic Shifts, Dividends, Vulnerabilities and Diversity

The South African population is set to grow by at least another 17 million people from the around 58 million people in 2018, to around 75 million by 2050. In addition to a population that will be 30% larger than we currently have, it is anticipated that (1) it will primarily be an *urban-based population,* and (2) at least 30 million of the 75 million South Africans (40%) will very likely be *living below the Minimum Living Level (MLL)*.

In terms of composition, the very youthful South African population of today (28% of the population is below 15 years of age) will by 2050 still be regarded as young, with (1) 25% of the population below 15 years of age, and (2) 31% between 15 and 34 years of age, and in their primary childbearing years. The share of the population that will be '65 years of age and older' will also have experienced significant growth, by 2050 constituting 8% of the population, ie 6 million people, which is nearly double the 3.2 million people that were '65 years of age and older' in 2018. This group will require increasingly more health and frail care and income support from households, communities and the State. This will, of course, open up and create a large number of job opportunities for frail and health care workers, many of which may be created in rural areas, if this is where, as anticipated, most of those above 65 years of age will choose to live.

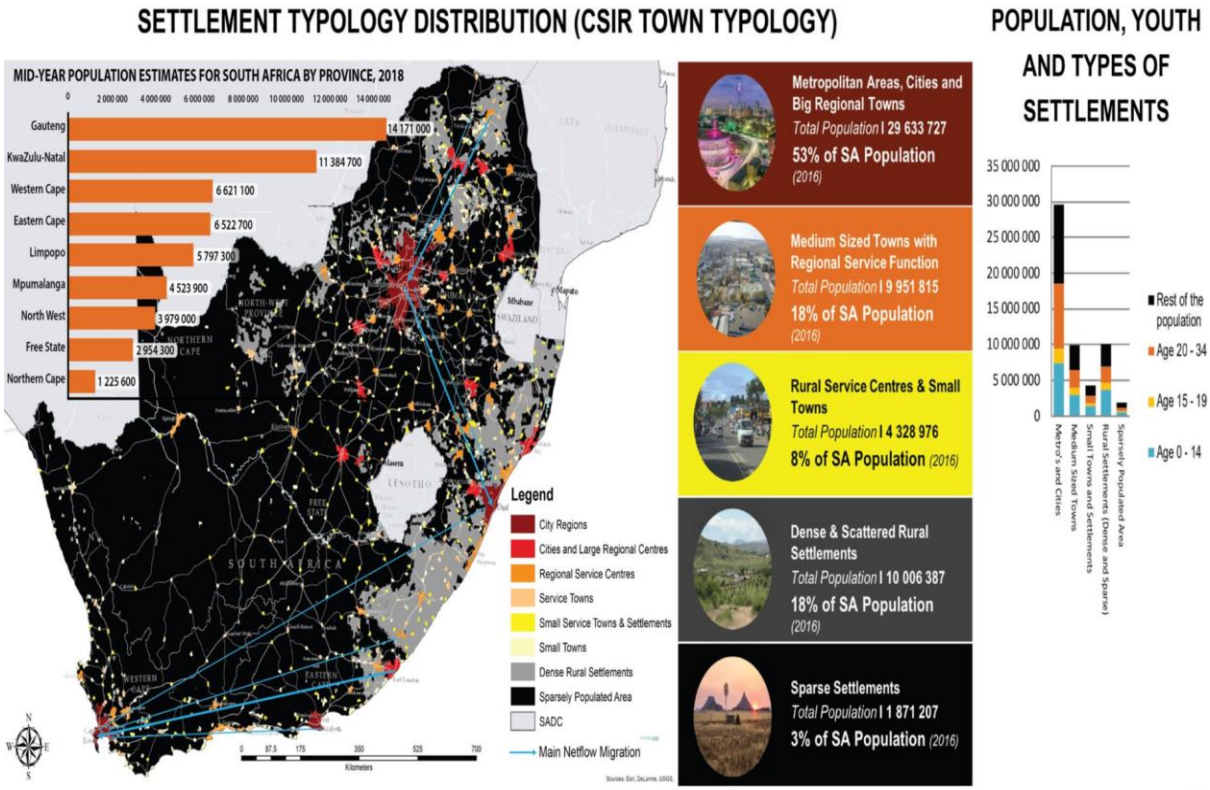
Given that the bulk of the envisaged *youthful population* would be living in urban areas, it will potentially present the country with a *'dynamic-triple-dividend', ie* (1) a large, dynamic, aspirational, creative and innovative economically-active population living at high densities in a few large places, constituting (2) a big, densely connected consumer market for goods and services, and displaying (3) a far more accepting and accommodating approach to difference and diversity, which will be especially important in the huge, high-density urban conurbations of the future. It is especially the higher densities at which our people will be living, coupled with the greater need to co-produce and collaborate in such spaces, that may create and instil a different view of each other *– more accepting and more celebratory of difference, and more mindful of the contribution that different individuals and groups can make to resolving a challenge or problem in an innovative and sustainable way.*

This 'dynamic-triple-dividend' is, however, not a given, and may not materialise, in which case our youth could become a very volatile and destructive force. Should this

youthful population (1) be raised in a caring environment with adequate food, love and attention, (2) be well-educated, and (3) be well-socialised and integrated into society, the 'full' dividend is more likely to materialise. Should the opposite prevail, as is currently the case for large numbers of our youth growing up in deeply impoverished rural areas and townships, *only parts of the dividend,* or none of it at all, will be realised, with severely negative consequences. As for the greater acceptance of difference and diversity, should (1) scarcity and (2) an unwillingness to share the little that is available prevail, this dividend will also not materialise. In such an event, our urban areas could very likely see more of the xenophobia and other forms of hatred of *'those who are seen to be different',* and this will be to the detriment of our cities transitioning into dynamic, safe and prosperous cosmopolitan economic powerhouses.

Merely hoping that the dynamic-triple-dividend will materialise by itself, especially given our historically high levels of poverty and inequality, is not a sensible strategy. To realise the 'full' dividend will require that it be actively pursued, with the State playing a critical role in this regard. Targeted and sustained nutrition programmes, housing and care, and the opening up of access to economic opportunities for youth will need to be seriously attended to, with specific attention being given to the needs of, and challenges faced by young women and youth with disabilities. As such, all government plans will need to be prepared with *an emphasis on youth, diversity and inclusion.* At the same time, those *national spatial development patterns and settlement forms* that will be better at (1) eliciting the dividend and (2) allowing it to flourish will need to be pursued. These include (1) developing urban settlements at higher densities, (2) adhering to and instilling the principles of universal access and design, (3) greater mixing of land-uses, and (4) vastly improving access to the multitude of opportunities that successful, well-connected, dynamic urban areas can offer.

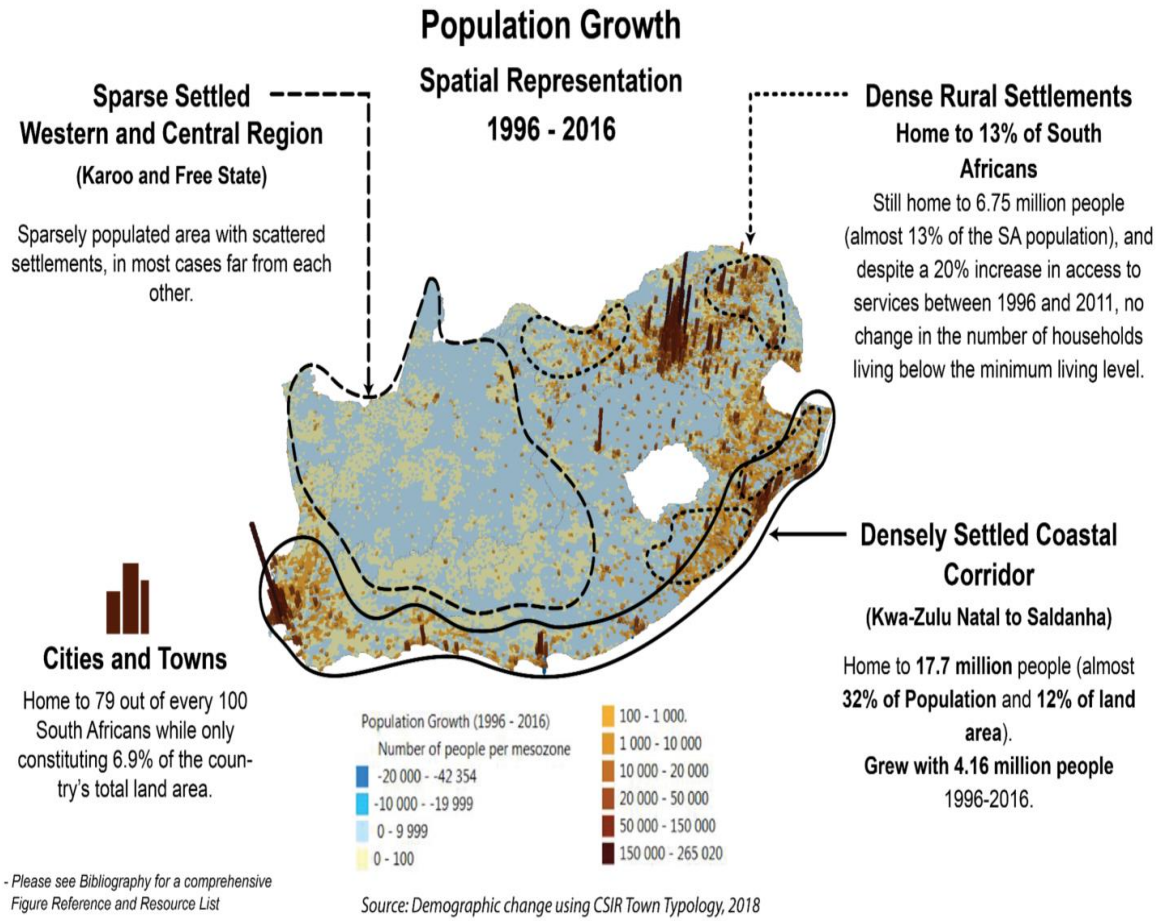
Figure 7:
People and Places – Population and Settlement Dynamics



Source: Population Characteristics and Settlement Dynamics Based on StatsSA, 2011, 2018; Quantec 2011; CSIR Town Typology 2018; Vulnerability and Migration Indicators

- Please see Bibliography for a comprehensive Figure Reference and Resource List

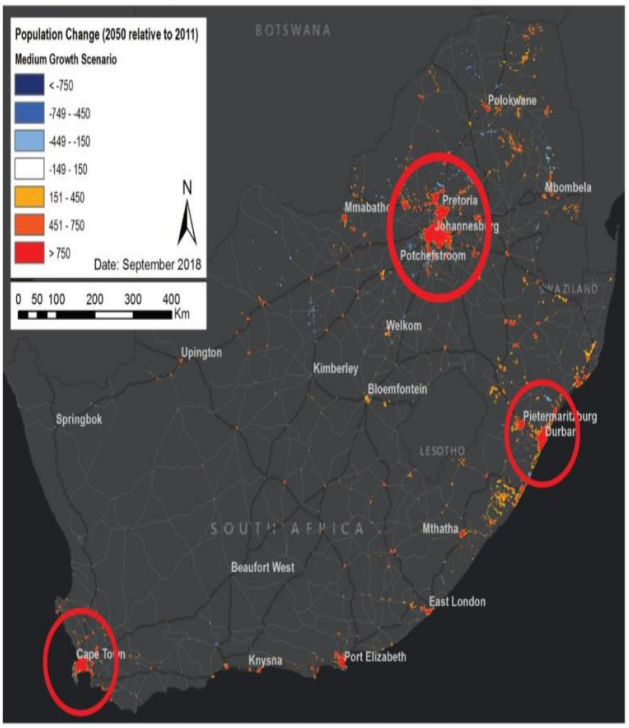
Figure 8:
People and Places – Population Settlement and Growth Dynamics



- Please see Bibliography for a comprehensive Figure Reference and Resource List

Source: Demographic change using CSIR Town Typology, 2018

Figure 9:
People and Places – Demographic Growth Scenarios



Demographic modelling and scenarios developed through CSIR, Green Book-project, 2018, using CSIR Town Typology, 2018, 2008,

- Please see Bibliography for a comprehensive Figure Reference and Resource List

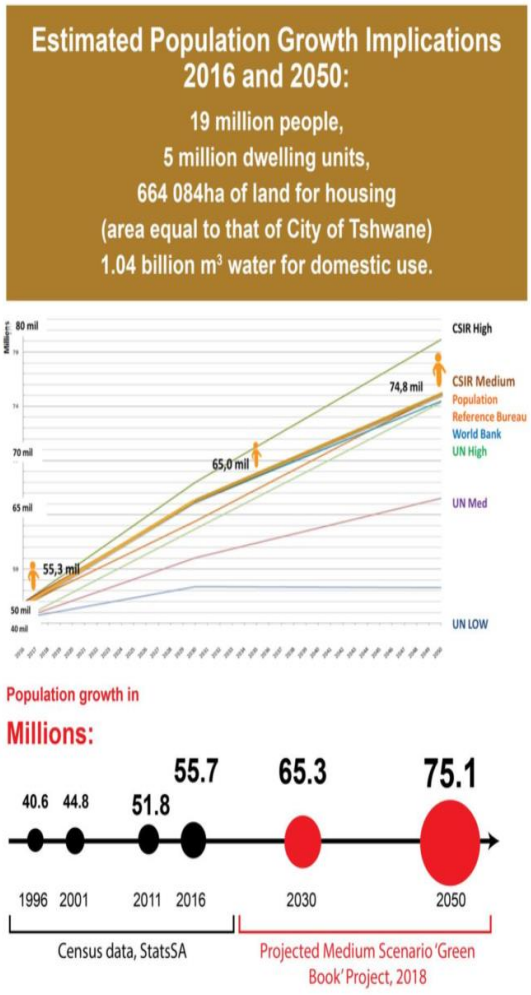
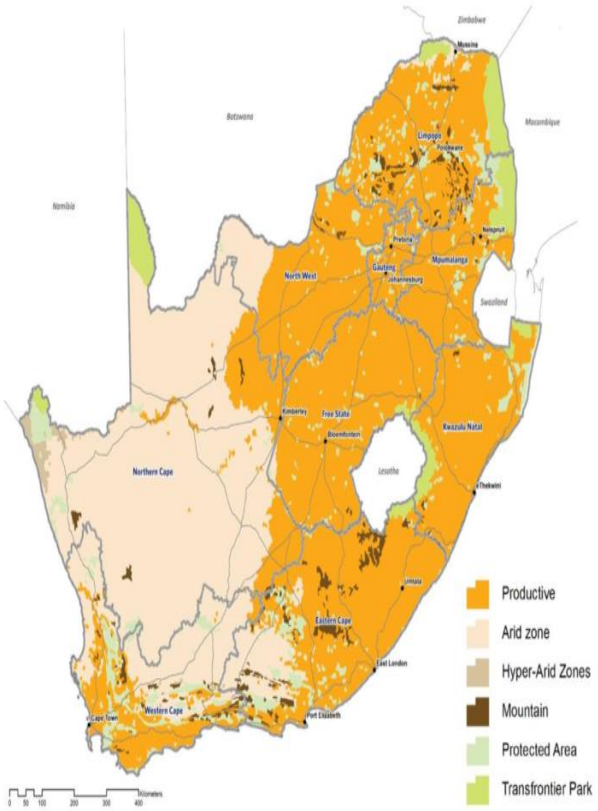


Figure 10:
People and Places – National Land Use

PRODUCTIVE LAND



Natural Resource Foundation	Square Kilometre	% of SA	Population
Stressed catchments	155 508	13%	7 684 600
Strategic water source areas	175 134	14%	15 150 404
High capacity agriculture	30 557	3%	NA

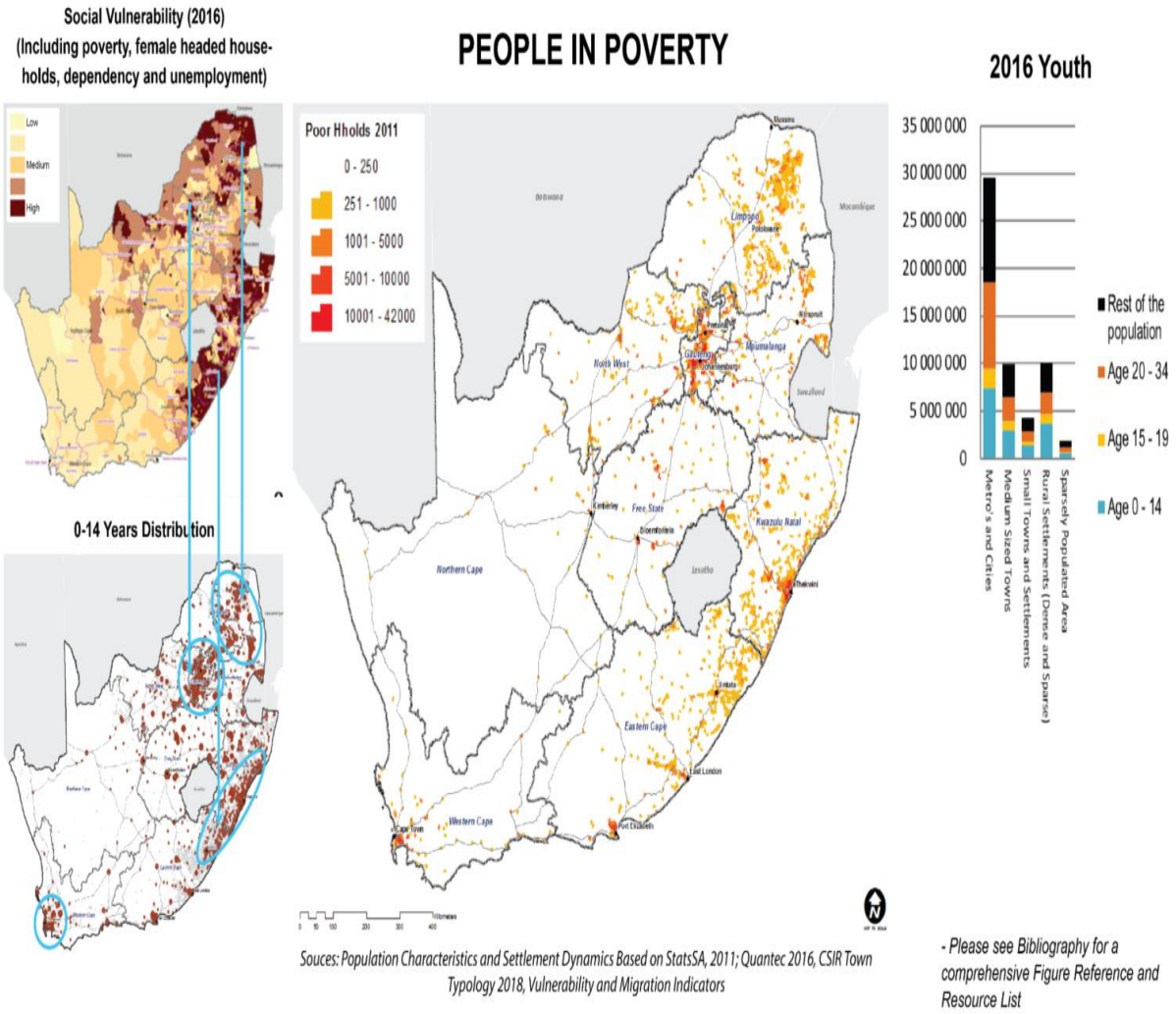
- Please see Bibliography for a comprehensive Figure Reference and Resource List

LAND USE STATISTICS

National Area	Square Kilometre		% of SA	Population 2016	% of SA
Productive use: Urban and Rural Settlement Areas		**552 243**	**45%**	**53 151 450**	**94,3%**
Productive use: Sparsely populated areas				**1 703 469**	**3,0%**
Well Protected	*24 104*				
Moderately Protected	*42 189*				
Poorly Protected	*231 548*				
Not Protected	*117 617*				
Arid zone		**501 329**	**41%**	**648 003**	**1,1%**
Well Protected	*6 919*				
Moderately Protected	*61 529*				
Poorly Protected	*145 371*				
Not Protected					
Hyper Arid zones		**7 558**	**1%**	**6 455**	**0,01%**
Well Protected	*94*				
Moderately Protected	*838*				
Poorly Protected	*1 681*				
Not Protected	*3 326*				
Mountains		**24 435**	**2%**	**47 884**	**0,1%**
Well Protected	*3 941*				
Moderately Protected	*6 205*				
Poorly Protected	*9 566*				
Not Protected	*4 723*				
Protected and Conservation Areas		**134 148**	**11%**	**803 971**	**1,4%**
Protected Areas	134 148				
Conservation Areas (overlapping)	126 998				
Transfrontier (Peace Parks Foundation) SA Only (Overlapping)	50 103				
South Africa		**1 219 714**		**56 361 232**	

OWNERSHIP	HA	% of SA	PEOPLE
State Land (DRDLR 2017) (Includes national parks and traditional areas)	21 195 968	17,38%	NA
Traditional Leadership Areas (DRDLR, 2017)	13 989 464,37	11%	NA

Figure 11:
People and Places – Population Vulnerability



3.3 Urbanisation, the Pursuit of a Better Life and a Desire for Quality Urban Living and Spaces

Urbanisation, meaning both (1) the movement of our people from rural to urban areas, and (2) the increase in the percentage of our population living in urban areas *vis-à-vis* rural areas, will continue unabatedly throughout the three decades up to 2050. According to United Nations-estimates, '... *71.3% of the South African population will live in urban areas by 2030, reaching nearly 80% by 2050'.* National population projections for medium and high-growth scenarios (considering population growth as well as international migration patterns) conducted to explore future climate change scenarios, illustrate the need to plan for at least a 30% increase in our urban population by 2050. §§ In the same vein, the CSIR's *'Downscaled Settlement Locational Modelling-exercise'* projects that under 'a *scenario with no radical intervention',* approximately 85% of South Africa's population will be living in urban agglomerations by 2050.

Our three urban regions in Gauteng, the Western Cape and KwaZulu-Natal will experience the largest increases in population – this being from natural growth, as well as in-migration from South Africa, SADC countries and further afield. Significant movement will also take place from villages and small towns to larger, better connected towns located on major transport routes where provision of better and more reliable basic services, education, healthcare and policing are, and will remain, important drivers

§§ Source: Prof J van Tonder for CSIR/IRDC Green Book on Climate Change Adaptation.

of migration. However, while small towns and dense rural settlements are not expected to see large population growth, *they are also not expected to see a significant population decline in either the medium-scale or high-growth scenarios for population growth in South Africa.* As such, both large urban regions and rural areas will require targeted and appropriate government focus and attention.

Given the presence of a young, educated, vocal and demanding *urban electorate* of around 65 million people by 2050, making good on the promise of a *better life for all,* will be a major concern for government. This will especially be the case in large urban regions, where these large populations will place huge demands on already over-burdened, collapsing and ageing municipal infrastructure. At the same time, these areas will need to rapidly increase their contribution to the country's formal economic output and tax income, and become (1) the sites of *'spatial transformation'* and *'drivers of inclusive and sustainable economic growth' at scale,* and (2) the incubators of *dynamic, creative, and innovative new economies.* Municipalities will not be able to carry this burden alone and will require significant financial and technical support from (1) national and provincial government, and (2) the private sector. Long-term planning for urban growth, including (1) the identification and rapid release of suitable land for settlement, (2) land reform planning, implementation and appropriate and sustained support, (3) land-use management, and (4) the preparation of infrastructure master plans with full life-cycle costing, will be imperative.

Ways of urban life and living are also likely to undergo radical change, with urban inhabitants increasingly (1) seeking, finding and making ways of *making a life for themselves,* and (2) becoming far more involved in *making better quality urban spaces* in what will for most *be their only home.* This *'drive from below'* will be fuelled by (1) a *far more active citizenry,* in part driven by necessity, (2) a *much smaller* large-sized private sector', severely bruised by dwindling disposable household incomes and a slow-to-change capital-intensive business model unsuited to an increasingly-faster changing business environment, and (3) the *scale of the challenge* in relation to the State's finances and capacity to deliver services and assist in this regard. This 'drive from below' will also lead to a relaxation of outdated, stringent and cumbersome land-use regulations and bylaws, and hence (1) far less petty, and far more strategic, high-level land-use regulations, enabling far greater levels of economic activity and agility, and far more organic and inclusive economic growth, (2) far greater diversity in economic activities, housing forms and tenure types, (3) far more horizontal and vertical mixing of land uses, (4) far higher settlement densities, and (5) far more vibrant and lively city streets.

The gaps in State service provision will very likely also open up opportunities for entrepreneurial endeavour, notably in the provision of housing, water, energy, health care and education. The *greater availability of urban land for settlement through urban land reform,* will, in turn, very likely lead to a rapid increase in the number of new small-scale property developers. Altogether, these new forms of urban living and urban spaces will become the new drivers of *'innovation, creativity and job creation and societal transformation from below'* and cement large urban areas as the most important contributors to the South African economy. This will not only be done through the collective endeavours of millions of individual actors and small and micro-sized enterprises in the economy, but also by the contribution of innovative and agile large companies competing successfully in the global economy.

An increase in cross-border trade and the rendering of personal, financial, education and health services in *border-region towns,* will see an increase in movement by South Africans and citizens from other African countries to such towns. Given (1) the envisaged changes in urban areas towards places of *far greater vibrancy, diversity, access and respect for difference, and* (2) *their global connectivity,* the *larger urban areas* will experience significant in-migration of people from primarily other African countries, but also from further afield.

In the *sprawling, dense rural areas* along (1) the eastern escarpment of the country in Limpopo and Mpumalanga, (2) the eastern KwaZulu-Natal and Eastern Cape coastal strip, and (3) the north-western mining and agricultural region running from the

Northwest to the Northern Cape coast, the trend towards far greater densification in *nodes* and *along routes connecting such nodes,* will continue and result in *far more concentrated development* and the *release* of agricultural land for productive use in these areas.

Smaller towns in rural areas will also experience sizeable counter-urbanisation, as growing numbers of retiring middle-income South Africans from urban areas will settle for more tranquil lives in these parts of our country. This will, in many such settlements, facilitate (1) the construction and upgrading of houses by individuals and families for this anticipated retirement stage, as well as (2) the tailor-made development of housing units catering for this older population in such towns, which will support the growth of a new generation of small-to-medium-sized property developers in these towns. The injection of the regular pensions of these new, retired inhabitants will also (1) stimulate the local economy, by creating a new (and reliable) market for local produce and personal and social services, notably the provision of health and frail care services, and (2) provide valuable and stable municipal rates and tax incomes. This move to rural South Africa will also be strengthened and facilitated in many villages and smaller towns by the rapid release of land in such towns through the *national land reform programme.* Ensuring that these positive dividends materialise in our rural areas will, however, require that serious attention be given to the already significant and growing trend of *the building of houses in traditional areas close to towns,* but outside the reach of the municipal property rates and tax system.

Quality urban living in both urban and rural areas will require just, universal and sustainable access to social services and the facilities where these are provided/offered. The provision of such services (1) requires investment in 'social infrastructure' in adherence to universal design principles, ie *'high-quality facilities that are well-equipped, safe, and universally accessible, maintained and operated, and staffed to the correct level by well-trained personnel who provide a range of critical social services to the community',* and (2) include *the full spectrum* of health and education services, citizen registration, welfare support, cultural and sport and recreational facilities. While no comprehensive overview of backlogs in the provision of these services is available at a national level, local case-studies show (1) critical shortages, (2) grossly inadequate service delivery, and (3) enormous gaps in the provision of universal access to facilities where such services are rendered, both in urban and rural areas. These gaps and inadequacies include (1) poor maintenance of buildings, (2) a shortage of equipment, and (3) critical staff shortages, especially with respect to well-trained and dedicated staff. The projected national population increase to 75 million people by 2050, however, not only means expanded requirements for social facility investment and operation, but also (1) *presents an opportunity for meaningful employment in rural towns,* and (2) if properly planned and provided, could act as a highly effective and sustainable catalytic economic injection and multiplier. The importance of *spatial planning* to guide targeted and system-focused social infrastructure investment can, however, not be over-emphasised, meaning: *the institution of a sound spatial-location-logic* that (1) pursues human capital development and economic impact, and (2) effectively, efficiently and sustainably addresses historic and persisting poverty and inequality, and ensures universal access and inter-generational justice.

3.4 Ruralisation and the Need for Decisive and Sustainable Rural Development and Agrarian Reform

Currently more than 17 million of our people are estimated to be living in rural settlements across both (1) dense, and (2) sparsely populated areas mainly in the former Bantustans. Most of these people live in conditions of extreme poverty and vulnerability. Research on these conditions shows that '... *the deprivation gap between those living in the former homelands and the rest of the country has not narrowed in the period between 2001 and 2011',* meaning that well-intended investment and rural

development initiatives for over a decade or more have not significantly changed this picture of relative deprivation in these areas. [***]

However, after (1) hundreds of years of *colonial and Apartheid* oppression, exploitation, disregard and calculated under-investment, (2) followed by decades of uncoordinated and fragmented investment by *successive post-Apartheid governments* in rural South Africa, these areas are finally getting the recognition, respect and focused 'development attention' they deserve and have been promised since 1994. This trend towards *'taking rural areas seriously'* is set to continue and become stronger over the next three decades, as these areas become recognised as parts of our country that are (1) *still 'home'* to millions of South Africans, many of them highly vulnerable and isolated from the broader national economy, (2) of *national significance* for surface water and food production and the provision of key national ecosystem services, (3) *places of retreat, rest and connection with nature and cultural practices,* far away from fast-paced urban lives, and (4) *sought-after domestic and international tourism and retirement destinations.* In terms of State action, focused rural development is set to find expression in (1) targeted agrarian reform, (2) tenure reform, (3) the development of agri-processing and logistic support-hubs, (4) diversification of the local economy, (5) small-town redevelopment and regeneration in suitable locations, (6) public works-led job creation programmes and the roll-out of core government social and municipal services, (7) the provision of grant support with the building and upgrading of housing, specifically in identified *regional development anchors* and *rural service centres,* (8) investment in restoring and maintaining ecological infrastructure in support of water security, food security and disaster risk reduction, and (9) development of the 'wildlife economy'.

Of crucial importance to the realisation of the desired rural development objectives is *rural land reform,* which will release vast amounts of under-utilised commercial agricultural and State-owned land for use by new entrants to the farming sector and the wildlife economy, and give the resurgence and upliftment of rural areas a huge impetus. The *new rural economy* will, however, necessitate the development of a very different local economy in those towns built up over generations and sustained by a model of either large-scale commercial agriculture or subsistence agriculture. Agriculture support entities, cooperatives, equipment, fertiliser, market support, funding and research will need to be revived or introduced in towns in rural areas *to support a new type of farmer*. Municipalities, who will have to ensure new and appropriate land management in such areas, may also be expected and/or called upon to assist new role-players in the local economy with establishing new agricultural and non-agricultural-related economic activities. In this, they will require very specific support from the national and provincial sector departments responsible for agriculture, conservation and rural development, who will themselves also have to take on new roles in the light of *the new dawn in rural South Africa*. The involvement of the private sector in the form of public-private partnerships should be seriously considered to provide additional capacity and opportunity.

Rural communities will increasingly also demand better levels and higher speeds of connectivity, both by road and rail, and by broadband. At the same time, demands will be placed on government for the provision of quality social, education, health and police services, placing significant pressure on what will, for at least the next decade – and severely worsened by the COVID-19 pandemic – be a severely constrained fiscus. As alluded to earlier, it is imperative that such services be provided in *such places* and in *such a manner* that they (1) have the greatest developmental impact, (2) adhere to the principles of universal access and design, and (3) serve the greatest number of inhabitants. In deciding on sites/locations and service-mixes, priority should be given to serving (1) the youth, with a specific focus on young women and persons with disabilities, and (2) those inhabitants who will elect to retire in rural areas and who will

[***] Source: Wright and Noble 2012 & 2014; Makgetla 2010.

spend significant amounts of money during their working lives on building and/or maintaining their retirement homes.

3.5 Natural Resource Limits and Imperatives

Over the last few years, South Africans were rudely awakened to the age-old reality that South Africa is a water-scarce country, and not one merely struck or frustrated by occasional droughts. While we have for many years been able to transfer water between *catchments with a surplus* to *areas with a deficit,* and maintained the myth of water-abundance, the reality is that the model has run its course and that we no longer have sufficient water in the system to redistribute if we continue to use water as we did in the past. As such, we will have to employ technology to (1) supplement our water supply, (2) reduce our use of this precious and limited resource, and (3) better manage and distribute piped water.

Should we, however, choose to continue along the economic trajectory that disregards our natural resource base, and continues to damage and destroy our natural resources and ecological infrastructure, we will in the very near future become even more aware of, and be confronted with the following realities: (1) dwindling water security and availability, wetland destruction, severely degraded water catchments and over-utilised and polluted groundwater sources, especially in our mining and commercial agricultural productions areas; (2) highly contaminated and toxic waterbodies and waterways; (3) toxic levels of air pollution through highly noxious industrial activities, such as the conversion of coal to liquid fuels, and the generation of energy through coal-fired power stations; (4) the loss of the very small extent of high-value agricultural land we once had; (5) irreparably damaged ecological infrastructure and loss of the services and benefits this infrastructure provides for people; and (6) a long and rapidly growing list of threatened ecosystems and species. Furthermore, we will be confronted with the reality that our continued pollution of rivers and streams, soil, air and the oceans around us, is not compatible with our plans to (1) grow our tourism sector and wildlife economy, (2) expand our agricultural and agro-processing activities, and (3) make far greater use of the oceans economy. As a country, we will be asked to make hard choices, such as between (1) an environment that sustains us and generations to come and is not harmful to our or their lives, and (2) the economic activities and national income that comes from exporting, burning and gasifying a dirty carbon like coal, and irresponsible, callous and wasteful natural resource use.

Turning away from this looming ecological disaster will require that *trade-offs be made* at the *national level* between (1) noxious and polluting economic activities, and (2) ecosystem health and integrity. At the same time, water demand management, and the behavioural changes and enforcement protocols that emanate from this, will need to be introduced, policed and enforced at *municipal level.* Irreplaceable natural resources of national significance, irrespective of where they are located, will need to be (1) acknowledged, demarcated and treated as such, so that they can contribute to the well-being of all citizens, and (2) formally protected and managed as part of conservation estate. Municipalities will have to focus far more so in their land use management functions on (1) protecting such areas, and (2) promoting compatible and productive land-use patterns that contribute to environmental management and restoration goals.

Likewise, sustainable land development and intergenerational spatial justice will require effective land administration and management, civil society custodianship and strong and efficient governance. This will only be possible if (1) municipal land use management systems are in place, and (2) municipalities are staffed with competent, dedicated and caring town planning officials and councillors who cannot be corrupted and who have the will and mandate to act. In addition to this, rehabilitation of degraded land and ecological infrastructure in stressed and degraded catchments (including former mining areas) will need to be done.

In accordance with the *Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA),* mining companies must be held accountable to clean up what they polluted, and legal provisions in this regard rigorously enforced. In addition to this, (1) ensuring

minimum environmental damage during mining operations, so as to also limit the need for and extent of rehabilitation at mine-closure, and (2) planning for rehabilitation even before the onset of operations should be ensured and policed throughout all mining operations. Mediation of job losses and the cumulative impacts thereof on local economies, due to the down-scaling of coal mining, burning and gasification *in adherence to international climate change reduction agreements and protocols,* such as the 2005-Kyoto Protocol and the 2016-Paris Agreement, (1) will have to be *proactively and jointly planned for by government and private role-players well in advance,* and (2) *job creation in ecologically less-damaging sectors actively and adequately provided for.* The country's exceptional biodiversity assets provide significant opportunities for job-creation, including in sectors such as nature-based tourism and the wildlife economy.

3.6 Climate Change Implications, Regional Adaptation and Mitigation

Climate change is set to have far-reaching impacts on our country, notably with regard to temperature and rainfall patterns. *Temperatures are set to increase* by *between 1 and 4 degrees Celsius* between now and 2050, in primarily the western and north-western parts of the country, while the number of very warm days is set to increase in an equally wide band across the country. *Rainfall is set to (1) decrease in a large stretch of the south-western, western and north-western parts of the country,* and (2) *increase, but also become more erratic in the central and south-eastern part of the country.* These climatic changes will not only have severely detrimental impacts on the highly productive agricultural activities in the western and north-western parts of the country. Likewise, the towns in these areas, of which most are heavily reliant on these agricultural economies, will be equally hard-hit, and their residents required to make far less use of water for domestic and economic consumption to keep the agricultural activities going.

Climate change impacts will also render significant parts of the country increasingly hostile to human, animal and plant life, and hard to live in. In addition to this, the likelihood of more veld fires is set to increase, especially so in vast and remote rural areas where municipal services are already thinly spread, and the State's capacity to *deal with such disasters* is generally weak. While some of the central and eastern parts of the country may experience more rain, *the equally greater degree of uncertainty and intensity of the precipitation will not be conducive to traditional conventional agriculture.* Sudden downpours may lead to (1) a greater loss of topsoil, and silting up of dams and water canals, and (2) the destruction of rural roads and infrastructure. In urban areas, such sudden and severe downpours could lead to flash-flooding, loss of life and destruction of municipal infrastructure, buildings and property, especially so in cases where these are not well-maintained. In many of our urban areas, it is especially *the poor, vulnerable and marginalised inhabitants* who live in vulnerable areas prone to flooding, and who are generally not insured, that will disproportionally suffer the impacts of such disasters.

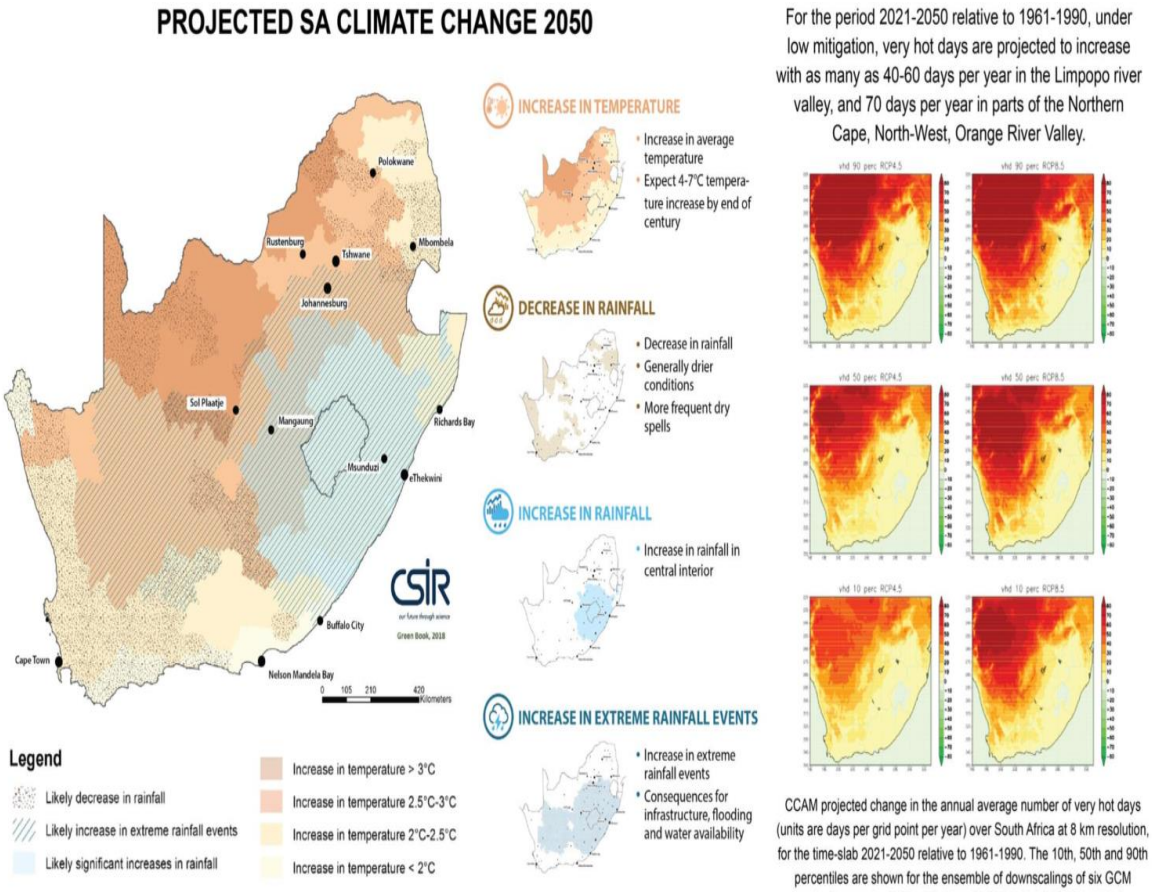
In terms of *national land use and settlement patterns,* climate change begs serious questions with regard to future human settlement in national space, such as: How will climatic change impact regional development patterns in terms of temperature, liveability, water, food security and the adaptation to viable agricultural practices and commodities? What kind of impacts can be expected in settlements and *where should new cities be built, and with what population-size in mind?* What are the disaster-risk reduction interventions, coping-capacity and national resource implications, eg drought relief, that are required in areas that are set to experience significant and intolerable changes in climate: Should new settlement development in these 'high-risk areas' for instance be discouraged and instead be concentrated in alternative, carefully selected, suitable locations? Likewise, what kind of activities and settlement patterns should be allowed in such areas? Will government be able to provide 'adaptation support' for the most vulnerable in such areas, and if so, of what kind and at what cost? Questions around regional adaptation also include consideration as to whether directing or

discouraging settlement in certain regions is constitutional, and if so, what kind of method or measure to regulate settlement in such areas c/would [sic] be used?

The higher levels of discomfort in the interior of the western and north-western parts of the country may also trigger migration from these parts to areas with better climates, notably the (1) eastern interior, and (2) eastern and southern coastal belts. The *eastern coastal belt and eastern escarpment* is, however, the part of the country (1) most suitable for food production and surface water-capture, and (2) in which traditional land tenure systems prevail. These are also areas in which the dreaded land-related legislation of the Colonial and Apartheid Eras have left deep scars, both on *the people,* and *space,* in the form of limited access to land, over-grazing and erosion. Given the urgency of the matter from a *national perspective,* and the challenges that will be encountered, it is of crucial importance that 'a *National Spatial Climate-Mitigation and Adaptation Plan'* (1) be prepared, with the full and active participation of all role-players involved, and (2) supported by strong spatial planning, ecosystem-based adaptation and land use management components. Ecosystem-based adaptation provides opportunities for intact ecological infrastructure to support adaptation by people to climate change through cost-effective nature-based solutions, such as 'making use of' (1) healthy wetlands to reduce the impact of floods, (2) strong and 'intact' coastal dunes to buffer coastal communities from storm surges, and (3) healthy Strategic Water Source Areas to secure reliable flows of water into dams downstream. Protected areas should be recognised as vital for ecological sustainability and climate change adaptation, as they serve as nodes in the ecological infrastructure network. Of crucial importance is that all climate change mitigation strategies and provisions focus on reduction of *national greenhouse gas emissions.*

In addition to this, climate change is also set to have severely negative impacts in terms of temperature increases and lower rainfall figures in *many of the other countries on the African continent.* These changes could potentially lead to large-scale in-migration of 'environmental refugees' from such countries to amongst others, South Africa. As such, South Africa will both (1) *need to be prepared,* and (2) our national space be *planned with such eventualities in mind,* to avoid the kind of antagonism and open hostility that refugees have often experienced, both in our country and elsewhere in the world.

Figure 12:
Ecologies, Economies and Spaces – Climate Change and Projected Regional Implications



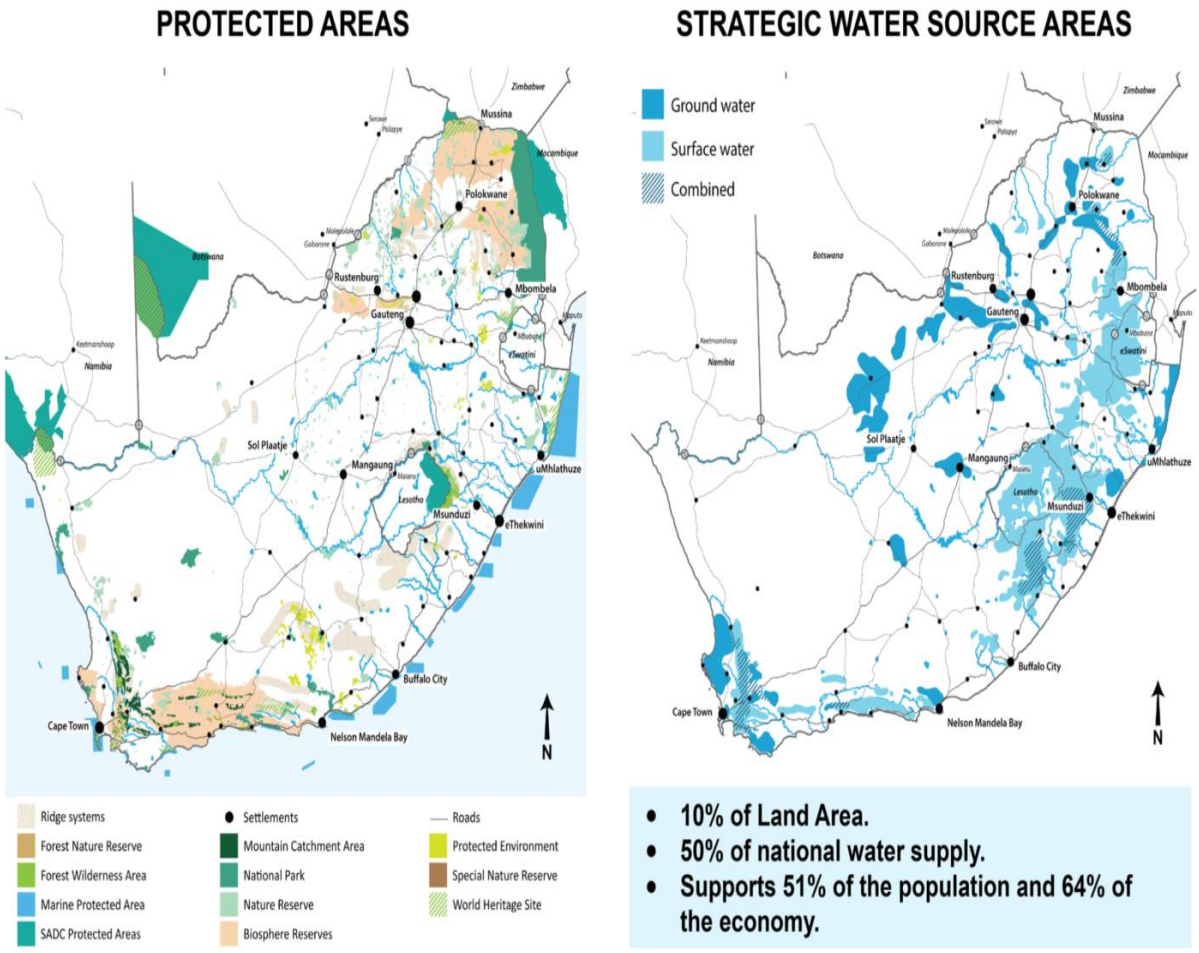
Climate Change Modelling and scenarios developed through CSIR, Green Book-project, 2018.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

For the period 2021-2050 relative to 1961-1990, under low mitigation, very hot days are projected to increase with as many as 40-60 days per year in the Limpopo river valley, and 70 days per year in parts of the Northern Cape, North-West, Orange River Valley.

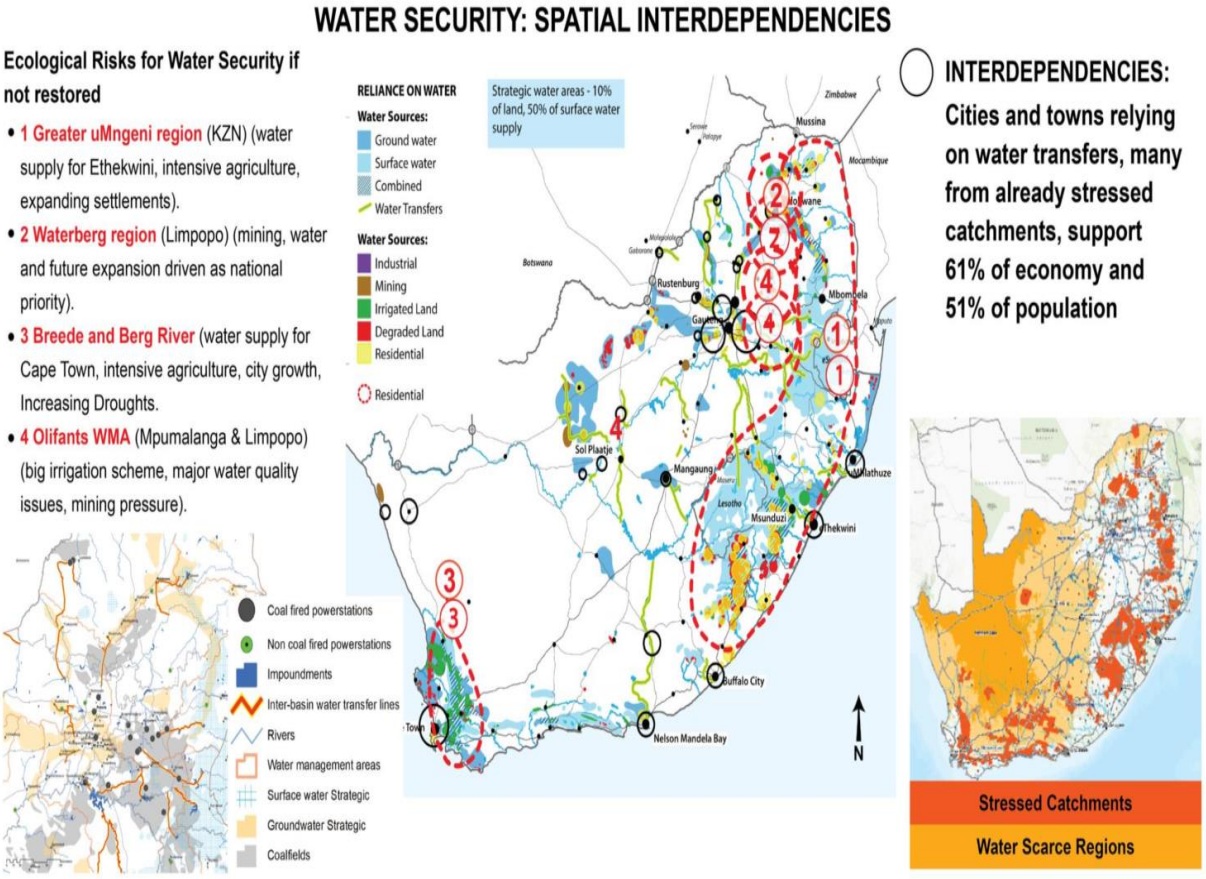
CCAM projected change in the annual average number of very hot days (units are days per grid point per year) over South Africa at 8 km resolution, for the time-slab 2021-2050 relative to 1961-1990. The 10th, 50th and 90th percentiles are shown for the ensemble of downscalings of six GCM projections under RCP4.5 (left) and RCP8.5 (right) (CSIR, 2018a).

Figure 13:
Ecologies, Economies and Spaces – National Ecological Infrastructure



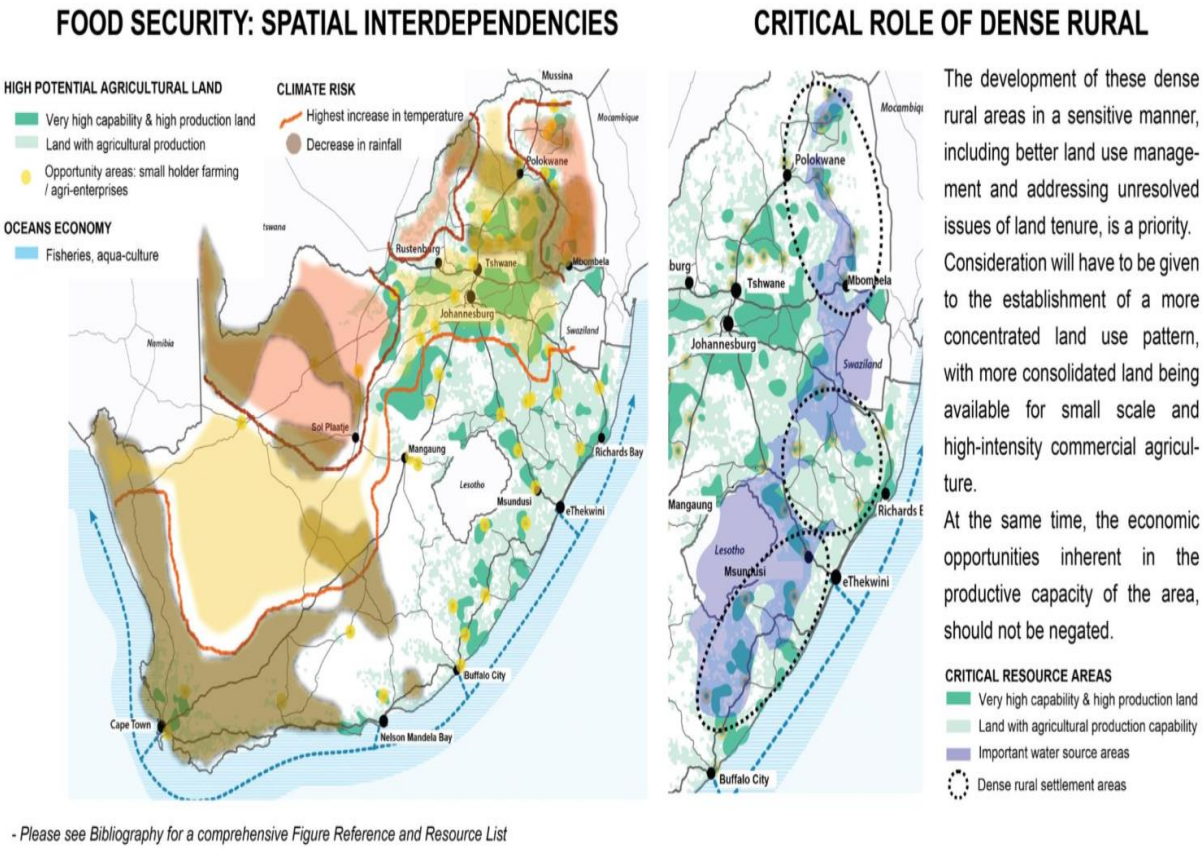
- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 14:
Ecologies, Economies and Spaces – Ecological Infrastructure, Interdependence and Threats



- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 15:
Ecologies, Economies and Spaces – Supporting Ecological Infrastructure



- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 16:
Ecologies, Economies and Spaces – Regional Economic Trends

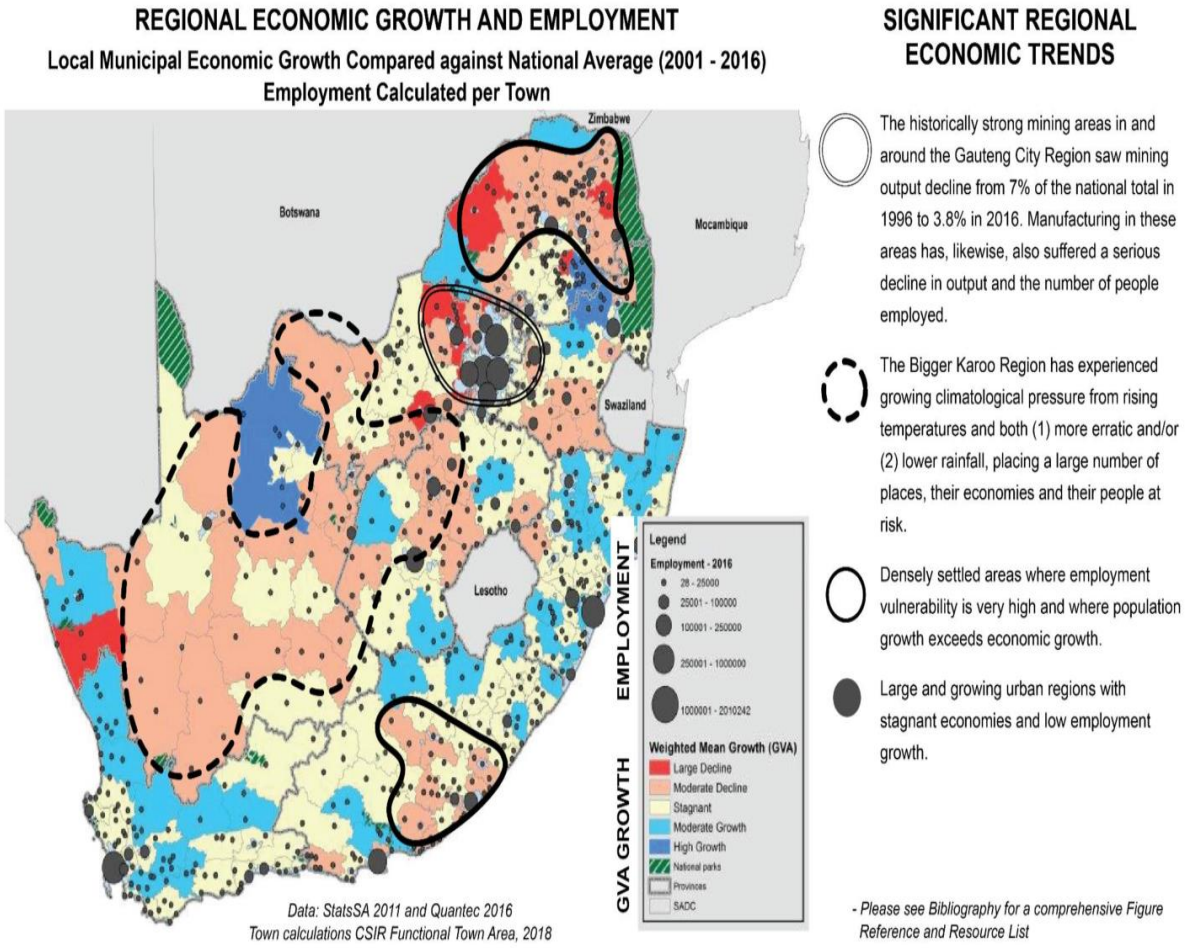
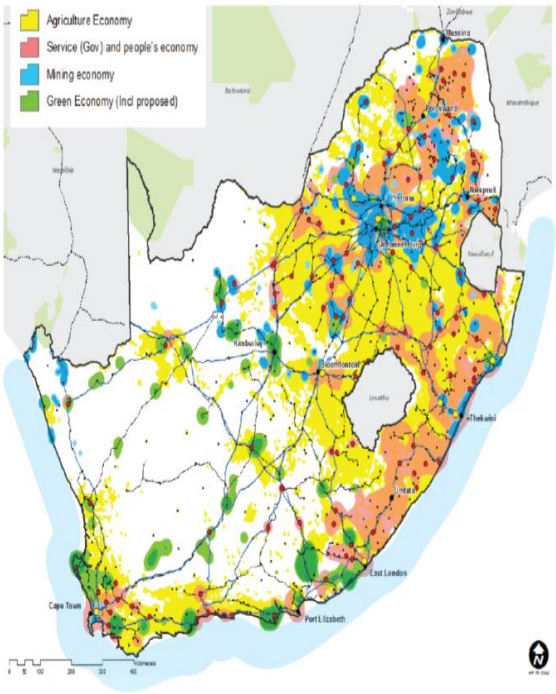


Figure 17:
Ecologies, Economies and Space – National Economic Production and Employment Trends

SPATIAL REPRESENTATION OF ECONOMIC PRODUCTION IN SA (2016)

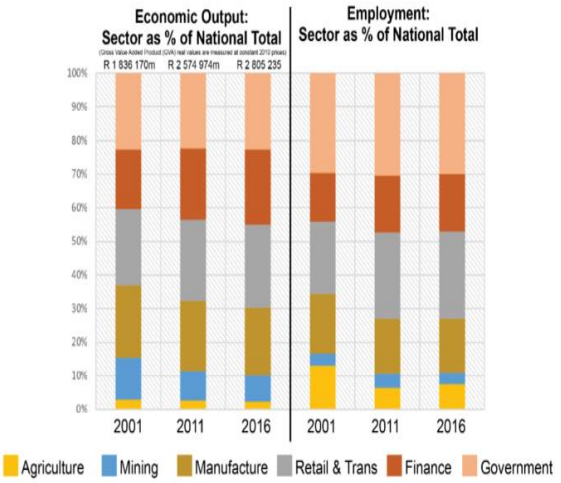
Nodal Agglomeration (Largely Retail and Trade, Finance and Government Services), Manufacturing Related Sectors, and Rural Resource Economies (Agriculture, Mining, Energy production, and Oceans)



Data: StatsSA 2011 and Quantec 2016. Spatial indicators based on CSIR Mesozone 2017, Integrated National Export Strategy (INES): "Export 2030". The DTI.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

NATIONAL ECONOMIC OUTPUT AND EMPLOYMENT TRENDS (INCREASINGLY NODAL)



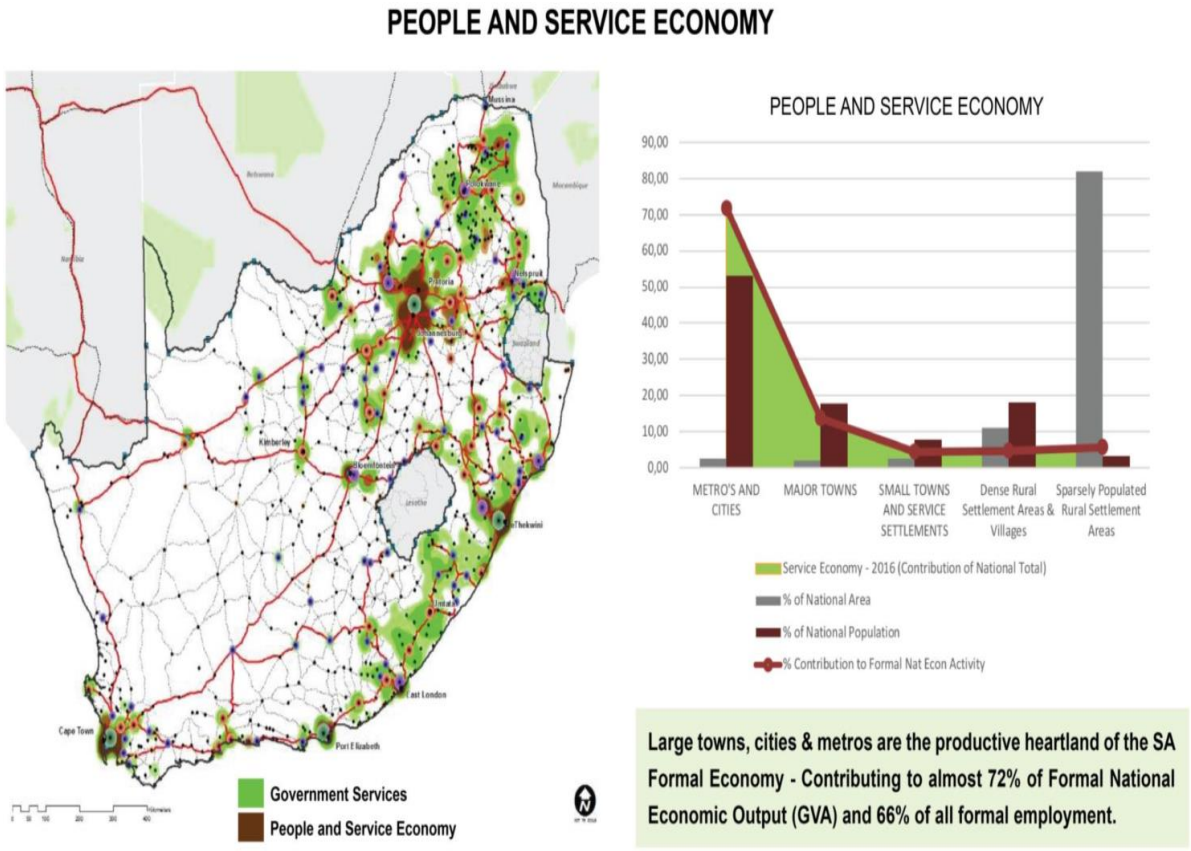
IDENTIFIED COMPARATIVE ADVANTAGE FOR EXPORTS: FUTURE FOCUS AREAS (INCREASINGLY NODAL AND DISTRIBUTED)

- Agriculture; forestry; agro-processing; organics; natural ingredients; biotechnology; fertilizer; pesticides; aquaculture; leather; and leather products.
- Mining; and beneficiation (including capital equipment).
- Petrochemicals; biofuels; transport; storage; machinery; equipment; energy; automotive; clothing; and textiles.
- Financial and business services; pharmaceuticals; and Information communication and technology (ICT).

NATIONAL SIGNIFICANCE OF SERVICE SECTOR (LARGELY NODAL)

- Government & service sectors expected to continue to play in future.

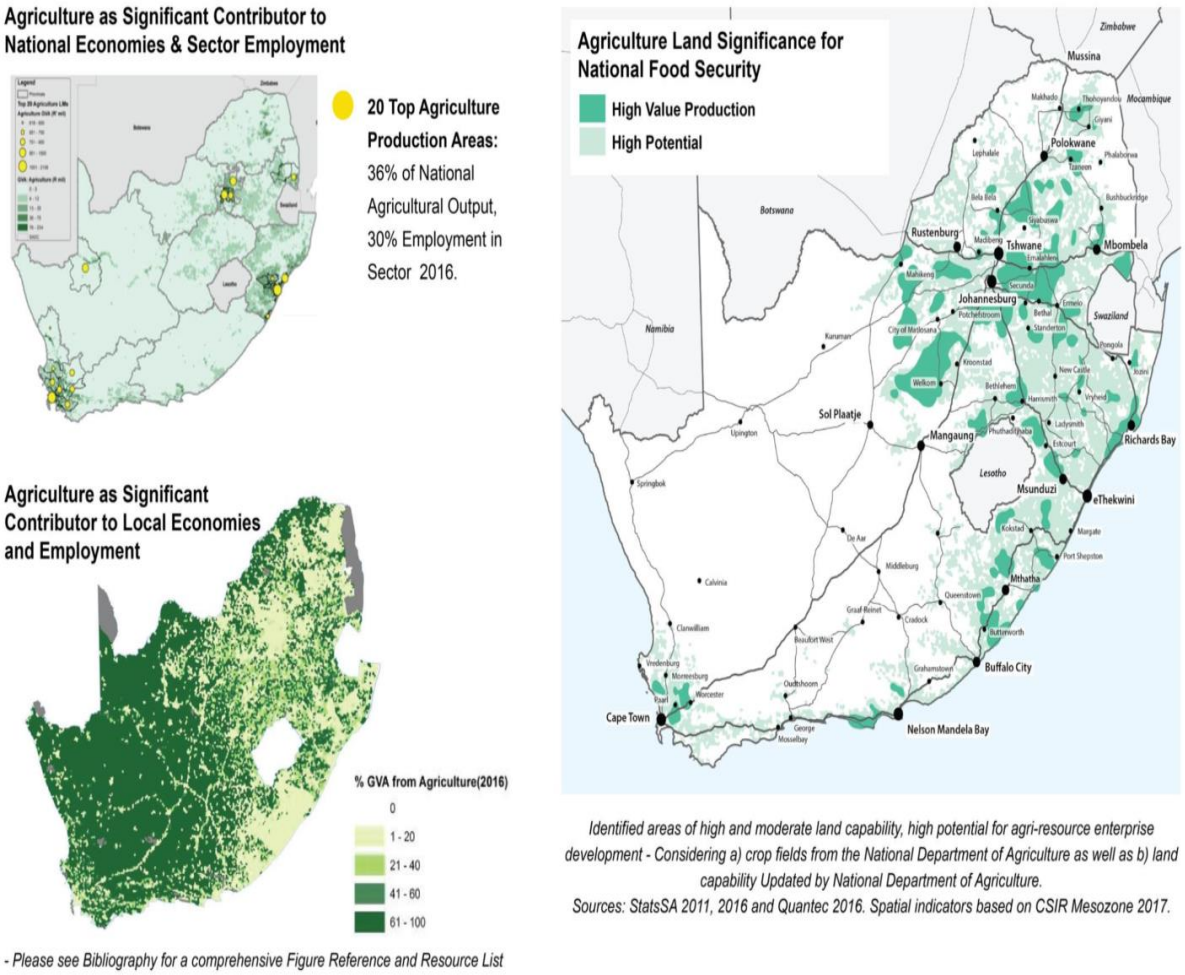
Figure 18:
Ecologies, Economies and Spaces – People and Agglomeration Economies in Polycentric Network of Cities and Towns



Sources: StatsSA 2011 and Quantec 2016. Spatial indicators based on CSIR Mesozone 2017, Functional Town Area, 2018.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 19:
Ecologies, Economies and Spaces – Agricultural Resource Economy and Food Production



Identified areas of high and moderate land capability, high potential for agri-resource enterprise development - Considering a) crop fields from the National Department of Agriculture as well as b) land capability Updated by National Department of Agriculture.
Sources: StatsSA 2011, 2016 and Quantec 2016. Spatial indicators based on CSIR Mesozone 2017.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

3.7 Land Reform in Urban and Rural Areas

After many years of under-performance, land reform is set to see a rapid expansion, *both in urban and rural South Africa.* In accordance with the national imperative and constitutional mandate to address colonial and Apartheid land and livelihood dispossession and injustice, Black South Africans will either get (1) *secure tenure (eg formal long term lease or formal rental) and land use rights,* or (2) *full title to land.* While State land will play a key role in this endeavour, it will also involve land held by non-State entities, and in so doing, assist in addressing the *grossly unbalanced land ownership profile,* by which the bulk of commercial agricultural land in the country is held by White South Africans. As such, land reform is set to have a huge impact on (1) national land-use and land-ownership patterns, (2) national settlement development, and (3) the national space economy.

In *urban areas,* land reform is sure to involve the identification of land that is (1) suitable for making a life and enabling quality urban life and living, and (2) able to assist in achieving our spatial transformation objectives. This would be land that could: (1) ensure infill development; (2) bring about greater social and economic inclusion; (3) unleash new economic opportunities; and (4) enable a far greater segment of the South African population to own and lease property, and have access to the opportunities, amenities and qualities associated with urban areas and 'urban living'. The provision of such land for economic activities and property development to Black South Africans previously excluded from such opportunities is also sure to assist in (1) bringing new and emerging actors into the economy, and (2) *breaking the back of the deeply monopolistic,*

concentrated and elite-controlled nature of the South African economy. In a similar vein, urban land reform may very likely assist in (1) making available land for unleashing new *opportunities in under-valued economies in our urban areas,* such as the optimisation of the *cultural industries, entertainment, food preparation, and service and small-scale manufacturing and repair activities,* and (2) facilitating the integration and optimisation of *'urban South Africa'* in a *'national economic innovation, inclusion and transformation system'.* This will, however, *require of municipalities* to gather the necessary information and keep up-to-date records of all land parcels in their areas of jurisdiction that are (1) strategically located with regard to urban economies, (2) underutilised, (3) vacant, and/or (4) kept for speculative purposes only. It would also require *decisive action* and *the limiting of time-lags* between land identification, acquisition, release, development and utilisation, coupled with *targeted and sustained support,* as and where required.

In *rural areas,* information such as (1) land ownership, (2) the condition of the land, soils and ecological infrastructure, (3) the carrying capacity of the land, (4) the availability of water on the land, (5) accessibility, (6) the quality of fences and roads, (7) the potential for non-traditional economic activities, for example related to the wildlife economy, especially in areas where conventional agriculture is not economically viable, and (8) anticipated exposure to climate change, would be important considerations. As in urban areas, limiting the time lag between land identification, acquisition and utilisation will be of the essence. Care would also need to be taken to *mediate the impacts of changes in rural economies, notably in small towns* built up on the back of, and reliant on (1) large-scale commercial agriculture and large farmers, and (2) their related market, financial and personal services, daily supplies, education, health care and fertiliser needs. At the same time, extensive and far-reaching engagement and consultation will need to take place on the matter of *tenure in communal land-areas* and the utilisation and sharing of such land in the *'ecological sweet spot'* of our country, ie the *eastern coastal belt and eastern escarpment,* for food production, surface water capture and the provision of key ecosystem services. In rural areas there is the potential to couple land reform with biodiversity stewardship initiatives, to give communal land holders access to the social and economic opportunities associated with nature-based tourism and the wildlife economy through partnerships between land reform beneficiaries and conservation authorities.

3.8 Technology, Innovation, Resilience and Disruptions in the Space Economy

While this is a fertile field for speculation, there is far less clarity as to what this shaper, often equated with the 4th Industrial Revolution, will entail and how it will play out in (1) different spaces, and (2) economic sectors in the country. What is at least increasingly clear is that: (1) *communication* will become faster, more affordable and more accessible to all, and allow for 'remote work' in a number of sectors, as the COVID-19 pandemic and resulting national lockdown has clearly demonstrated; (2) *urban areas* – despite their temporary COVID-19 induced setbacks – with their dense institutional networks, higher education, innovation and research centres and institutes, huge consumer markets, many public spaces, and vast potential for human-to-human service and entertainment-based economies, will remain significant players in the new economy; (3) *automation, robotics, and machine learning* will cause major disruptions in the world of work and leave very few occupations unaffected; and (4) the *higher the levels of education of our people* are, the more likely they are to manage, utilise and gain from the transitions.

With regard to *national spatial development,* South Africa will most likely experience (1) a rapid expansion in broadband coverage, (2) the advent of ever-more automated mining activities, fewer on-site jobs, greater use of *'fly-in-fly-out'* modes of operation, and a smaller need for the development of dedicated 'mining towns', (3) automation in economic sectors that are currently regarded as major job-creators, such as manufacturing and agriculture, leading to a reduction in employment in areas where it is sorely needed, notably rural South Africa, and (4) the closure of factories and mining

operations that are unable to compete globally, leading to job losses and a contraction in retail and economic activities in towns dependent on these sectors.

In order to ensure that the country is not left behind, the following are imperative: (1) the *roll-out of super-fast broadband* throughout the country; (2) the prioritisation of well-functioning, *key national road and rail networks* to ensure the creation of a densely integrated functional national economic system; (3) a focus on *innovation and knowledge production, packaging and sale;* (4) the expansion, modernisation and re-gearing of the *higher education sector* towards growing and supporting innovation and the entertainment, cultural and creative industries; and (5) the *nurturing of all South Africans, but especially our youth,* by ensuring proper nutrition, a safe, secure and pollution-free environment, quality health care and meaningful, life-long learning, to ensure that they are, and remain fully prepared for the dynamic world they will be living in. In addition to that, if well-used, the new technologies could, given their (1) ease of access, and (2) possibility to create small-and-medium-sized industries, be of assistance in *breaking down the monopolistic nature of the South African economy*.

Should South Africa not succeed in surviving the disruptions and transitions coming our way, it will most likely lead to (1) more unemployment and poverty, (2) the deepening of existing and creation of new inequalities, (3) further spatial fragmentation, (4) higher levels of crime, (5) more barricaded settlement development, and (6) even less opportunity for capitalising on the economic dividends that dense, safe and universally accessible human settlements offer and can provide.

3.9 Globalisation, Supra-National Regionalisation, Gateway Nodes and National Connectivity and Integration

Despite the setbacks for global trade brought about by the COVID-19 pandemic, the long-term trend will be for (1) increased global trade, and (2) increasing integration of countries and cities in the global economy. The importance of being part of this global economy and being 'an equal partner' in this system will demand of countries, including South Africa, to *ensure ease of access to their economies* through well-functioning (1) *global gateways,* ie harbours, airports and border posts, and (2) a *well-maintained national road and rail network.* The latter will also ensure that the whole country, and not only parts of it, become and remain part of this global economy. *Prioritisation of routes* on this network will be very important, as funds for road and railway lines will be severely limited. Where possible, *rail should be prioritised* to (1) reduce carbon emissions and damage to roads by trucks, and (2) minimise the social costs that communities in towns with truck-stops, especially their most vulnerable members, often suffer. In this regard, it will be important to move beyond platitudes and proposals towards implementation, ie the construction, upgrading and maintenance of railway lines.

Significant changes are also envisaged in the top order of the global economy, with (1) *China and India* set to greatly strengthen their positions, and (2) *regional powerhouses,* such as Indonesia, Brazil, Turkey and Mexico, poised to increasingly make their presence felt. Furthermore, a number of countries on the African continent are rising rapidly, notably so Rwanda, Ghana, Morocco, Kenya, Nigeria, Egypt, Ethiopia and Angola. Closer to home, Mozambique, despite a simmering regional insurrection, is growing at a steady pace, and Zimbabwe should be making rapid economic progress in the next few decades. Should South Africa wish to remain a part of this global economy, it will need to ensure that *its urban and rural-based economies are globally competitive.* This would, amongst others, require (1) reducing constraints on small business development, and (2) the upskilling of our labour force. From a *national spatial development perspective,* South Africa must ensure that it ties its economy into the (1) new global economies, (2) regional powerhouses, and (3) emerging economies on the African continent. This must be done by aligning its ports with the growing importance of new trade routes to the east of the country and ensuring fast and reliable connectivity through these ports to not only the Gauteng Urban Region, but also other regions in our country with strong export opportunities.

Of equal importance will be the *strengthening of regional trading blocs,* such as the AU and SADC, to (1) create greater regional consumer markets, and (2) ensure more bargaining power when negotiating the terms of trade with other such blocs, eg the European Union. *Alignment of national freight and logistics infrastructure,* especially the (1) major road and rail corridors, but also (2) harbour infrastructure, will be required to establish and sustain strong regional linkages within SADC.

Internally, if a fast-growing, well-connected and more inclusive economy is to be achieved, the development of movement infrastructure and a variety of modes of transport will have to be guided by a *national spatial development pattern* with at its base (1) the pursuit of *more compact, concentrated settlement in fewer national nodes,* to reduce the number of main roads and railway lines to be built and maintained, (2) *more mixed, higher density development,* to reduce the need for motorised travel and distances to be travelled, and (3) *higher levels of beneficiation and processing of raw materials,* to reduce the volume of raw products that pass through our harbours and that require expensive road and rail transport networks to enable and sustain these flows.

The movement network will also have to be strengthened in the *eastern escarpment and eastern and southern coastal areas,* to support the population, economic and climatic shifts described in **section 3.6**. In addition to this, infrastructure maintenance will have to be prioritised, not only for freight transport, but equally so for the safe, efficient, affordable and universally accessible movement of passengers, including tourists. In densely settled urban and rural areas, special emphasis should be placed on (1) the provision of more affordable and universally accessible public transport services, and (2) the development of high-intensity, high-density mixed land-use areas in nodes and suitable stretches along such routes.

Figure 20:
Movement, Connections and Flows – Connectivity

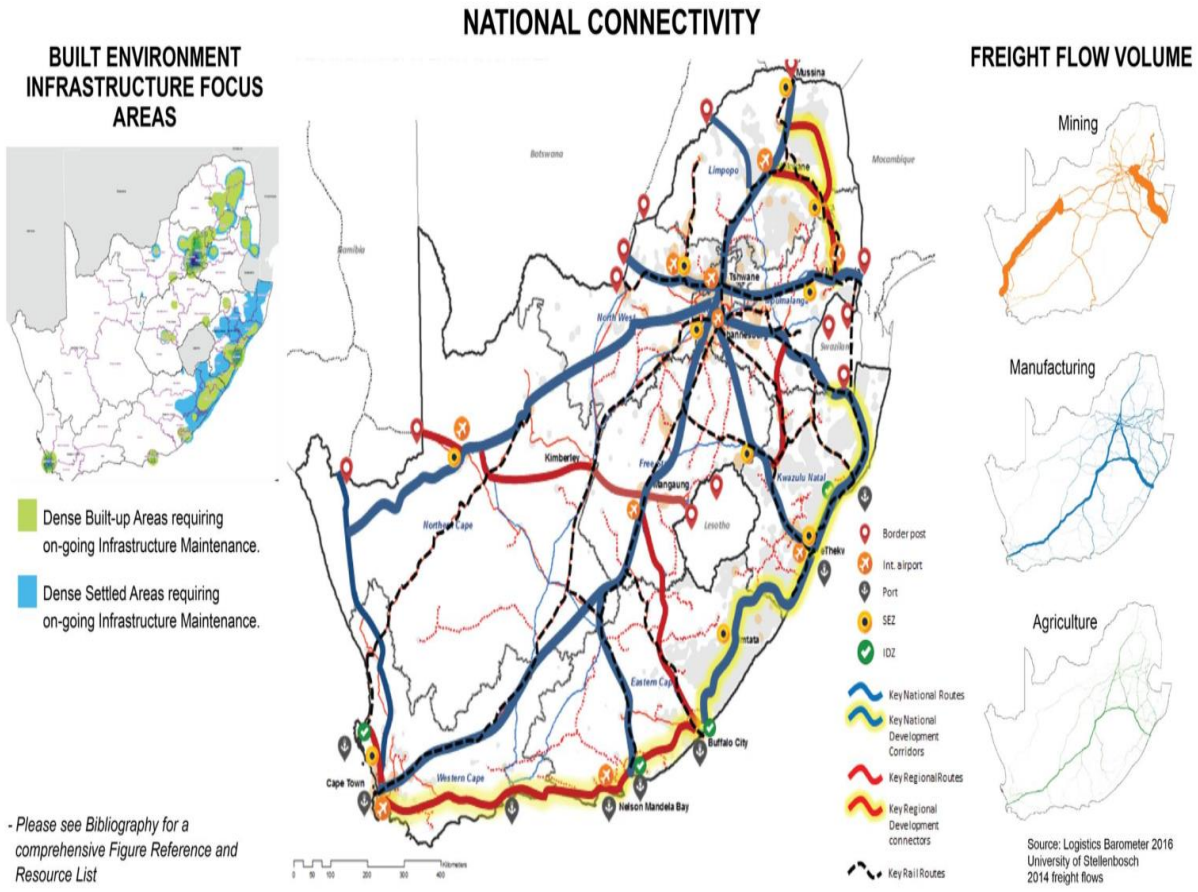
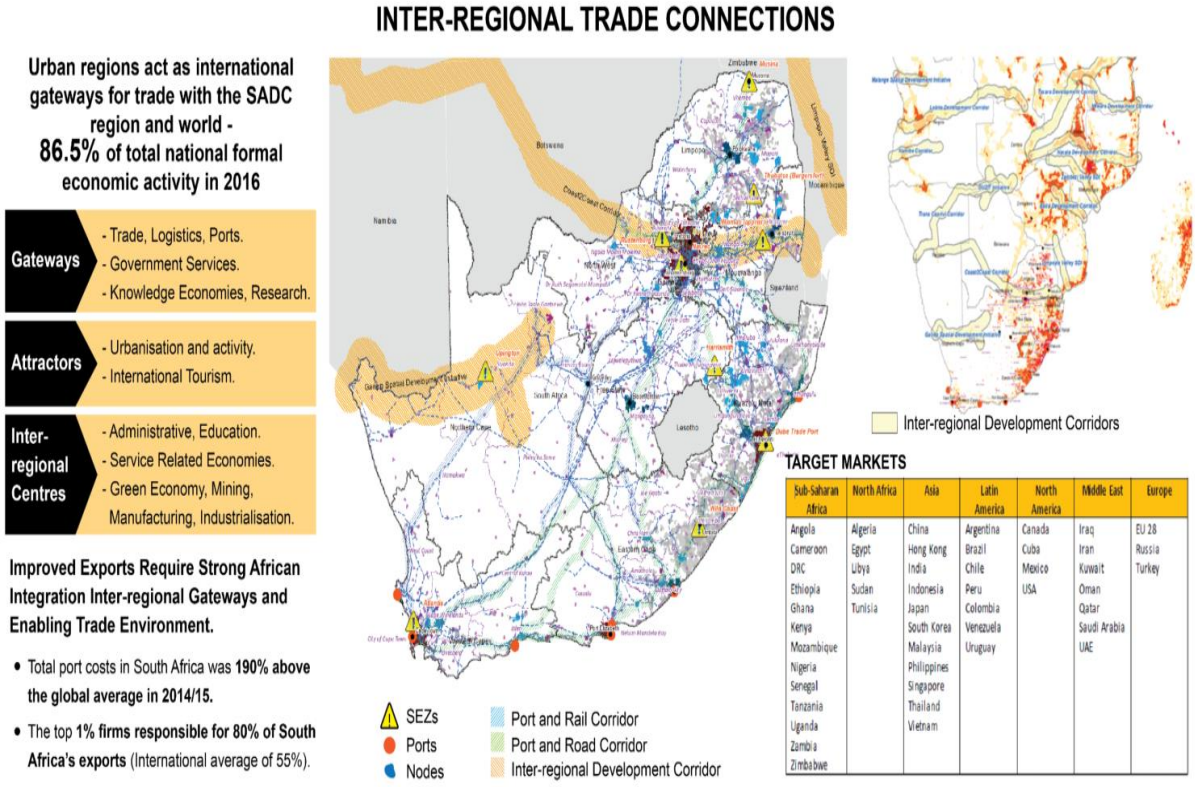


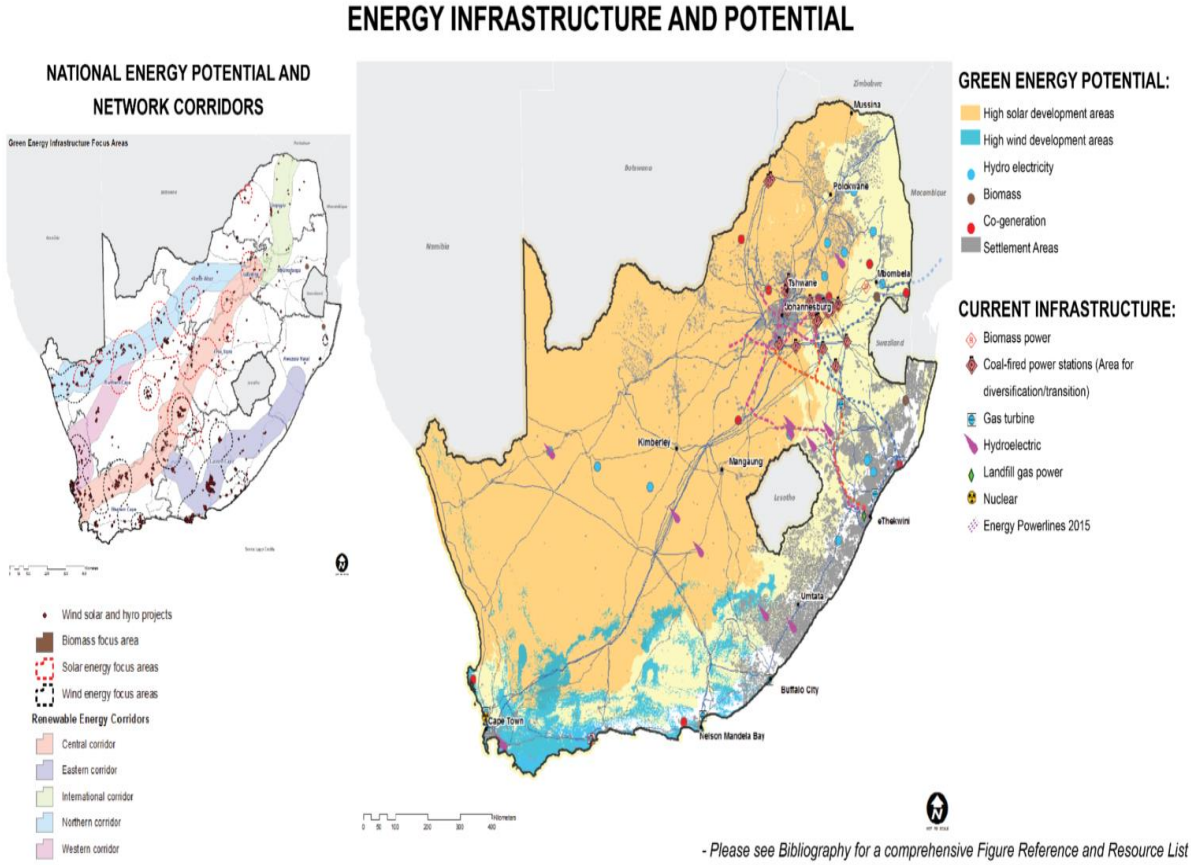
Figure 21:
Movements, Connections and Flows – Inter-Regional Trade Connections



TOWARDS Spatial Perspectives in Support of The NGP. Unpublished Report Prepared By The CSIR For EDD; SACN, SOCR, 2016). Integrated National Export Strategy (INES): "Export 2030". the dti.

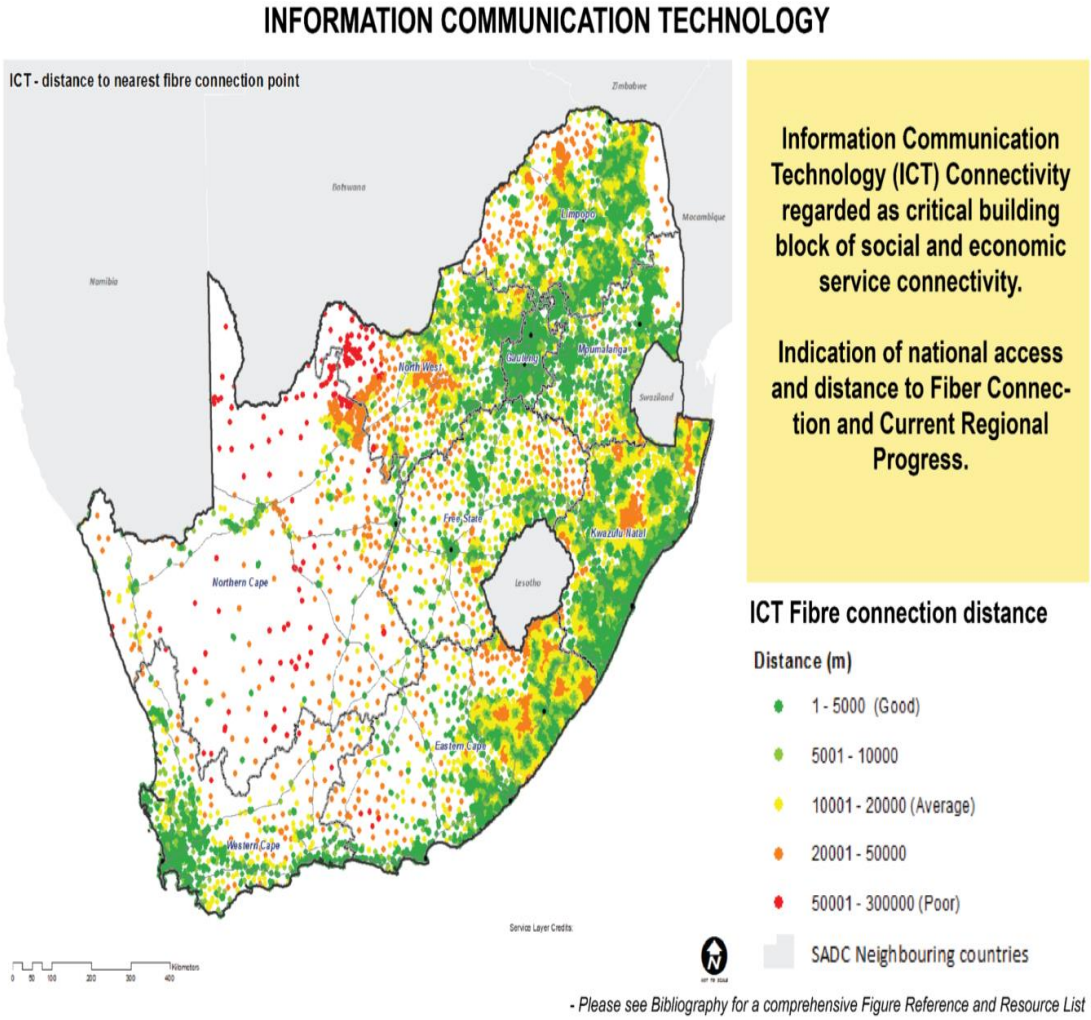
- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 22:
Movements, Connections and Flows – Energy



- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 23:
Movements, Connections and Flows – ICT



- Please see Bibliography for a comprehensive Figure Reference and Resource List

3.10 Institutional Weaknesses and Fragmentation and Prospects for National Developmental Action

In a country with the dreadful history of exploitation and targeted underdevelopment like South Africa's, there are high expectations of the State to assist in (1) correcting the wrongs of the past, (2) healing the still-open wounds, and (3) creating a very different and better future for all. This is, and has proven to be, a huge endeavour and one that Government has managed to attend to with different degrees of success. What has not made this 'national transformation, reconstruction and redevelopment task' any easier has been the need to ensure coordination, integration and alignment of the endeavours of spheres and sectors of government responsible for different segments of the reconstruction, transformation and redevelopment tasks. This is largely due to (1) the costs involved in intergovernmental engagements, (2) the lack of enforcement of decisions reached in multi-stakeholder sessions, (3) the different modalities and work and budget cycles, and (4) the unique particularities of decision-making in the different spheres and sectors of government.

As a result of the difficulties faced in ensuring intergovernmental cooperation, *national sector departments* have increasingly focused on fulfilling their mandates and 'going it alone' in their pursuit of meeting their set targets. In addition to this, some of them have increasingly relied on (1) the private sector, and (2) outside countries and entities to finance much-needed infrastructure investment. While 'it may get things done', it may also lead to (1) the country losing control over its resources, and (2) an inability to

implement plans and frameworks that are in the national interest, rather than those that are in the interests of private investors or foreign countries.

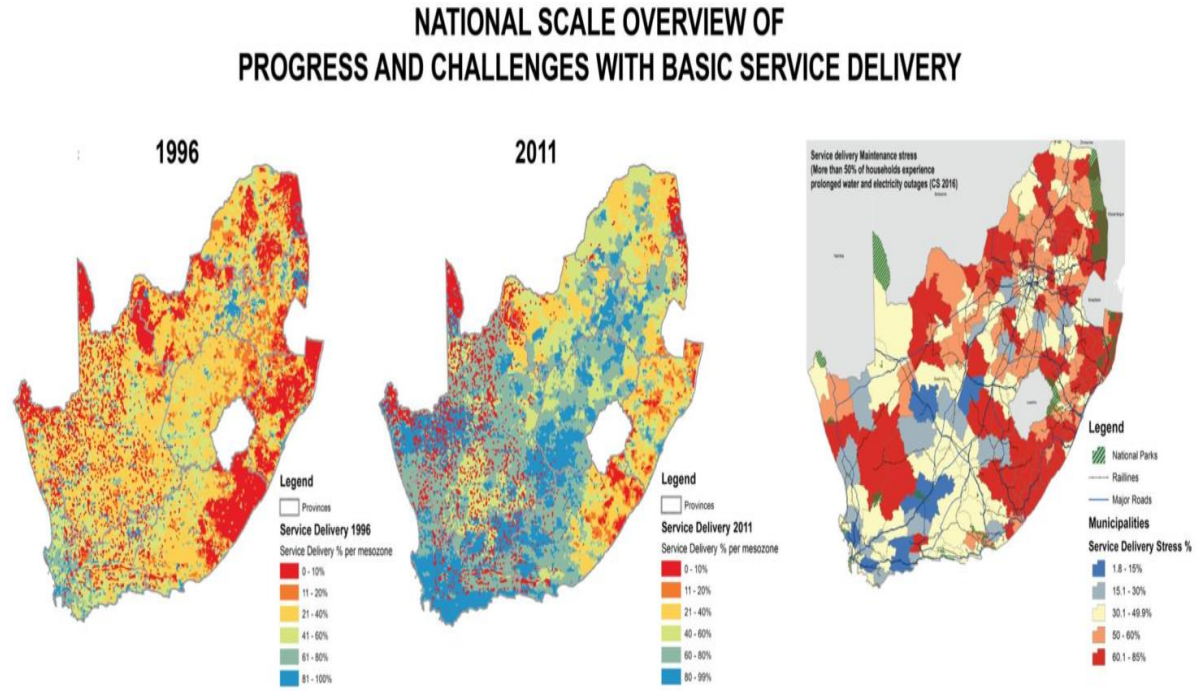
In the provincial sphere, many *provincial governments* have prepared provincial economic growth and development plans and spatial development frameworks to attend to their economic, spatial development and human settlement challenges, but have in most cases lacked (1) the funds required to put these plans into motion, given that the bulk of their funds are tied to the provision of education, health and welfare services, and (2) struggled to secure national sector department and municipal buy-in to and support for these plans and frameworks.

In the *local space,* municipalities are (1) increasingly struggling to provide basic municipal services, and (2) in many cases, overwhelmed by the huge national redevelopment and transformation tasks they have been given. And, while the crucial and potentially very powerful (1) spatial planning and transformation, and (2) land use management functions resort with them, most municipalities lack the leadership, technical capacities and finances to adequately execute their mandates. At the same time, many municipalities have turned ever-more inward, both in terms of municipal planning and the provision of municipal services, which has been hugely detrimental to progressive, transformative municipal-wide planning, and subsequently also provincial and national planning and transformation. In addition to this, in distressed mining and heavy manufacturing areas, municipalities were not only hard-hit by job losses and business closures, but also lost their steady and significant incomes from the sale of water and electricity to mines and factories. In many *rural areas,* municipalities have struggled to prepare credible plans and achieve the desired developmental impact, given (1) the vast size of their areas of jurisdiction, (2) a lack of capacity, and (3) the enormity of their inherited service backlogs.

While the State is and remains crucial to the reconstruction, transformation and development of our country, it is struggling to do so. Inadequate funding and capacity, coupled with inefficiency, incompetence, corruption and theft of State resources, has (1) led to an erosion of trust in public institutions, (2) severely damaged the culture of service delivery in the public service, and (3) the siphoning off of billions of Rands required for redress and development. The result has been a deeply frustrated populace that has lost much of its trust in the State and its capabilities. Failure to deliver on small tasks has also *reduced confidence* in the ability of the State to attend to the far larger national transformation issues.

Given these weaknesses and challenges, rebuilding trust and showing progress in the areas of transformation will be crucial in the next decade. Making good on planned interventions and ensuring the feasibility of investments in terms of long-term plans will also assist in this regard. However, to do so within the limited budgets available will require (1) far more spatial targeting, integration and alignment in infrastructure investment and development spending by the State, (2) guiding and directing private sector investment into desired sectors and locations, and (3) ensuring that existing and possible systemic links between places and communities are optimised. Careful planning of the placing, type and reach of State facilities will go a long way in this regard. Equally so will be careful planning in pursuit of the desired national spatial development pattern and concentrating resources and investments in areas where the majority of our people are living and are likely to live in future. This urgently required integrated national, regional and local-scale form of planning, budgeting and implementation will, however, require (1) the staffing of national and provincial government departments and municipalities with well-trained and ethically-solid professionals, (2) far more direction and clarity in terms of *what is to be done,* where, when, for how long, and by whom, (3) better mechanisms to ensure intergovernmental cooperation, harmonisation and alignment, and (4) the introduction of an 'intergovernmental accountability system/model' to enable State actors to jointly measure, assess and hold each accountable in relation to their pursuit of national spatial transformation and economic transition objectives.

Figure 24:
Institutions and Services – Basic Service Delivery



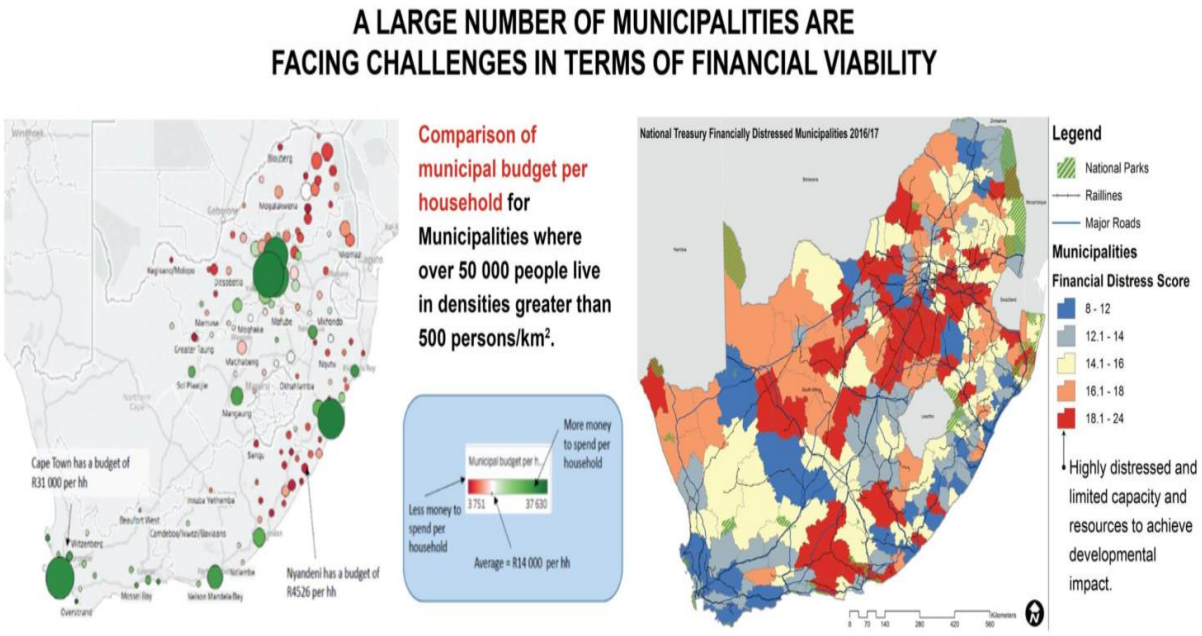
Service Delivery Provision and Access to Water, Electricity and Sanitation, Comparisons between 1996 and 2011 in relation to number of households with access to services.

Service delivery maintenance stress, where more than 50% of households experience prolonged water and electricity outages (2016).

StatsSA, 2011. National Treasury, 2018. Government Performance in South Africa, 2016.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 25:
Municipal Financial Viability



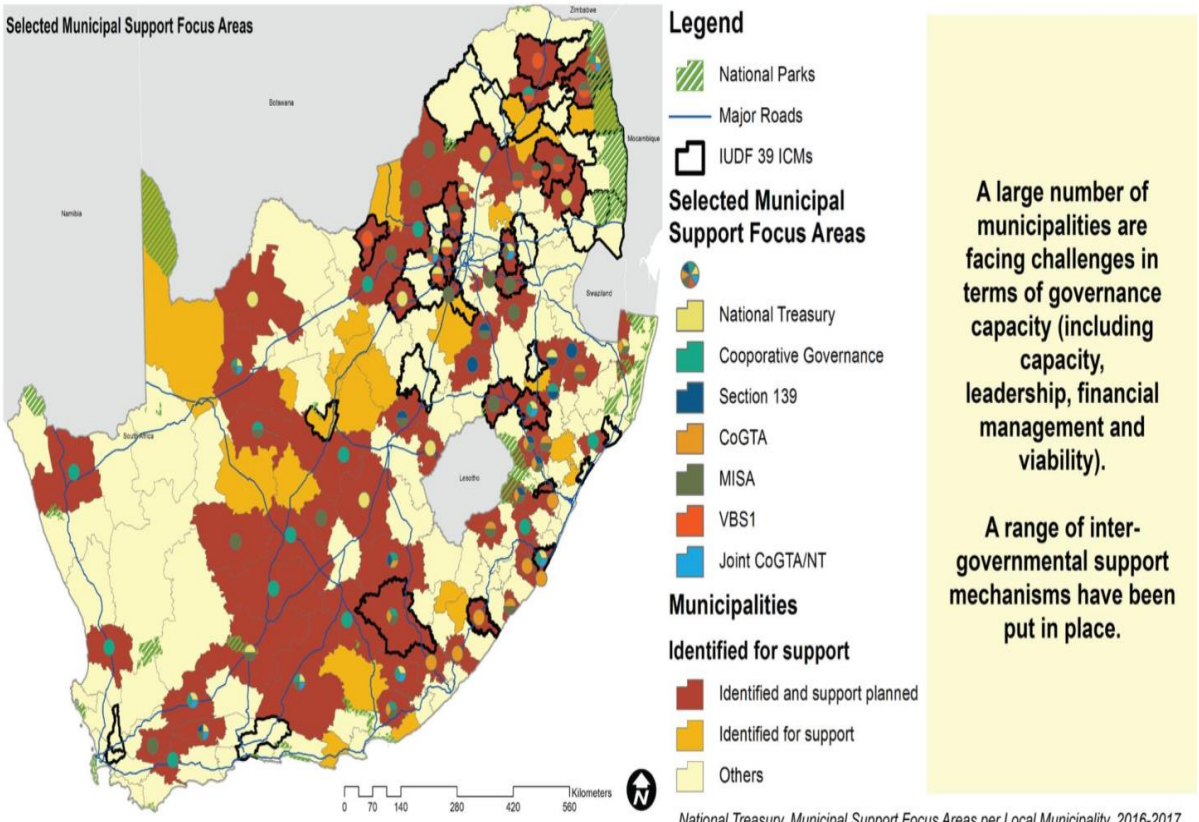
Large numbers of financially distressed municipalities has significant implications for local service delivery. It also has significant implications for national developmental impact within an intergovernmental system where developmental local governments are required to fulfill key roles as part of a bigger developmental state.

IUDF Presentation 2018; National Treasury, Municipal Financially Distressed Municipalities, 2016-2017.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 26:
Institutions and Services – Municipal Capability

AN INDICATION OF CURRENT GOVERNANCE SUPPORT FOCUS AREAS



National Treasury, Municipal Support Focus Areas per Local Municipality, 2016-2017.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

Figure 27:
Institutions and Services – Municipal Capability

LOCAL GOVERNMENT (AND THE MAJOR CITIES IN PARTICULAR) ARE CRUCIAL ACTORS IN THE COUNTRY'S DEVELOPMENT AND IN BUILDING A CAPABLE STATE IN LINE WITH THE NATIONAL DEVELOPMENT PLAN (NDP)

Municipal Capability for 2017 (Capable Cities Index)	
Capacity (municipal conduct focused internally), **Performance** (municipal conduct focused externally), & **Compliance** (municipal conduct in relation to the law).	• The capacity of municipalities has significantly improved; • 45 municipalities did not have a permanent municipal manager and CFO; • Intervention under section 139 of the constitution can improve municipal capacity; • 30 % of municipalities would still require external assistance to reach full capacity; • Cities are now performing better in filling vacant positions of senior managers; and • Being a metropolitan municipality does not necessarily mean improved capacity.

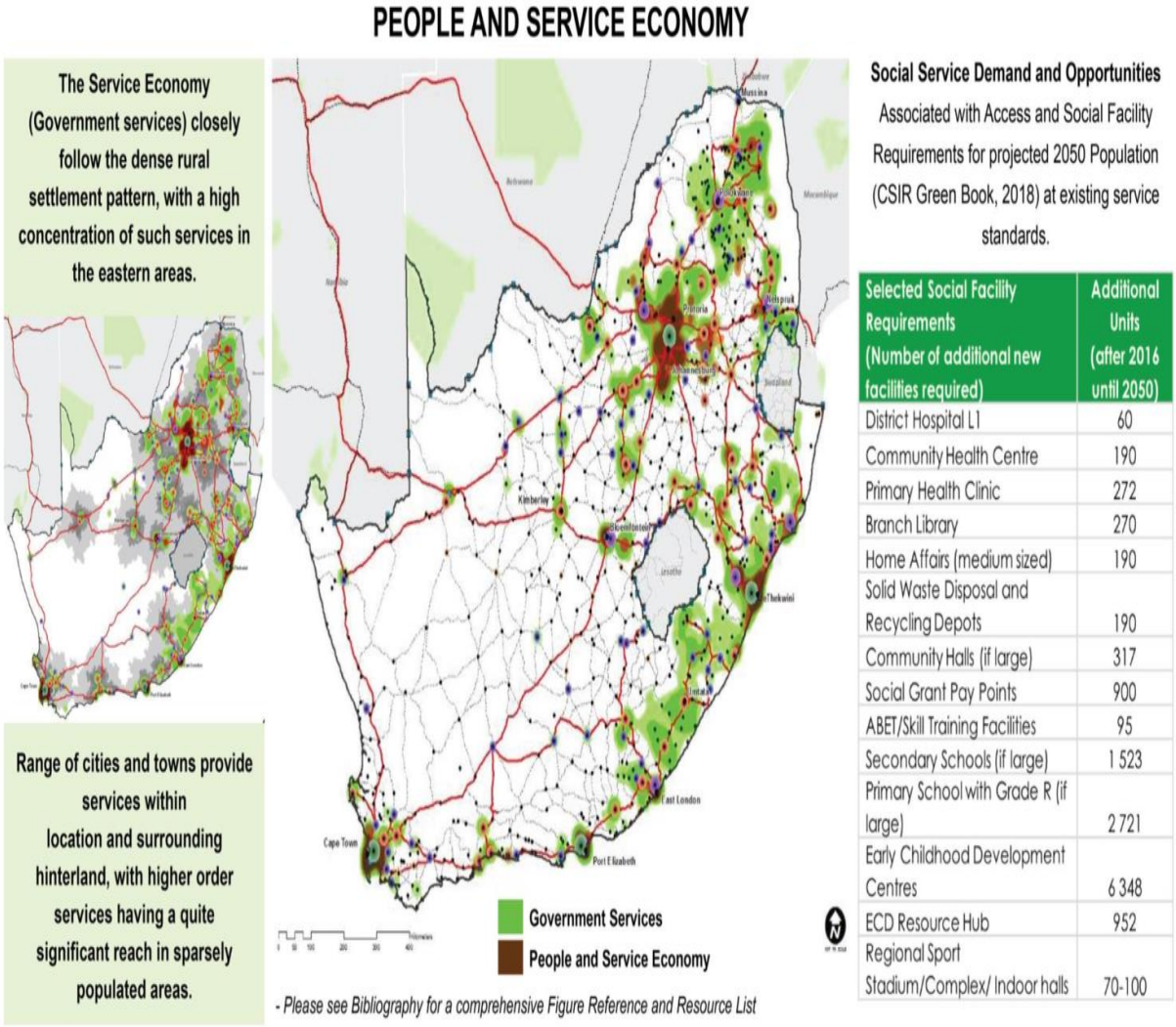
The Capable Cities Index (CCI) (Applied Constitutional Studies Laboratory at UWC (2017)), measures and ranks the capability of South Africa's municipalities on the basis of their consistency in maintaining high levels of capacity, performance and compliance, with a focus on the 27 largest cities.

Components of Municipal Capability	
Environmental capability	The social and demographic composition of citizenry; economic circumstances (including the tax base); spatial structure of settlements; and ecological, geographic, natural, mineral, and environmental context in which individual municipalities function.
Institutional capability	The structure and functionality of the organisations with which the municipality needs to interact. This includes policy, legislation, the institutional framework, and the relationships between organisations, including the regulatory, enabling, and support arrangements for local government. It also includes the financial framework within which municipalities function.
Organisational capability	Internal policies, organisational structure, ability to manage relationships and contacts with other organisations, strategic leadership, organisational purpose, organisational memory, internal confidence, human resource management, operational systems, technical capacity (ability to provide and manage infrastructure) and financial abilities.
Individual capability	The potential and competency that is found within a person. It is normally reflected through their technical and generic skills, knowledge and attitudes accumulated through education, training, experience, and networks.

- Please see Bibliography for a comprehensive Figure Reference and Resource List

Parnel, s., Moodley, N., and Palmer, I., at UWC, 2017. Defining the four components of capability.

Figure 28:
Institutions and Services – Social Services



Selected Social Facility Requirements (Number of additional new facilities required)	Additional Units (after 2016 until 2050)
District Hospital L1	60
Community Health Centre	190
Primary Health Clinic	272
Branch Library	270
Home Affairs (medium sized)	190
Solid Waste Disposal and Recycling Depots	190
Community Halls (if large)	317
Social Grant Pay Points	900
ABET/Skill Training Facilities	95
Secondary Schools (if large)	1 523
Primary School with Grade R (if large)	2 721
Early Childhood Development Centres	6 348
ECD Resource Hub	952
Regional Sport Stadium/Complex/ Indoor halls	70-100

3.11 Key National Spatial Development Dynamics, Challenges and Opportunities

The key national spatial development challenges and opportunities (1) that emerged from the discussion of the nine **National Spatial Development Shapers**, and (2) that the NSDF will have to respond to are:

- Providing life chances and a decent quality of life to *an additional 17 to 22 million people* by 2050, within the context of (1) an ever-smaller habitable land area due to climate change, (2) ever-more stressed, threatened and compromised ecological spaces and systems, and (3) ever-fewer natural resources;
- Ensuring *rapid redress at scale for Black South Africans* (1) dispossessed of their land, (2) systematically excluded from the economy, and (3) severely restricted and stinted in their life chances, while at the same time rapidly growing and transforming the economy and transforming national, provincial and local space;
- Maintaining *national biodiversity and ecosystem integrity* for global, national and local resilience within an environment of a young, dynamic and aspirational population;
- Managing competition between *human activity and nationally important ecosystems and the essential services they provide,* notably so with regard to

water production, energy generation, mining, manufacturing, and food production in the central and eastern parts of the country;

- Managing *surface and groundwater use* and potentially harmful land-uses in surface-water production areas, preventing contamination of water bodies and sources by human activities, rehabilitating contaminated water bodies, streams and rivers and maintaining bulk and local reticulation water infrastructure;
- Making the shift to a *greener, low-carbon, more service-based economy* through (1) compact, mixed land-use well-connected urban and rural settlement development, (2) the provision of enabling municipal services, and (3) efficient and affordable ICT and transport infrastructure investment and development;
- Optimising the enormous economic growth and job creation opportunities that *dense, compact and diverse urban agglomerations and development corridors* offer in the areas of human-to-human service provision, trade, entertainment, and the creative industries, especially so in an ICT-rich, but also job-threatening 4th Industrial Revolution environment;
- Improving the *quality of life and human capability* in a fiscally-constrained environment through (1) the well-located, planned and integrated provision of social services, and (2) the optimisation of the economic and employment benefits of such service provision in all our cities, towns and villages;
- Transforming the current highly financialised commercial farming *agricultural sector into a mixed system,* including hundreds of thousands of small and medium-sized producers, and optimising the economic dividends from the research, marketing, financing and equipment development opportunities that this transition will unleash in both urban and rural South Africa;
- Competing in *the global economy* through innovative product and service development in especially our large cosmopolitan urban regions, with an emphasis on (1) the creative industries, and (2) the cultural and entertainment sectors, and utilising both of these to bolster our tourism offering;
- Optimising the enormous economic opportunities that *SADC* offers for (1) trade, (2) collaborative research and knowledge development, packaging and distribution, (3) water-sharing, and (4) energy generation;
- Identifying and utilising opportunities for the *beneficiation* of minerals, metals and agricultural products where it is economically viable and ecologically sustainable to do so; and
- Optimising our existing *national transport infrastructure network* by (1) prioritising rail over road, and (2) investing in and maintaining the most crucial components of the network, with an emphasis on connecting global gateways, core urban nodes and regional development anchors throughout the country.

Part Four
National Spatial Development Vision, Logic, Levers and Outcomes

4.1 Introduction

In this part of the NSDF a number of the core components of the **National Transformation Logic** (see **section 1.2**) are covered. In the first section, the **National Spatial Development Vision** to direct, guide and align spatial planning, infrastructure investment and development is provided. This is followed by an exposition of the shifts that need to be made from the current **National Spatial Development Logic** to the required **Post-Apartheid National Spatial Development Logic** in accordance with the **National Transformation Logic** (see **section 1.2**). Following this exposition is an introduction to, and overview of a series of **'National Spatial Development Levers'** to bring about the **Post-Apartheid National Spatial Development Pattern** in accordance with the **Post-Apartheid National Spatial Development Vision** and

Logic. This is followed by a section outlining a series of *five* **National Spatial Development Outcomes** that *must* and *will be* accomplished by (1) making the shifts in accordance with the **Post-Apartheid National Spatial Development Logic**, and (2) putting the **National Spatial Development Levers** to their envisaged use. These outcomes connect the **National Spatial Development Vision** and **Logic**, as set out in this part of the NSDF (ie **Part Four**) to the desired **National Spatial Development Pattern** in **Part Five**. Following this section is **a vision of what life could be like in South Africa in 2050**, should we jointly (1) work towards the *vision*, (2) make the necessary shifts in our *spatial development logic*, (3) use the *levers* as envisaged, and (4) pursue the *outcomes,* as set out in this part of the NSDF.

4.2 The National Spatial Development Vision

The purpose of the **Post-Apartheid National Spatial Development Vision** is to provide a *long-term guiding light* for realising our desired **Post-Apartheid National Spatial Development Pattern**. As set out in the **National Transformation Logic** (see **section 1.2**) and the NSDF's *Theory of Change* (see **section 1.4.3**), this vision is:

- Derived and drawn from the **National Development Paradigm**, with as its key pillars the Constitution, the NDP, and the full suite of post-1994 legislation and policy; and
- Prepared within the current and anticipated future challenges and associated opportunities facing our country (see **Part 3** and specifically **section 3.13**).

In addition to the more eternal long-term **National Spatial Development Vision** and accompanying Mission-statement (see **Figure 29** below), a time-bound **2050-National Spatial Development Vision** is provided in **section 4.5**. This vision serves to make (1) the future more tangible, and (2) our infrastructure investment and development spending actions more measurable in terms of moving our country from where it is now to where we want it to be.

4.3 The National Spatial Development Logic

A key driver in the NSDF's theory of change (see **section 1.4.3**) is the move from a **National Spatial Development Logic** based on, and in service of the **colonial and Apartheid National Development Paradigms**, to one *based on and in service of* a **Post-Apartheid National Development Paradigm**. In this regard, it is framed and guided by:

- The *NDP* targets, strategic levers and strategic policy direction; and
- The five normative principles, as provided in *SPLUMA.*

In this section of the framework, (1) the direction and guidance provided by the NDP and the five SPLUMA principles, and (2) the *shifts* that have to be made in the **National Spatial Development Logic** are set out.

Figure 29:
The National Spatial Development Vision Statement

'All Our People Living in Shared and Transformed Places in an Integrated, Inclusive, Sustainable and Competitive National Space Economy'

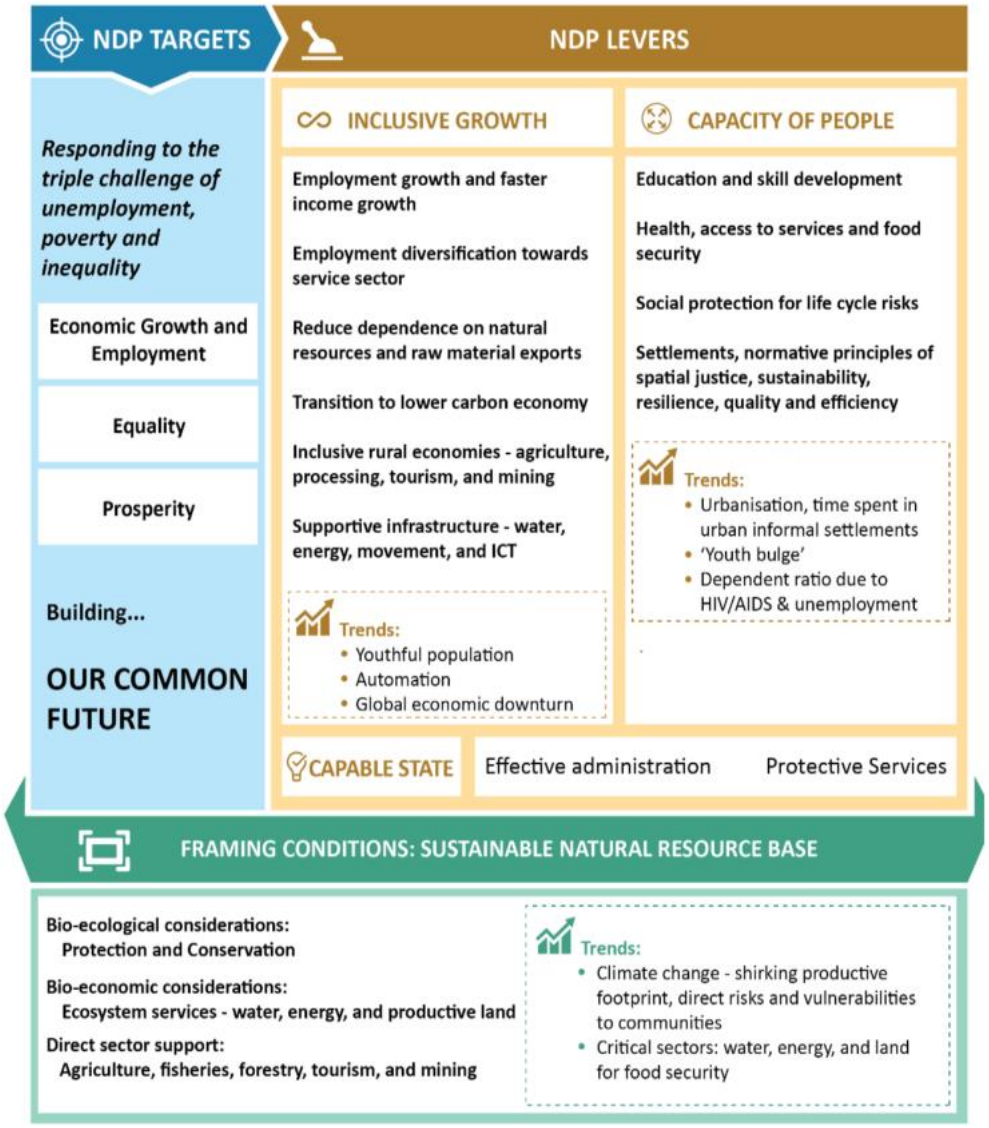
The accompanying **Mission Statement** reads as follows:

'Making our Common Desired Spatial Future Together Through Better Planning, Investment, Delivery and Monitoring'

4.3.1 The NDP as Guide and Driver

The NDP identifies a set of national development priorities, which include targets for economic growth and employment, equality and prosperity. It also identifies (1) *inclusive growth,* (2) *the capacity of our people,* and (3) *a capable state,* as the *levers* to achieve these targets. The link between the targets, levers and strategic policy direction, as provided in the NDP, is summarised in **Figure 30**.

Figure 30:
The NDP Levers and Objectives-Framework



The *national spatial development implications* of the strategic direction provided by the NDP in the formulation of a new **National Spatial Development Logic** can be interpreted as follows:

(a) With regard to Inclusive Growth

A need to:

- Transit to a compact, service-based, resource-efficient space economy, that (1) includes both rural and urban spaces, and (2) recognises the limitations of our national natural resource base;
- Consider the long-term resilience-benefits of a more compact settlement footprint in spaces less prone to the impacts of climate change, and adjust (1) settlement development forms and patterns, (2) housing types, building materials and construction methods, and (3) transport and service networks accordingly;
- Increase access and remove barriers to (1) the often concentrated and barricaded benefits of the national resource base, and (2) the locational benefits and amenities of exquisite and exclusive places developed for the few;

- Promote inclusive and sustainable urban settlement growth and facilitate movement and trade in and between settlements;
- Support growing economic nodes in previously forgotten and neglected regions, and ensure a more diversified economy;
- Deal with distressed mining and industrial areas in compassionate, just, smart, affordable and sustainable ways; and
- Recognise and develop settlements in accordance with their (1) roles in the national space economy and 'network of settlements', (2) regional and local contexts/settings, and (3) labour-absorption capacities.

***(b)* With regard to the Capacity of our People**

A need to:

- Ensure access to, and provision of quality services to all South Africans, to enable the development of human capital irrespective of where it is located in the country;
- Develop national urban centres of service excellence and innovation to drive and maintain the global competitiveness of our country; and
- Develop differentiated, place-specific and viable responses to critical issues, such as basic service delivery gaps, migration hot-spots, high levels of youth unemployment and exclusion, access to land and insecure tenure.

***(c)* With regard to a Capable State**

A need to:

- Recognise and use (1) spatial planning as a tool for transformation, and (2) spatial planning processes and plans, such as SDFs, as opportunities for integrating and coordinating State action;
- Introduce a new spatial development logic and vision in the process of building a new, cohesive society; and
- Attend to state capacity gaps, to ensure fulfilment of the NDP's developmental agenda.

4.3.2 The SPLUMA Principles as Guide and Driver

In addition to the policy directives provided by the NDP, SPLUMA provides *five guiding principles* that have to be (1) used and observed *in all spatial planning processes at all scales,* and (2) *reflected in the products* of such processes. These principles are the following:

- Spatial justice;
- Spatial sustainability;
- Spatial resilience;
- Spatial efficiency; and
- Good administration.

In terms of the formulation of a new **National Spatial Development Logic**, the following guidance and direction is drawn from these principles:

***(a)* Spatial Justice**

- Ensure redress in terms of universal access to the economic opportunities, amenities and locational benefits that the country and its cities, towns and rural areas offer, including well-located, productive land;
- Include inclusion of previously excluded areas in the national space economy; and

- Pursue intergenerational justice in (1) the location and pattern of settlement development, and (2) the use of natural resources.

***(b)* Spatial Sustainability**

- Ensure national spatial development within the limits of the natural resource base of the country – now and in the future;
- Pursue the development of viable settlements and sustainable economies; and
- Pursue a more concentrated, well-connected and more compact national footprint, to increase access to opportunities for all, and reduce (1) use and wastage of natural resources and State finances, and (2) travel distances and the need for motorised transport.

***(c)* Spatial Resilience**

- Proactively minimise risks to settlements though the considered selection of the location and pattern of settlement development;
- Develop settlements in ways that reduce their dependence on carbon-based fuels to mitigate and reduce their climatic impact; and
- Make far greater use of renewable energy generation (1) on-site, and (2) to fuel micro-grid-based energy-distribution systems in places far removed from the national energy grid.

***(d)* Efficiency**

- Optimise the use of all State and non-State resources, and minimise the negative impacts of settlement development, wherever it is done and whatever spatial form it takes; and
- Diversify and densify settlements to reduce transactional costs, travel distances and the need for motorised transport.

***(e)* Good Administration**

- Pursue coordination, integration and spatial alignment in all forms of government spatial planning, budgeting and investment;
- Ensure maximum participation and active engagement in spatial planning and settlement building, grow the local economy and tax base, and build, expand and deepen social cohesion; and
- Ensure adherence to the law, notably SDFs and municipal Land Use Schemes (LUSs), to ensure that the social, spatial, ecological and economic benefits of good spatial planning materialise.

4.3.3 The Necessary 'Shifts'

Based on the NDP and SPLUMA as *guides* and *drivers,* the following interrelated *shifts* in the **National Spatial Development Logic** are proposed to ensure the movement to a truly **Post-Apartheid National Spatial Development Pattern:**

***(a)* With regard to the beneficiaries of national spatial planning and spatial development**

- Placing the interests and benefit of the many at centre stage, and not those of a/the few;
- Ensuring access for all to the use of land for residential, social, economic and cultural purposes, both in urban and rural areas;
- Limiting the development of luxury enclaves and estates for the use and enjoyment of the few; and
- Ensuring rapid release of land through well-planned urban and rural land reform at scale, for the use, development and enjoyment by the many.

***(b)* With regard to our natural resource base**

- Placing a far greater focus on, creating a much greater awareness of, and introducing a far greater quantification of our natural resource base, to enable and enhance the sustainable use and protection of critical natural resources;
- Making a clearer distinction between the ecological and economic value of natural resources, and pursuing a far greater interest in and understanding of future trends and risks in natural resource use; and
- Identifying and earmarking broad categories of (1) high-value agricultural land for national food security and agrarian reform, and (2) environmentally-significant areas for the provision and use of essential ecosystem services.

***(c)* With regard to the nature, function and performance of our settlements**

- Recognising *our settlements as 'our new gold',* and establishing a new, renewable people and place-based low-carbon economy based on, and driven by human interaction and ingenuity in quality urban spaces, and less so economic activities based on non-renewable resources and/or with high environmental costs;
- Reframing the old logic of cities as 'engines of growth' in service of capital, to *'cities as engines of radical transformation in service of inclusive, people-focused, people-driven development and transformation',* and unleashing the enormous opportunities they offer for (1) the human-to-human services sector, (2) the innovation, knowledge-creation, valorisation and sharing sector, (3) the culture, entertainment and restaurant sector, and (4) the domestic and international tourism sector;

- Optimising the dividend of the millions of young South Africans that will be entering higher education, and be (1) gaining new insights, (2) 'making new sense' of the world, and (3) developing new forms of knowledge;
- Recognising cities as democratic spaces in which millions of economic activities and transactions take place and *can* take place, and in doing so, have the power to disrupt and restructure the highly concentrated, monopolistic nature of our economy;
- Emphasising the need to develop a new kind of city that provides universal access, and in which *public urban space* can become a key driver of a new, inclusive and enabling *'people's economy from below'*;
- Pursuing a denser, smaller, polycentric system of settlements that has (1) a smaller footprint, and (2) spans urban and rural areas;
- Making a clear distinction between the systemic roles and related capacities of different types of settlement in the national systems-based network of settlements; and
- Recognising the need for the future-proofing of cities as sites of human innovation in becoming active participants in the era of Artificial Intelligence (AI) and the 4th Industrial Revolution.

***(d)* With regard to our rural areas**

- Recognising the need to pursue vibrant, inclusive and sustainable rural development with a *'functional regional-rural systems-based approach'*;
- Identifying, developing and strengthening a series of *'regional development anchors'* in rural areas to act as (1) dual-purpose connection points and conduits for mutually beneficial *rural-rural and urban-rural connections,* and (2) catalysts for *regional-rural development*;
- Developing a functional, systems-based *'polycentric rural service-delivery network'* around regional developments anchors and carefully selected *'rural service centres'* to (1) provide quality public services, (2) enhance rural-rural interaction, and (3) drive and support local economic development;
- Exploring the possible delineation of *'rural edges'* in rural areas to ensure the protection of (1) the unique, intrinsic qualities of our rural areas, (2) the cultural, customary and historical value they have and hold, and (3) the often highly sensitive ecosystems they harbour;
- Pursuing *intra-rural trade* as core systemic and social glue/cohesion-activity between villages and towns in rural areas, and *not shopping malls*, which at core are little more than 'one-sided-extraction transaction points'; and
- Pursuing greater resilience of rural areas through diversification, in so doing ensuring that they (1) are not, and (2) do not become single-economic sector' places.

***(e)* With regard to the nature, significance, form and impact of spatial development planning**

- Ensuring greater collaboration, coordination and integration in spatial development planning, both *in* and *between* the spheres and sectors of government, including the use of (1) *national spatial targeting*, and (2) *differentiated responses* to the potentials and challenges of designated sub-national intervention areas;
- Investing at scale in 'special areas' identified for *nationally significant economic growth,* for as long as it is required to make an impact, and with the benefit of not only the national economy, *but also the related provincial, regional and local economies* in mind;
- Placing a far greater focus on optimising *the developmental impact of national infrastructure investment and social development spending initiatives* on (1) sub-national regions, and (2) the livelihoods and well-being of communities in such regions;
- Introducing a collaboratively prepared and mutually agreed to *'intergovernmental spatial transformation accountability model'* by which all three spheres of government, sector departments and non-State actors will individually and collectively hold each other accountable for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base (see **sections 4.4.4** and **6.1**); and
- Driving far greater involvement in, and support by national sector departments and provinces in municipal spatial development planning, to ensure (1) the preparation and use of progressive, quality municipal SDFs, (2) the enforcement of land-use policies and rules emanating from such SDFs in municipal Land Use Management Systems (LUMSs), as provided for in SPLUMA, and (3) the preparation of credible, mutually agreed-to and supported, and useful *'One Plans'* in accordance with the District Development Model (DDM).

4.4 National Spatial Development Levers

In order to (1) give spatial expression to the **National Spatial Development Vision,** and (2) support the shifts that need to be made in accordance with the new **National Spatial Development Logic,** a series of **'National Spatial Development Levers'** were developed. These levers have their home in:

- The contextual realities, challenges and opportunities, as set out in **Part Three**;
- The drivers, levers and principles as set out in the NDP, the IUDF and SPLUMA (see **sections 1.3.2** and **4.3**);
- The concepts and constructs that are considered exemplars of *'good spatial and settlement planning'* in local and international planning policy frameworks, guidelines and practice; and
- The theoretical domains of spatial development planning, urban design, regional and rural development planning, institutional economics, agglomeration economics, and ecological resource planning and management.

Six such **National Spatial Development Levers** were developed. Each of these is discussed below (see **Figures 31** and **32**).

Figure 31:
National Spatial Development Levers

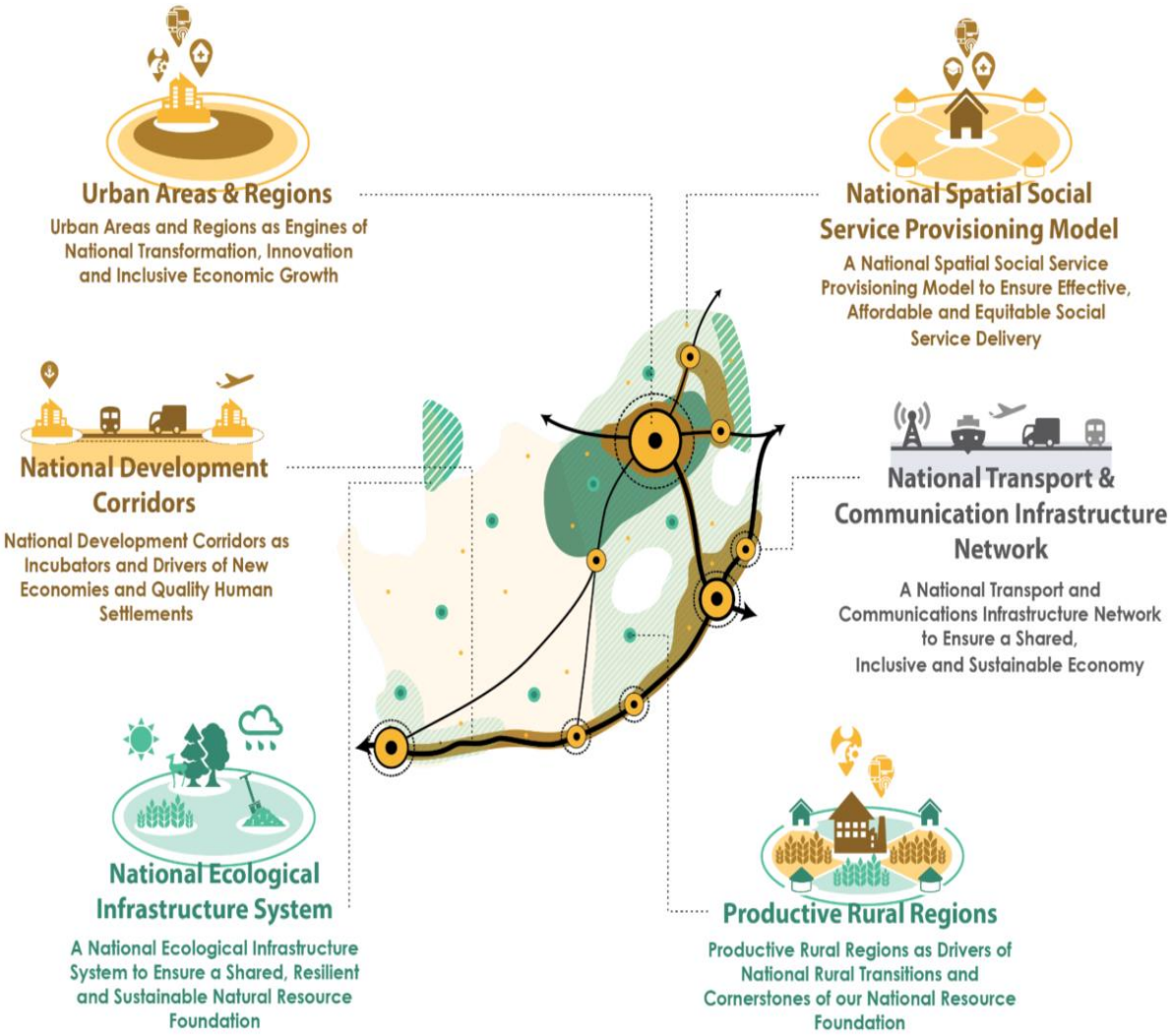
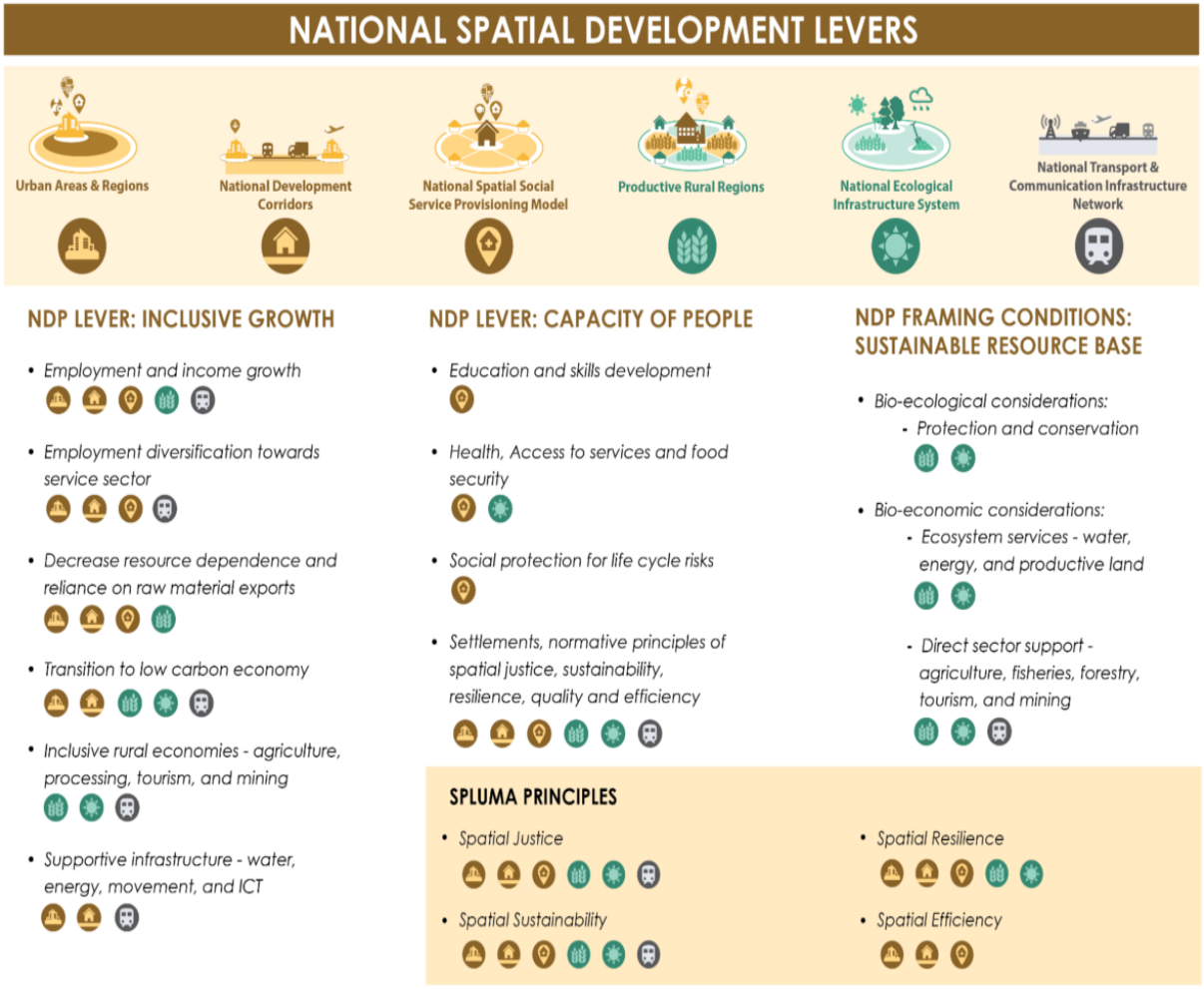


Figure 32:
Linking National Spatial Development Levers to the NDP and SPLUMA



Please note: The NDP Lever 'Capable State' and the SPLUMA Principle 'Good Administration' are addressed in the Implementation Framework (Part 6)

4.4.1 Urban Areas and Regions as Engines of National Transformation, Innovation and Inclusive Economic Growth

The IUDF argues that '... in the economic history of humanity, urbanisation has always been an accelerator of growth and development, bringing about enormous changes in the spatial distribution of people and resources, and in the use and consumption of land'. With nearly 70% of South Africa's population already living in cities and towns, and this figure set to rise to 80% by 2050, the NSDF shares this view, and argues that **urban areas** will play an increasingly important role in the development of a shared and sustainable South Africa. As argued in **section 4.3.3**, urban areas must and will become South Africa's 'new gold'. The NSDF does, however, hold that urban areas will only be able to perform this critical and desired role if:

- There are *high levels of inter-connectivity* between the country's urban regions, cities and towns, and they are all tightly integrated into a well-functioning, mutually beneficial and resilient *national urban settlement network* (see also **section 4.4.6** below);
- The *benefits of agglomeration in urban areas* are allowed to surface and flourish through (1) fast-tracked urban land reform and land release, (2) effective settlement planning, design and management, including growth management, (3) the introduction of regulations and land use management systems that focus on strategic and not petty matters, (4) densification, diversification and quality public place-making practices that adhere to the principle of universal access, (5) the provision of basic municipal and social services in a financially viable way, (6) the provision and use of universally accessible, safe and effective public transport and non-motorised bicycle lanes and walkways, (7) stringent water demand and waste management, (8) the creation of safer environments, and (9) the provision of effective policing services; and
- *Regional-level urban development corridors* between (1) cities and towns in urban regions, as well as (2) existing and emerging nodes within cities and towns (such as between township nodes, suburban nodes and Central Business Districts) are properly planned, developed, supported and strengthened.

4.4.2 National Development Corridors as Incubators and Drivers of New Economies and Quality Human Settlements

National Development Corridors are large stretches of densely-populated human settlements and intense economic activity primarily located along/on roads and/or railway lines. The (1) dense human settlements, (2) the road/railway links, and (3) the intensive economic activities, mutually support each other in a synergistic way. While such corridors often develop organically over long periods of time, they can be supported and strengthened, and their development fast-tracked though well-considered, well-timed and targeted 'strategic interventions'. Such interventions typically entail (1) the strengthening of the economy or the housing market in cities and towns in the corridor, (2) the construction of new, or the expansion and/or upgrading of existing road and railway links in the corridor, and/or (3) the provision of targeted incentives to support more spatially-concentrated and economically-diverse land development in corridors in urban and rural areas marred by sprawl.

In addition to supporting the use and development of **National Development Corridors**, the NSDF puts forward the concept of **National Spatial Transformation and Economic Transition Regions** based on 'the logic of corridors', as potentially powerful national spatial development levers, especially (1) along coastal-based tourist routes, and (2) in former Bantustan areas marked by dense, yet sprawling human settlements along roads and/or railway lines.

The development of these *mega-scale* **National Spatial Transformation and Economic Transition Regions** will, however, require:

- Intensive and sustained *broad-based, multi-sectoral intergovernmental and SOE-collaboration,* especially so with regard to the quantum, timing and spatial location of (1) land to be released for use/settlement, (2) infrastructure investment, upgrading and maintenance, and (3) social service provision;
- The development of urban areas in these regions in accordance with the *requirements for urban areas* as set out in **section 4.4.1** above; and

- The *availability of viable, real economic opportunities,* which would ideally not be based on a single economic sector, to (1) enhance resilience, and (2) increase the prospect of developing robust and diverse economies based on these opportunities.

4.4.3 Productive Rural Regions as Drivers of National Rural Transitions and Cornerstones of our National Resource Foundation

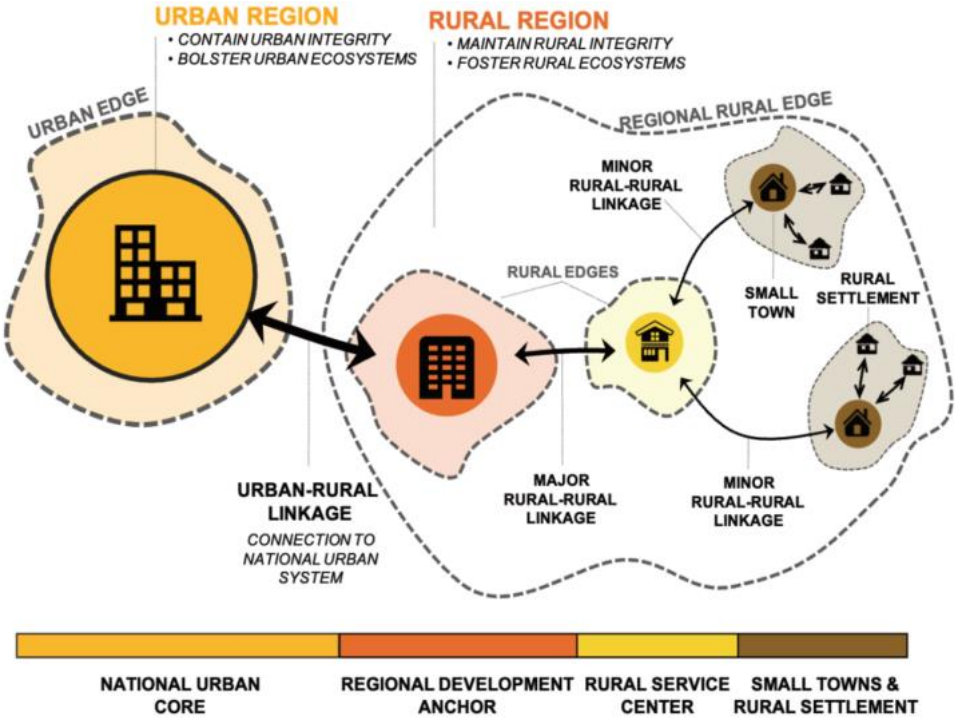
Rural areas, especially in the former Bantustans, (1) were by and large zones of neglect, and the major 'cost-bearers' of large-scale commercial farming, mining activities and urban-based manufacturing economies *during colonial and Apartheid times*, and (2) *have of late* been the sites of often well-intended, but piece-meal, unintegrated, and fragmented spatial and economic development initiatives.

The NSDF puts forward a **Regional-Rural Development Model** (see **Figure 33**) as a third **National Spatial Development Lever**. This model:

- Takes a systemic *view of rural areas* and proposes the 'soft delineation' of *'polycentric functional rural regions*' that have (1) at least one well-connected regional development anchor, located both within the region, and on the national transport network to 'anchor' the region as a whole in, and connect it to the national space economy, (2) social, cultural, historical, economic and cultural characteristics and attributes that would make the development of a 'functional rural region' possible over time, and (3) the potential for *intra-regional rural-rural and rural-urban trade* between towns and villages in the region;
- Proposes the preparation of *regional-rural development plans,* as the DALRRD has already begun to do in rural South Africa, for these regions, and include the projects and plans that are identified in these plans in the IDPs, SDFs and DDM One Plans of the municipalities in whose areas of jurisdiction the regions fall;
- Requires that *land reform* be fast-tracked and undertaken within the framework of the regional-rural development plan to ensure that suitable and well-located (1) agricultural land, and (2) stands in towns, are identified through a multi-criteria assessment process and released for productive, commercially viable agricultural purposes, and that the necessary support for beneficiaries (inputs, fencing, equipment, markets, finances, etc) is properly planned for and undertaken in a systematic, structured, effective and sustained way;
- Requires wise *natural resource* use, management and protection;
- Utilises the **Social Service Provisioning Model** (see **section 4.4.4** and **Figure 34**) to (1) *provide social services* in villages, towns and regional development anchors in accordance with their role and place in the region in the most effective, sustainable and affordable way, and (2) create at least one regional development anchor/town to attract and retain professionals and entrepreneurs who would otherwise generally not move to, or stay in rural areas;
- Envisages *the use of 'rural edges'* (see **Glossary of Terms**) to bolster the 'regional systems' from intrusion of non-compatible and potentially destructive land uses that could (1) disrupt or violate the rural integrity of the region, (2) remove or destroy crucial regional systems-components, such as the ecosystems on which the region relies, and (3) threaten local lifestyles and cultures in the region; and

- Depends on local people being duly empowered to become active participants and 'change agents' in the development of their areas, and, as such, makes a move away in 'rural development thinking and practice' from an approach of *'transformation-from-above'* to one of *'transformation-from-below'.* [†††]

Figure 33:
Schematic Presentation of the Regional-Rural Development Model



4.4.4 A National Spatial Social Service Provisioning Model to Ensure Effective, Affordable and Equitable Social Service Delivery

The realities of (1) national fiscal constraints, (2) the high construction, maintenance and staffing costs of social services, and (3) the general inward focus in requests and proposals in municipal IDPs and SDFs for the placing of *national* and *provincial* social service facilities, require that a rational allocation of facilities that render social services be done in national space. In addition to this, investment in social infrastructure, if (1) well-planned, (2) designed for multiple uses, and (3) placed in 'the right location/spot', eg on public transport routes, and in a place where adequate municipal services are available, in a village, town or city, can become:

- An *attractor* for economic activities and contribute to place-making, urban densification and diversification; and

[†††] See Greenberg. 2013. Institute for Poverty, Land and Agrarian Strategies, UWC. Page 18, 19; See Cousins (2015), Aliber et al (2017).

- A *catalyst* for nodal development and assist in reducing transport costs and limiting urban and rural sprawl.

The provision of social services is also a creator of public sector jobs with secure incomes, which can assist in bringing a degree of predictability to the frequency and size of disposable income in a region or town. In rural areas, where settlement development was often not planned, (1) the preparation of a proper 'rural design framework/plan' that incorporates the principles of universal access and design, and (2) the placing of government services in accordance with this framework/plan, could greatly assist in developing rural towns/settlements with solid, resilient public investment/capital structures.

The **National Spatial Social Service Provisioning Model** (see **Figure 34**) put forward in the NSDF as a **National Spatial Development Lever,** works on a hierarchical base and in support of the proposed **Regional-Rural Development Model** (see **section 4.3.3**). In terms of this model, the higher the order of a service in a category, and the larger its spatial reach, the higher the order of place it is to be placed/located in (see **Figures 34** and **35**) ‡‡‡ In for instance the case of *'Health and Emergency Services',* regional hospitals would be placed in *'national urban cores'* and *'regional development anchors',* and mobile clinics in small villages. Likewise, in the case of *'Skills and Education',* universities would be located in *'national urban cores'*, high schools in *'rural service centres'*, and small schools and mobile libraries in villages.

While rather rigid in appearance, the model *does not propose an iron-caged spatial investment model*, but instead envisages a situation by which municipalities and national and provincial sector departments would use the *'national and regional settlement and service network'* or *'Social Services Wheel'* for short, as a strong indicator and guide in *jointly engaging and deciding on* the spatial location of facilities. In addition to this, the wheel could also be used to:

- Avoid and resolve intergovernmental disputes regarding the spatial location of social service facilities;
- Inform, structure and guide engagements by communities with government regarding the provisioning and spatial location of social services; and
- Assess social services-investment decisions by national and provincial sector departments and municipalities in accordance with the proposed collaboratively prepared and mutually agreed to *'intergovernmental spatial transformation accountability model'* (see **sections 4.3.3** and **6.1**).

‡‡‡ The level of service per settlement typed indicated in the 'Social Services Wheel' is based on the following previous work that is documented in:

- Green, Cheri; Mans, Gerbrand; Ngidi, Mawande; Sogoni, Zukisa; & Maritz, Johan. Using Catchment Areas Analysis and GIS based Spatial Analysis for Prioritising Spatial Investment in Non-Metro South Africa- 2016. ISOCARP Durban, 12-16 September 2016. (Short title 'Prioritisation of Towns for Social Investment').
- Green, CA & Argue, TC. 2012 CSIR Guidelines for the Provisions of Social Facilities in South African Settlements. August 2012: ISBN 978-0-7988-5603-4. (Short Title CSIR Social Facility Standards).
- Green, C. & Argue, T. 2016. Guidelines for the Differentiated Provision of Social Services in Rural Areas. Commissioned by the Department of Rural Development and Land Reform (Short Title Differentiated Social Facility Standards).
- CSIR Town Area Typology 2018.

Figure 34:
A National Spatial Social Service Provisioning Model ('Social Services Wheel')

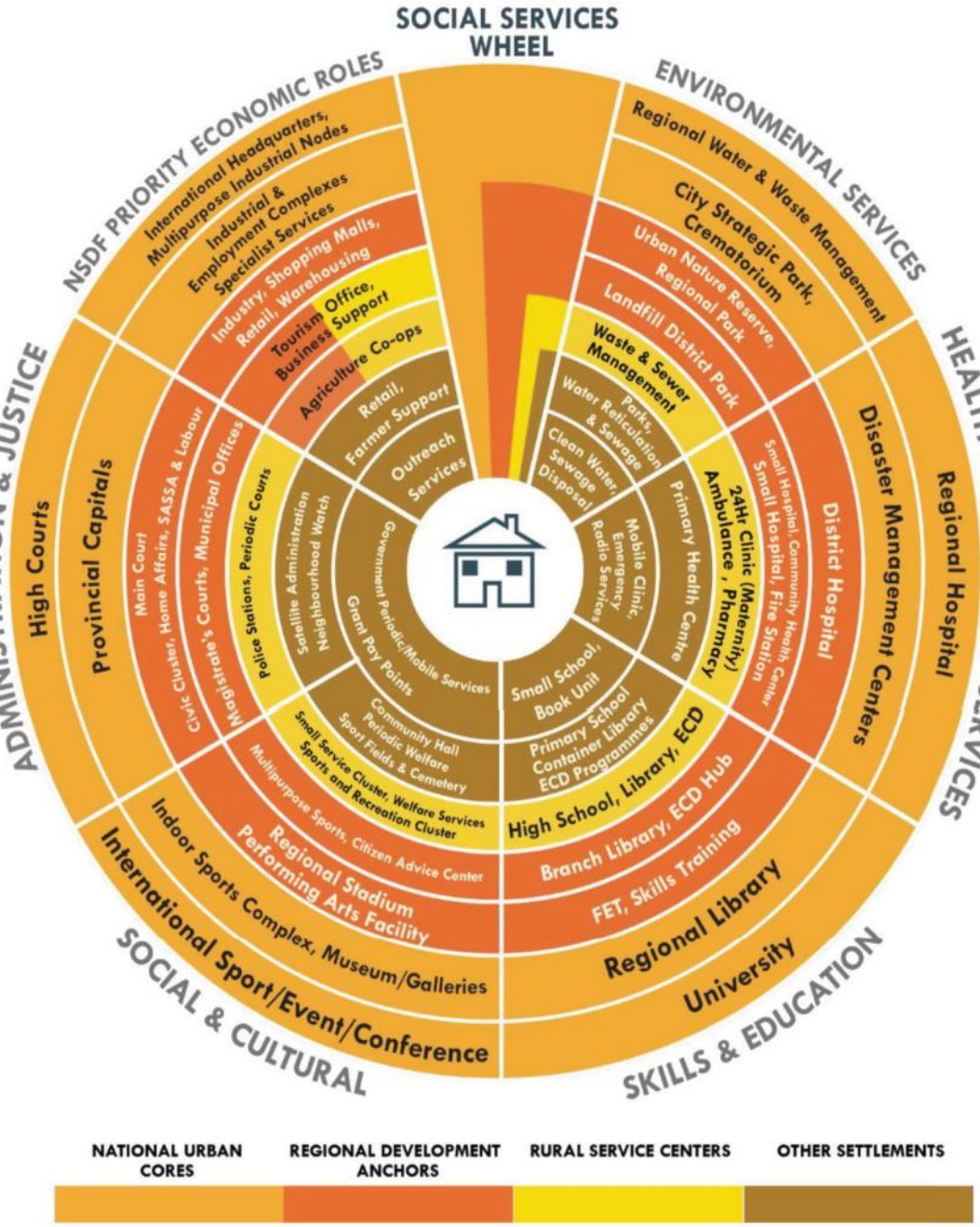
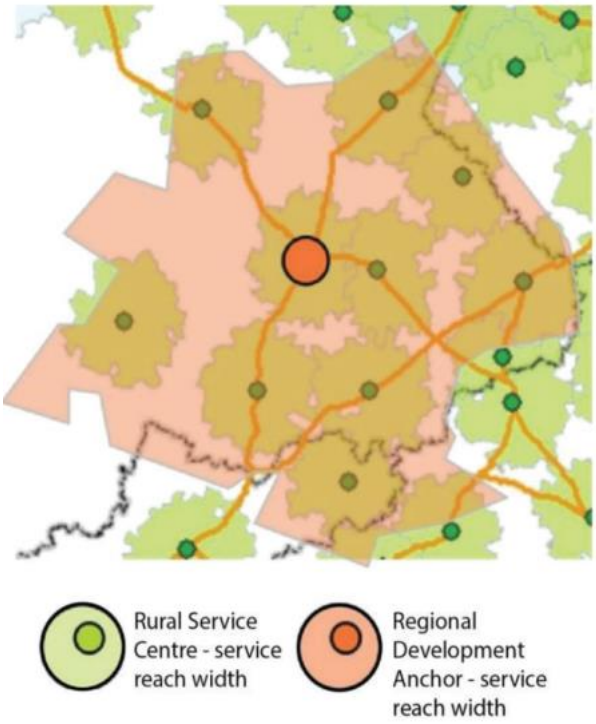


Figure 35:
Illustration of Settlement Service Reach



4.4.5 A National Ecological Infrastructure Network to Ensure a Shared, Resilient and Sustainable National Natural Resource Foundation

It is both a (1) national spatial development, and (2) human rights imperative to ensure sustainable and just access to natural resources for current and future generations. The **National Spatial Development Vision** recognises this, and specifically refers to the need for our country's natural resources to be (1) accessible to, and (2) shared and used by all in a sustainable manner. In order to give spatial expression to this imperative, the NSDF introduces a **National Spatial Ecological Infrastructure Network** as a *national spatial development lever* in recognition of:

- The *limited availability of high-value agricultural land* in the country, and seeks to ensure that this resource is identified and managed with the utmost care, to ensure national food security;
- The *high levels of regional interdependency between water catchment areas and* the enormous volumes of *water transfers* in the country, and hence the need to protect (1) *surface water production catchment areas* from encroachment by non-compatible land-uses, as well as (2) *underground water sources* from contamination by noxious activities; and
- The major changes in *land suitability and habitability* that extreme climate change is set to bring to the country, and hence the need to identify those areas that will most likely be least affected by climate change, and ringfencing, preserving and

protecting these areas for (1) future (emergency) use for water and food production, and (2) the provision of crucial national ecological ecosystem services.

The **National Spatial Development Lever** put forward in the NSDF in this regard seeks to (1) *identify those areas of crucial national ecological significance*, and (2) *propose measures to ensure their protection and management, and their reservation as such*, in all provincial, regional and municipal SDFs to be prepared henceforth.

4.4.6 A National Transport, Communications and Energy Infrastructure Network to Ensure a Shared, Inclusive and Sustainable Economy

A well-functioning and well-managed *national transport and connectivity infrastructure network* that ensures and enables (1) the safe and efficient movement and transport of people, (2) the rapid and reliable flow of information and communication, (3) the efficient transport of goods, (4) the provision of services, and (5) the ability to participate and interact in the global economy, is crucial to the spatial development and economic life of any country. Given (1) the *high costs* associated with the construction, upgrading and maintenance of such networks, which include airports, harbours, border posts, logistics hubs, electricity, fiber networks, cellular masts, natural gas pipelines and road and rail networks, and (2) *the need to recover such costs through paid-for-use,* a country has to carefully plan *where* these networks are to be provided. In the case of South Africa, *the legacy of historic national development paradigms* in terms of which such networks supported first colonial extraction and export, and later the creation of the Apartheid State for a White minority, requires that these networks *now, and henceforth, be strategically planned, built, and maintained in support of post-Apartheid spatial transformation and inclusive economic growth.*

The **National Spatial Development Lever** put forward in the NSDF with regard to transport and communications infrastructure networks, seeks to ensure:

- Investment in *maintaining, strengthening and expanding connectivity* to ensure the creation of a solid transport and communications network between urban areas and regions, regional development anchors and smaller towns and villages in such regions, with a focus on (1) ensuring the roll-out and continuous upgrading of broadband access to all South Africans, and (2) prioritising rail over road infrastructure;
- More *people-focused infrastructure investment,* such as (1) upgrading infrastructure networks in major urban areas and towns, to accommodate far higher densities and intensities, (2) installing and maintaining infrastructure networks in former township areas at scale, so as to develop these previously neglected areas into high-quality urban living spaces, and (3) developing universally accessible, quality public spaces, pedestrian walkways and efficient, affordable and safe public transport networks for use by all;
- More *upgrading of ageing urban municipal service infrastructure* and large-scale investment of municipal infrastructure in regional development anchors and rural service centres; and
- More investment in the *enabling and catalytic infrastructure* required for (1) renewable energy-generation, storage and distribution, (2) smallholder farming and agro-processing, (3) tourism, culture and entertainment-led economic growth, and (4) innovation and knowledge-creation, packaging and transfer.

4.5 National Spatial Development Outcomes

4.5.1 Introduction

This section outlines a series of *five* **National Spatial Development Outcomes** that *must* and *will be* accomplished by (1) making the shifts as set out in **section 4.3** and (2) using the **National Spatial Development Levers** as set out in **section 4.4**. These outcomes, each of which is briefly described in the following five sections, connect the **National Spatial Development Vision** and **Logic** in this part of the NSDF (**Part Four**) to the desired **Post-Apartheid National Spatial Development Pattern** as set out in **Part Five**.

4.5.2 National Spatial Outcome One

A network of consolidated, transformed and well-connected national urban nodes, regional development anchors, and development corridors that enable South Africa to derive maximum transformative benefit from urbanisation, urban living, and inclusive economic development.

In terms of this outcome:

- Consolidated and quality settlements are provided with the necessary social and economic infrastructure for a fast-growing population in a way that considers (1) all our available natural and human-made resources, and enabling and empowering technologies, and (2) the need to provide for both current and future generations;
- National urban regions and nodes act as national and global gateways for trade, tourism and national political functions, and gateways for supra-national African and SADC integration;
- High-density urban nodes provide opportunities for interaction, innovation and enterprise development within (1) existing, as well as (2) new, inclusive and interaction centred enterprise economies;
- A well-developed service infrastructure system acts as the basis for just and universal access to high quality social and other services in:
    - A *strong and well-functioning polycentric system* of well-connected urban core areas within wider functional urban regions and corridors that offer a wide range of high-order medical, education, government, safety and security, trade-gateway and economic services; and
    - A network of *vibrant regional development anchor towns*, with strong rural-rural connections to strategically located rural service centres that act as regional-rural service providers.

4.5.3 National Spatial Outcome Two

National-scale corridors and regions of opportunity enable sustainable and transformative urbanisation, urban consolidation, mutually beneficial urban and rural linkages, and ecological management.

In terms of this outcome:

- Economic activities, settlement development and infrastructure are focused on/located within well-connected inter-regional and national development corridors and routes;
- Urbanisation, settlement growth and the dynamically changing needs of a growing population are directed, attracted to, and accommodated in a system of national urban regions and nodes, with specific emphasis on national development corridors and **National Spatial Transformation and Economic Transition Regions** that provide viable, transformative and sustainable opportunities for sub-national, systems-based regional adaptation through:
    - Settlement transformation and consolidation and the creation of inclusive urban economies;
    - Effective land-management and custodianship of national strategic water production and ecologically sensitive areas; and
    - Sustainable eco-agri-enterprise activities and livelihoods.

4.5.4 National Spatial Outcome Three

National connectivity and movement infrastructure systems are strategically located, extended and maintained, to support a diverse, adaptive and inclusive economy, and a set of key national and regional gateway cities and towns.

In terms of this outcome:

- The national transport, trade and communication network is aligned with, and serves the identified nodes and development corridors in a way that supports the development needs of our growing population through (1) effective support for the economy, (2) the delivery of quality services, and (3) growth in employment;
- All national road, rail, air, maritime and Information and Communication Technologies (ICT) networks and infrastructure are aligned and prioritised, based on the demand and volume of services, as well as envisaged future growth in identified areas;
- Transport and logistic links serve natural resource-based economies in areas focused on (1) the export of raw materials, and (2) processing-activities related to mining, agriculture, forestry and manufacturing;
- Regional and local (1) freight movement, and (2) public transport are aligned and used to support and strengthen identified nodes and connecting corridors;
- Effective development of all national ports of entry, including (1) the upgrading and maintenance of logistics infrastructure, and (2) the provision of efficient customs services, is ensured to support the international and regional flow of goods, services and people; and
- National water and energy distribution infrastructure is expanded, upgraded and maintained to ensure universal national water and energy supply and distribution.

4.5.5 National Spatial Outcome Four

Productive rural regions, supported by sustainable resource economies and strong and resilient regional development anchors that provide access to people living in rural areas to the national and global economy.

In terms of this outcome:

- Differentiated rural development (as called for in **Chapter 6** of the **NDP**) entailing small, medium and large-scale agriculture, agro-processing, agro-eco enterprises, tourism, and natural resource management and protection, play a key role in (1) creating economic opportunities, and (2) addressing unemployment, poverty and inequality in these regions and the country as a whole;
- Well-functioning, well-connected and productive rural regions (1) strengthen and enhance rural development and the well-being of rural communities, and (2) ensure the wise use, management, and protection of nationally significant natural resources;
- Large and strategically located towns in rural areas with significant rural-regional reach in terms of social service provision, tourism, personal services and administrative functions, are identified and developed and/or strengthened as *'regional development anchors'* that (1) act as conduits for mutually beneficial urban-rural and rural-rural linkages, (2) strengthen the development of functional regional-rural systems, (3) enhance national food security, rural transformation and rural enterprise development and quality of life in rural South Africa, and (4) support urban consolidation, innovation and growth, and the provision of affordable access to housing and municipal services (in these anchors); and
- A set of well-connected, strategically located smaller towns act as *'rural service centres'* to (1) ensure mutually beneficial *urban-rural* and *rural-rural* linkages, and (2) provide distributed, but efficient and universal access to critical social services and sustainable livelihood and settlement opportunities within productive and prosperous rural regions.

4.5.6 National Spatial Outcome Five

The national ecological infrastructure and natural resource foundation are well-protected and managed, to enable sustainable and just access to water and other natural resources, both for current and future generations.

In terms of this outcome:

- National ecological infrastructure assets, as the foundation of our national ecological infrastructure network that sustains all life and livelihoods, are protected and well managed through a range of mechanisms, including (1) formal protection, (2) sound spatial planning and land-use management, to avoid incompatible land uses that disrupt the ecological functioning of these assets, (3) land and resource management that maintains ecological functioning, and, where necessary, (4) restoration, such as removing invasive alien plants and restoring wetlands;
- National ecological and biodiversity management areas, consisting of (1) protected areas, (2) *Strategic Water Source Areas (SWSAs)*, and (3) *Critical Biodiversity*

Areas (CBAs), are recognised as nationally important and are well-managed and, where not yet the case, formally protected;

- The national water-capture, storage and inter-regional transfer system is well-planned, funded and maintained, and, together with the introduction of far more stringent national, regional and local water-supply management measures, ensures (1) national water security and well-being, and (2) quality livelihoods for all;
- Ensuring that long-term water availability' takes centre-stage in well-aligned and integrated long-term national, provincial and municipal strategic and sector planning processes, and includes a focus on supra-national, national and sub-national water-interdependencies; and
- In full recognition of (1) our complex inter-regional and national spatial interdependencies, and (2) the impact of spatial development on ecological infrastructure, national spatial development and land use is well-planned and effectively managed.

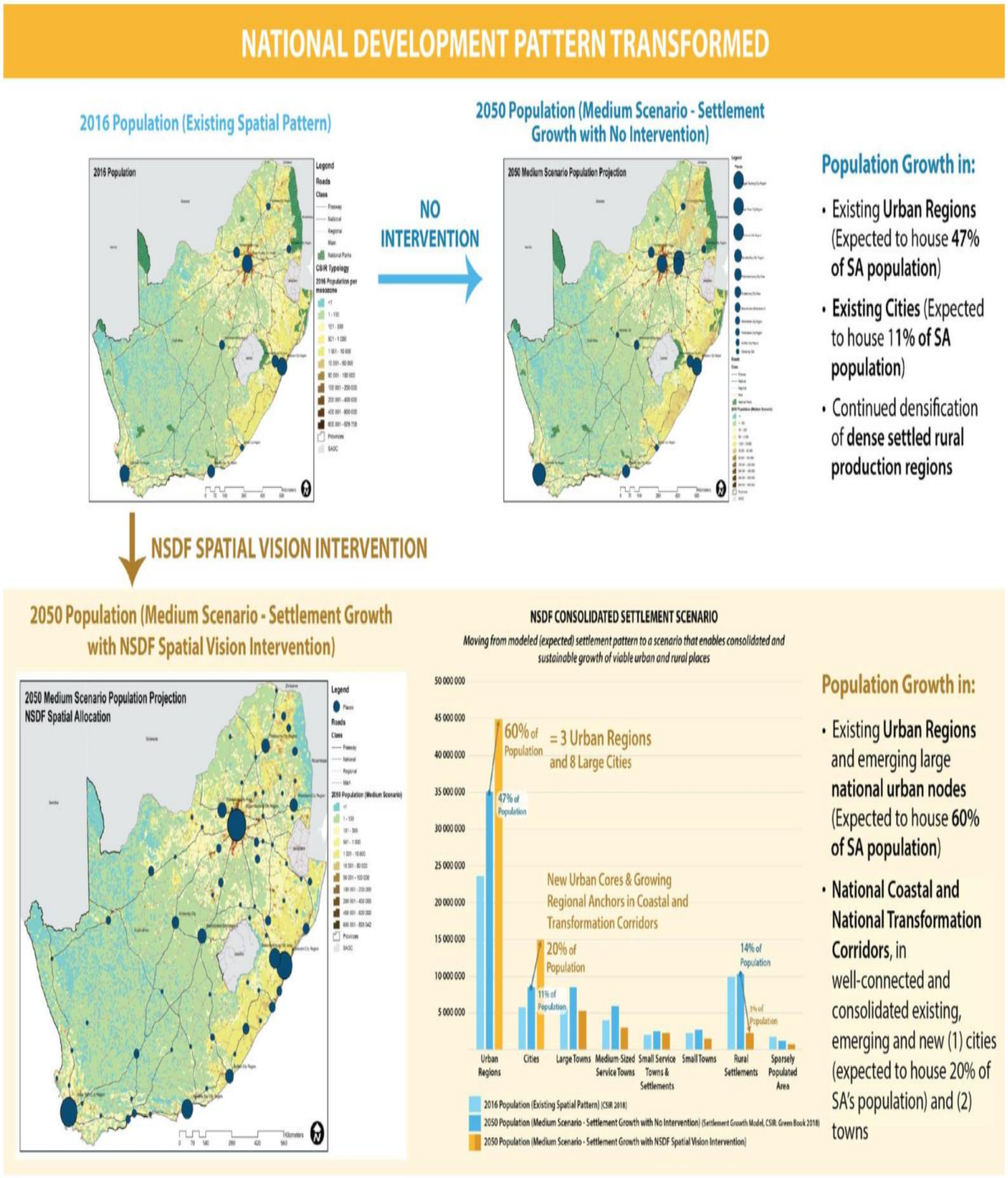
4.6 Putting it All Together: Life in South Africa 2050: The Long-Term National Spatial Development Vision, Logic and Levers in Action

In this section, the **2050-National Spatial Development Vision** as tangible expression of what the desired future will entail once the **Post-Apartheid National Spatial Development Vision, Logic** and **Levers** have been put into action is presented. It reads as follows...

75 Million South Africans

It is April 2050. A year earlier, during South Africa's 55th *'27 April-Democracy Celebrations'*, the 75th million South African was born in the Buffalo City Urban Region. This massive urban conglomeration is one of the 'big four' urban conurbations along the South African east coast, that are now jointly home to more than eight million South Africans. These four urban conurbations have grown rapidly – their growth equalling that of the Cape Town Urban Region, with its more than six million inhabitants. Despite their rapid growth, the 'big four' are still a long way off from the Gauteng Urban Region with its population of more than 22 million people. Together with the booming cities of Polokwane, Mbombela, Rustenburg, Msunduzi and Mangaung, each with their populations of around 1 million people, the eleven urban conurbations now provide a life, a livelihood and a future to around 42 million people, or around 60% of the South African population (see **Figure 36**).

Figure 36:
National Spatial Development Pattern Transformed



Eleven Urban Conurbations

In contrast to days gone by in which large parts of metropolitan South Africa were described as 'lifeless and boring', they are now hives of activity. Three-to-six storey mixed-use buildings are the norm (1) in the buzzing former inner-city areas, and (2) along dense activity-streets in many of the suburbs. Forgotten are the dismal lockdown and social-distance days of COVID-19. Rooftops are in most cases used for (1) food production, preparation and distribution, (2) pop-up music performances, (3) poetry nights, and/or (4) plays. Some of them are used for solar and wind energy generation, alongside a myriad of other ways of doing so (1) on buildings and verandas, and (2) in

larger commercial energy farms on high-lying areas and in the ocean, alongside the numerous thriving aqua-culture projects.

Trade with African countries along the east coast of the continent, as well as with India and China, has boomed over the last three decades. In contrast to bygone days, this is far less in the form of the export of raw commodities, some of which are no longer shipped, such as coal, due to international carbon-trade-bans dating back to the 2030s. Nowadays, South Africa is a major exporter of a wide range of high-value hand-made high-fashion clothing, jewellery, art, furniture, foodstuffs and beverages, which have become highly sought after in countries where nearly everything is made by machine. A key contributor to this new dawn for South Africa was the unveiling by government in the early 2020s of its massive and hugely successful *'Smart Reindustrialisation Programme'* and its *'Eastern South Africa Development Plan'*. Driven by (1) the evermore-pressing droughts in the western and north-western parts of the country, (2) the unfulfilled and deferred promise of the democracy that was won at such a high cost, and (3) the enormous agriculture, industrial and settlement development opportunities 'that lay east', and which were with great effect unlocked by the massive *'New Land Reform Programme'* of the 2020s, Government acted swiftly and decisively. And now, 25-30 years on, this is the outcome.

Transformation at Scale

The massive national-led *'macro-restructuring and development plans'* not only resulted in shared economic growth and poverty alleviation at scale, but also assisted in inculcating a culture of joint, 'all-in', targeted, integrated and coordinated planning. Out the door went untargeted, unplanned and unintegrated investment by government and the private sector, and the wastage of time and money by everyone pursuing their own plans and projects in their own backyards. A key driver in this regard has been SPLUMA, which by the late 2020s had outgrown its teething problems and matured into a powerful transformative force for good. It is now (1) used as intended throughout the country, and (2) valued and respected by government, communities, traditional leaders/authorities and the private sector, alike.

In addition to the positive impacts the macro-restructuring and development plans had on the national spatial development planning system, the 'tangible success' of these plans assisted in *making South Africans believe that they can, and that it was possible to develop a truly transformed, liberated and prosperous post-Apartheid South Africa.* The fruits of this freed-up, confident country are everywhere to be seen – from the dynamic and mutually beneficial interplay between (1) well-targeted, wise government investment, and (2) innovative, organic urban growth and land development by communities, to the booming SADC region. It is especially this supra-national bloc and the connections and free flow of goods, services and people that it has enabled that have played an enormous role in the national economic growth rate of on average between 3% and 6% since the mid-2020s. The benefits have not only been felt on the national level and in the big urban areas, as also smaller towns and rural areas have gained from it. Always and everywhere *'thinking SADC, nationally, regionally and locally'* when planning, budgeting, and undertaking infrastructure investment and social and economic development spending, played a huge role in this achievement.

A Good Life in Urban South Africa

Life on the streets of urban South Africa is very different to the first two decades of the 2000s. In contrast to life back then, the streets are now filled with people, and there is excitement in the air. There are now also far fewer cars in the streets, and all you hear is people's voices and music – walking and cycling are now the most popular means of moving around, and the hydrogen-powered buses and trucks and electrical taxis barely make a noise. Instead of pavements packed with cars, there now are (1) many small places to eat, (2) salons where you can have your hair done, (3) little shops selling anything from fresh produce to health foods, (4) research, education and innovation institutes, where knowledge and ideas flow freely, and (5) art and culture academies, where young artists are primed, and where music, poetry and short plays can be

enjoyed, and paintings and sculptures viewed and bought. And it is here, in the vibrant streets and surrounding public spaces that never sleep, where many of the more than 75% of South Africans who now call 'the city' their home, *make a life and live much of their lives.* It is also here where South Africa and the rest of the world meet – where you see faces, fashions and hear languages from every country on the planet. Many of these voices are those of tourists who love the vibrant and unique cosmopolitan atmosphere and who have made South Africa one of the top ten tourist destinations in the world for the last 23 years in a row. Again, it was the foresight and decisive actions of government in the mid-2020s in the aftermath of the devastation wrought on the sector by the COVID-19 pandemic that succeeded in growing it into one of the largest and most dynamic in the country.

A Good Life in Rural South Africa

Rural South Africa is also in a very different shape to what it was in the late 2010s and early 2020s when it was a hard place to grow up in, money was tight, jobs were few and government services in many places non-existent, or weak. This all started changing for the better when government launched its grant-funded *'National Spatial Restructuring Priority Plans'* in the mid-2020s, with their focus on developing *'functional rural regions'* throughout rural South Africa, and which entailed the carefully planned roll-out and provision of quality services in each of these regions in a systemic way in accordance with government's so-called *'Social Services Wheel'.* In many rural towns, there are now clinics, police stations, schools, arts and culture academies and sporting facilities, and even the smallest villages have lightning-fast communication networks. Hundreds of thousands of graduates deployed over the many years as interns, researchers, and tutors to rural schools, also assisted in making these plans a success. Very soon trade connections between smaller places in rural South Africa started growing, which fuelled the rapid development of strong rural regions in areas where once there was little else but destitution and despair. At the same time, with the growing movement of millions of retired South Africans to rural areas, the economies of these places have been given a strong and stable financial injection.

A Young, Free and Creative Country

Today, 56 years into democracy, South Africa is finally beginning to enjoy the full dividend of freedom, and is able to (1) harness the energy, creativity and vitality of its many young people, and (2) fuse it with the innovative flares and creative blazes of young people *in* and *from* countries around the globe.

Figure 37:
Putting It All Together

Part Five
National Spatial Development and Investment Guidance

5.1 Introduction

In this part of the NSDF, the desired **Ideal National Spatial Development Pattern for South Africa in 2050** is put forward. The **National Spatial Development Main-Frame: The Ideal National Spatial Development Pattern** (see **Figure 39**) provides an image of a:

Resilient, sustainable and inclusive post-Apartheid national spatial development pattern that is well-served by a consolidated system of international, national and regional development nodes and corridors, with a highly productive network of rural regions, where development nodes, rural regions and hard infrastructure are embedded within the capabilities and interdependencies of the national ecological infrastructure system.

The **'Main-Frame'** is 'detailed out' in five **'Sub-Frames'.** These five **Sub-Frames** are:

- **NSDF Sub-Frame One:** Inter-Regional Connectivity;
- **NSDF Sub-Frame Two:** The National System of Nodes and Corridors;
- **NSDF Sub-Frame Three:** The National Resource Economy Regions;
- **NSDF Sub-Frame Four:** The National Movement and Connectivity Infrastructure System; and
- **NSDF Sub-Frame Five:** The National Ecological Network.

The **Main-Frame** and the five **Sub-Frames** were prepared:

- In *adherence* to the priorities of the **National Development Plan** and the **SPLUMA principles**;

- In *accordance* with the **National Spatial Development Vision** and **Logic**;
- By *making use* of the **National Spatial Development Levers**; and
- In *pursuit* of the **National Spatial Development Outcomes** (see **Figure 37**).

Key **considerations** in constructing the **Main-Frame** and the five **Sub-Frames** were:

- National spatial development *realities* and national and international *trends, movement patterns and technological advances*, and (1) the challenges they present, and (2) the opportunities they offer;
- Significant projected growth in our *national population* of between 17 and 22 million people by 2050;
- The (1) unique *development potentials of places and areas*, and (2) the *roles* they will have to play in national, regional and local economies, to realise our national development objectives – as set out in the NDP – of inclusive economic growth, job creation and poverty eradication;
- The need to (1) safeguard *national food security*, (2) make the transition to a *low-carbon energy future*, (3) ensure *adequate provision of safe and affordable water*, (4) protect, manage and maintain *key ecosystems and the services* they provide, and (5) recognise the *interconnectedness and interdependencies* between places; and
- The multiple threats associated with *climate change,* such as (1) rising temperatures in the western and central parts of the country, (2) increasing unpredictability in seasonal rainfall patterns, and (3) a reduction in water availability throughout the country.

Together, the **Main-Frame** and the five **Sub-Frames provide**:

- A **national spatial schema** to *inform, direct, prioritise and guide* all future infrastructure investment and development spending decisions by government and the private sector, to (1) optimise place-based potentials and spatial interdependencies, and (2) realise the **2050-National Spatial Development Vision** and our core national development objectives, as encapsulated in our **Post-Apartheid National Development Paradigm**;
- **Strategic spatial development and investment guidance** to *spatially direct* plans, budgets and actions of public and private sector actors, so as to, over time, (1) *capitalise* on key national spatial assets, locational potentials and agglomeration opportunities, and (2) *bring about* decisive, rapid, sustainable and inclusive national development and transformation at scale;
- A carefully selected and *distinct set of* **nationally significant places, connectors and areas** in and around which to *align, integrate and coordinate* investment by the private sector and the three spheres of government when preparing and reviewing (1) sub-national area-based provincial, regional and municipal SDFs, and (2) sector-specific and macro-infrastructure national and supra-national SADC-focused investment plans;
- A brief outline of the **key role-players** involved in *pursuing and driving spatial transformation and national adaptation* in pursuit of the desired national spatial development pattern; and
- A **spatially-explicit assessment and accounting instrument** for *joint, collaborative and supportive intergovernmental monitoring and evaluation* of all spending and investment decisions by government and the private sector in *space* (specific places and connecting spaces) and *time* (the short, medium and long-term).

Following on from the ideal spatial pattern and the sub-frames, a set of five **National Spatial Action Areas (NSAAs)** are put forward. These NSAAs represent:

- The **most critical** sub-national regions/areas for *bringing about and/or catalysing national spatial transformation and economic transition at scale*; and/or
- The **most stressed** sub-national regions/areas in terms of *current, rising and anticipated national risks*.

As such, these NSAAs require urgent, concerted, targeted and sustained collaborative, coordinated and integrated intergovernmental action in (1) **the respective sub-national region/area's interest**, (2) **the interest of other such regions/areas to which it is systemically connected**, and (3) **the national interest**, starting with:

- *Aligning plans, budgets and action/implementation plans* in and between spheres of government around these priority regions/areas; and
- Identifying, initiating and/or undertaking *the most beneficial catalytic actions/interventions* in these regions/areas.

Figure 38:
From the NSDF Main-Frame to the NSDF Sub-Frames

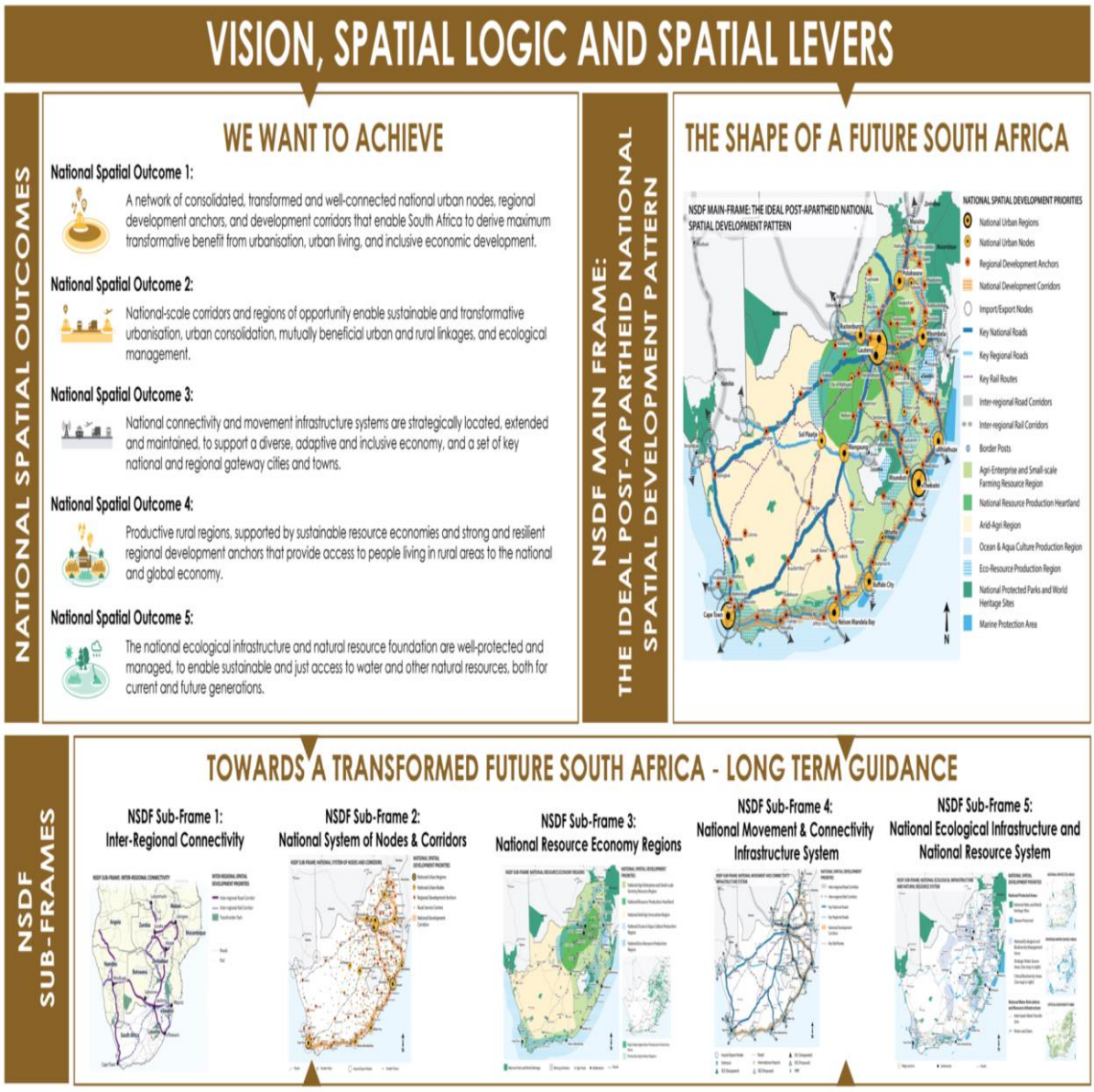
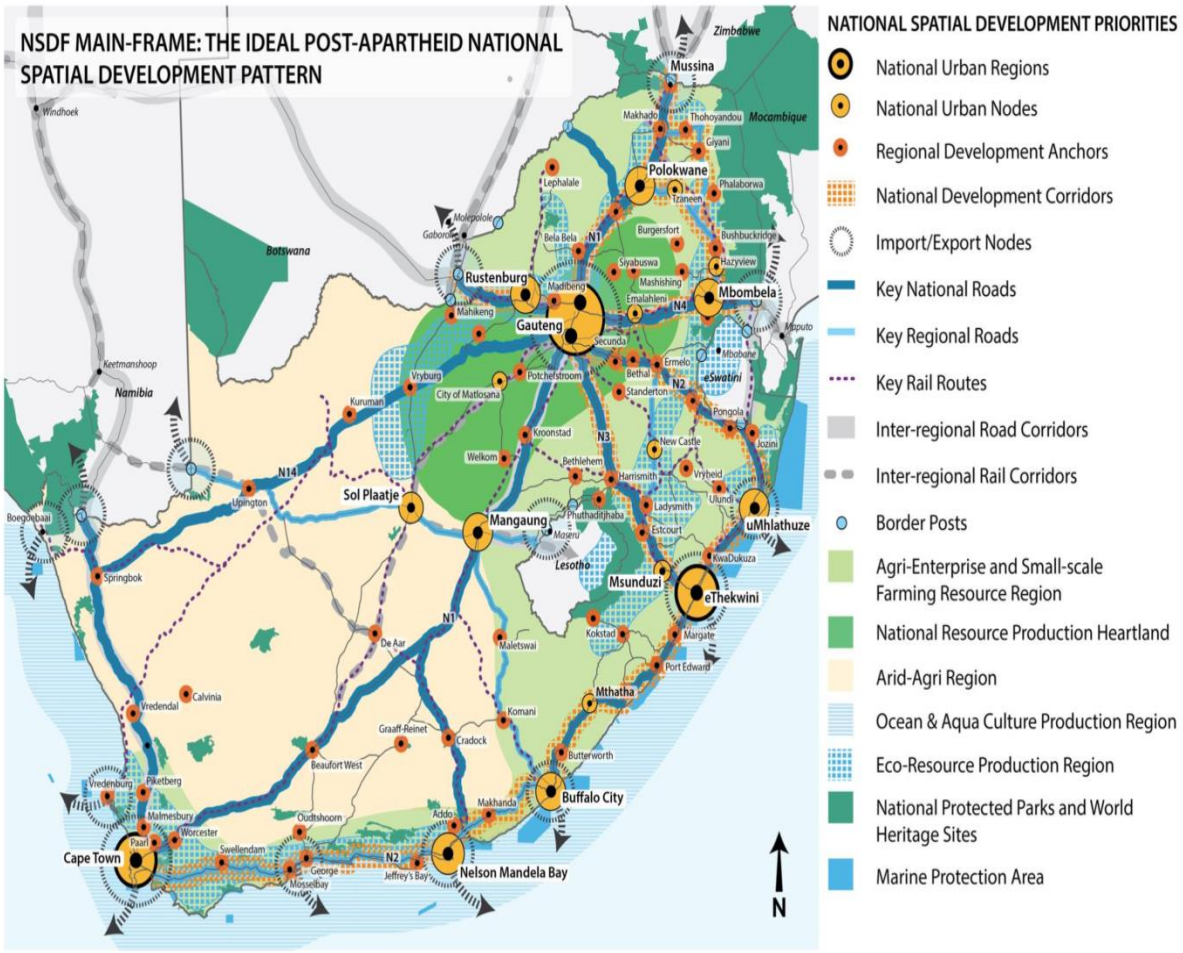


Figure 39:
NSDF Main-Frame: The Ideal Post-Apartheid National Spatial Development Pattern



5.2 NSDF Sub-Frame One: Inter-Regional Connectivity

5.2.1 Spatial Development and Investment Guidance

Four supra-national inter-regional networks are of particular importance to South Africa (see **Figure 40**). These relate to (1) *energy supply*, (2) *transport and logistics services*, (3) *shared water resources*, and (4) *ecological infrastructure*:

- **Regionally-connected electricity networks** enable South Africa to (1) buy electricity from Lesotho, Mozambique and Namibia when surplus is required, or (2) sell to Botswana, Lesotho, Mozambique, Namibia, Swaziland, Zambia and Zimbabwe when it has excess production. §§§ The *SADC Energy Sector Plan* indicates that, apart from the infrastructure projects in South Africa, there are also a number of *planned* (or by now *current)* projects aimed at increasing power generation in the region. **** Nationally, these are also under consideration through the *Electricity Grid Infrastructure and Gas Pipeline Extension programme*. Renewable energy has also emerged as a rapidly-growing source that can add vastly to the energy mix in the region. This is, however, dependent on (1) policy and regulatory uncertainties being resolved, and (2) gaps in connecting infrastructure and financing being attended to.

§§§ ESKOM (2016).
**** SADC (2012).

- **Transport and logistics infrastructure** has been identified as key to creating an enabling environment to (1) achieving the goal of sustainable regional socio-economic development, and (2) closing the widening gap in the provision of high-quality, efficient infrastructure, especially when considering road and rail infrastructure. In response to this, SADC adopted a spatial development corridor strategy in 2008. While railway lines are considered as crucial for (1) improved efficiency of movement of freight in the region, and (2) the protection of infrastructure investment in the regional road network, the railway network has seen only minimal improvement, revitalisation and expansion. Poor road quality and lack of maintenance in certain areas remain a critical concern in the case of regional and urban roads. Although capacity currently exists on the road network, projections for 2027 suggest the need for (1) further road-widening, (2) the construction of bypasses for major cities and passing-lanes in hilly regions, and (3) more efficient border-posts. [††††] While the SADC railways generally operate far below their original design capacities, they cannot increase their volumes because of (1) poor track condition, (2) a lack of locomotive and wagon availability, and (3) low operating capital. With regard to new railway investments directly impacting upon or driven by South Africa, the TRANSNET rail investment plan indicates a new rail line to Botswana (the Lephalale-Mahalapye line) for coal transport, as well as the upgrading of several lines to the major regional harbours, primarily to support the export of minerals and metals.
- **Water availability** across SADC varies. The countries with the greatest demand unfortunately also have the most limited supply. South Africa shares several water catchment basins with neighbouring countries including: (1) the Orange-Senqu basin (Namibia and Botswana); (2) the Limpopo basin (Botswana, Zimbabwe and Mozambique); (3) the Inkomati basin (Swaziland and Mozambique); and (4) the Maputo-Usungo-Pangola Basin (Swaziland and Mozambique). It is projected that by 2025, two of South Africa's major river basins (the Orange-Senqu and the Limpopo basin) will be under stress, ie meaning they '*will have less than 500 cubic metres of water available per person annually'.* [‡‡‡‡] The SADC-Protocol establishes a legally-binding framework for transboundary water management in the region. Within the context of recent water challenges to sustain livelihoods and the agriculture, mining, industrial and service economies in our country, the regional importance of (1) transboundary water management, and (2) the protection, sustenance and enhancement of biodiversity and natural ecosystems, including wetlands – which are also the bases for viable rural livelihoods and tourism – is clearly evident.
- **Ecological infrastructure** management and collaboration regarding risk management and beneficiation associated with identified strategic national protected and management areas within SADC is of crucial importance for South Africa in (1) achieving its national development objectives, and (2) meeting its international commitments and agreements.

The priorities related to supra-national cross-border and regional inter-relations can be summarised as follows:

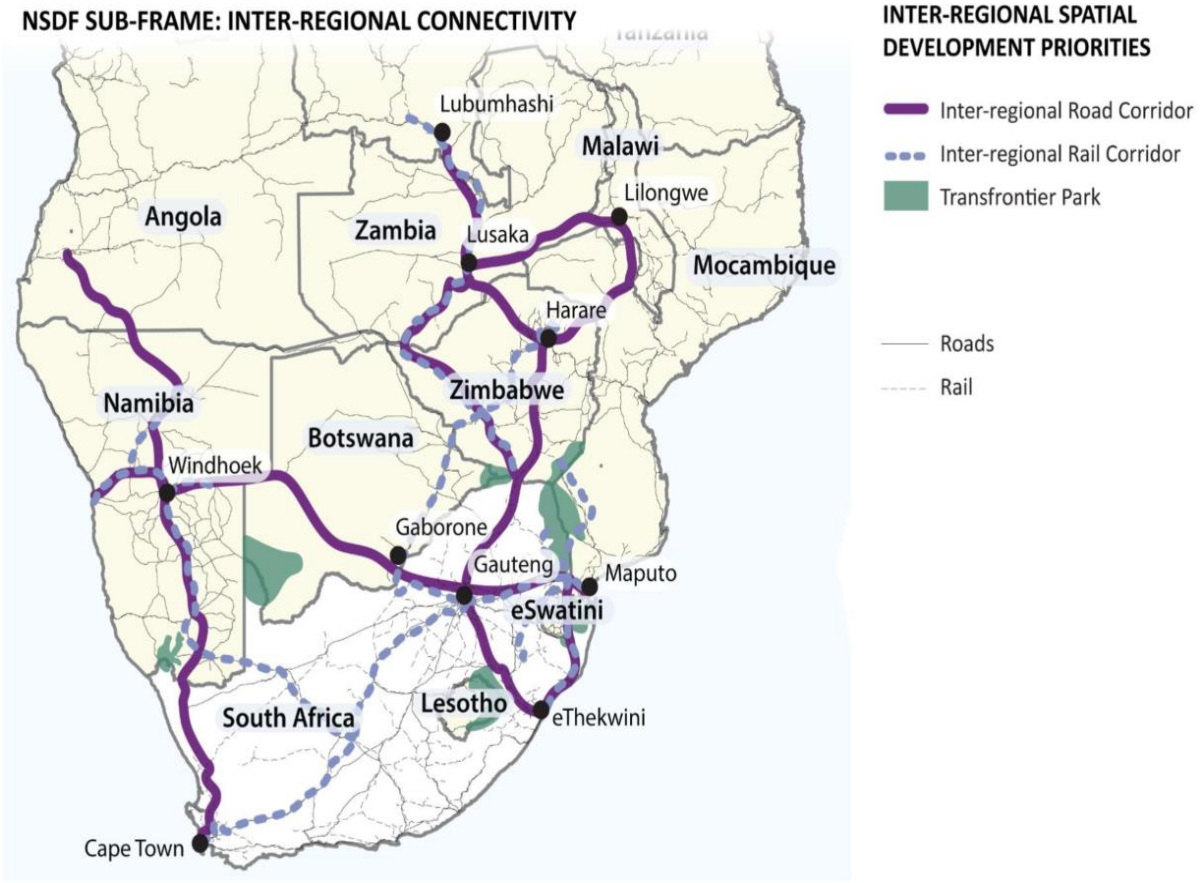
- Facilitation of *trade and movement* in the SADC trade bloc;
- Strengthening and expansion of South Africa's role in facilitating inter-regional trade and providing *regional gateways,* ie our core urban regions and nodes (see **NSDF Sub-Frames 2** and **3**);
- Protection of *strategic regional ecosystems and bio-diversity* through shared management of International Transfrontier Parks; and

[††††] SADC (2012).

[‡‡‡‡] Earle & Malzbender (2013).

- Effective and efficient management *of cross-border movement,* service delivery and inter-regional migration.

Figure 40:
NSDF Sub-Frame One: Inter-Regional Connectivity



5.3 NSDF Sub-Frame Two: National System of Nodes and Corridors

5.3.1 Spatial Development and Investment Guidance

Settlement development, both in *urban and rural South Africa*, must be undertaken in such a way that it (1) increases development density, (2) reduces urban sprawl, (3) prevents the unsustainable use of productive land, and (4) optimises investment in infrastructure networks (see **Figure 41**). This requires the pursuit of a number of **interrelated objectives:**

Inclusive economic development, livelihoods, land and housing: In accordance with this objective, *municipalities, supported by provincial and national government sector departments*, must:

- Prepare and implement appropriate local and regional economic development interventions;
- Enable and support a wide spectrum of livelihood opportunities;
- Ensure timeous identification, acquisition and release of well-located land; and
- Make provision for a diverse range of *housing options* for a diverse range of *household types*. §§§§

§§§§ As such, the process coordinated by the *IUDF Working Group* to expedite urban land reform is noted and strongly endorsed.

In *rural settlements,* it is imperative that (1) environmentally sensitive settlement planning is undertaken, (2) *'rural design'* is introduced, and (3) viable, new agri-eco-focussed enterprises are established, and existing ones supported.

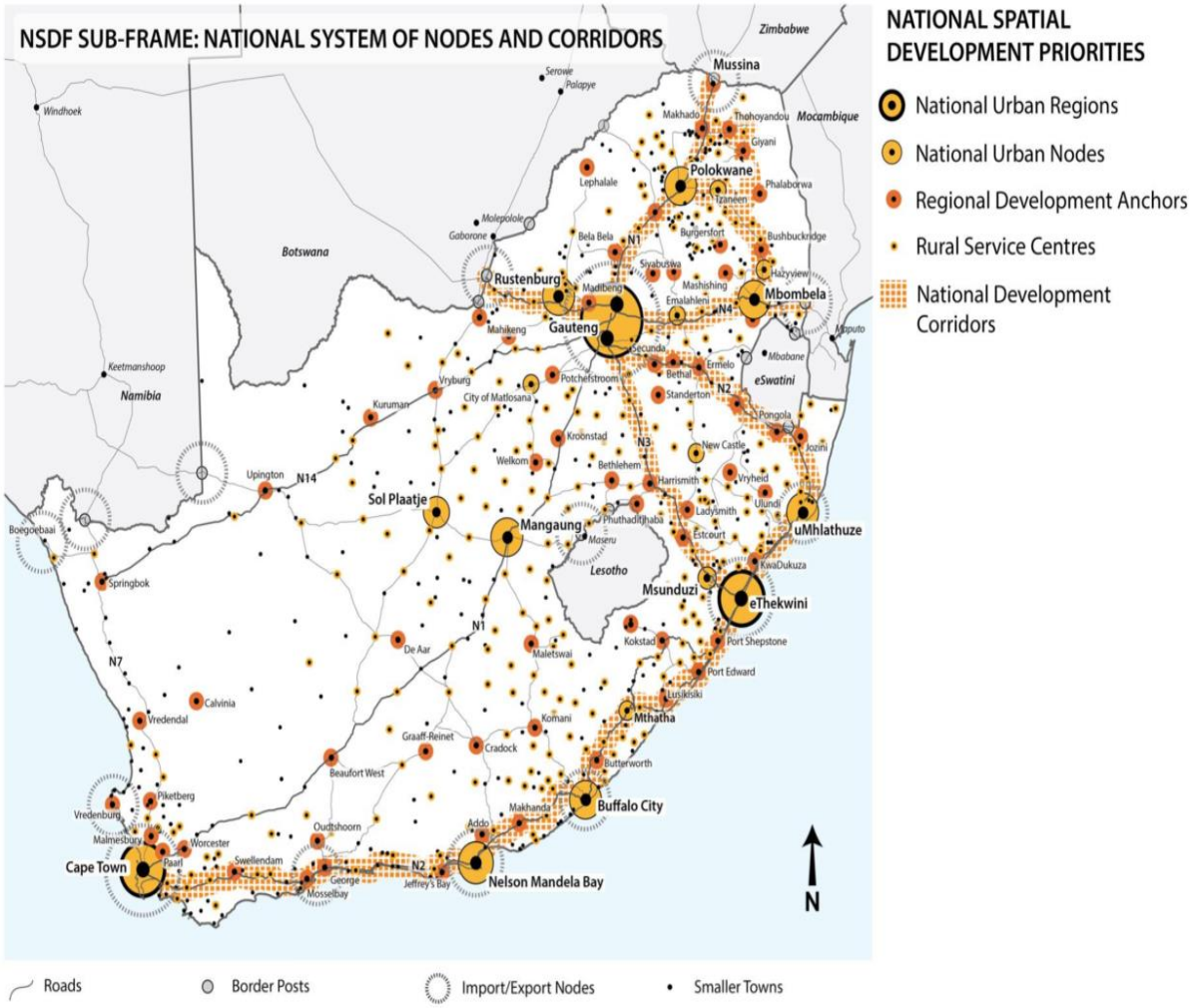
Social services and settlements: If South Africa is to meet the social needs of its *very young,* but also *increasingly older* population, then a rational process of providing social infrastructure is required. The NSDF is therefore underpinned by a *'national settlement service provision framework system'* in terms of which social services are provided in accordance with the role of the type of settlement within its (1) broader national, and (2) sub-national 'regional-rural setting'. This system provides the basis for guiding investment in infrastructure and social services, especially by national sector departments (see **Figure 42**). However, *this system will only work if government as a whole adopts it* to guide its social infrastructure planning and investment. *As a starting point, it is recommended that priority be given to embedding this system in all of government*.

National and regional connectivity: The national network of nodes, smaller settlements and corridors requires that (1) national nodes and smaller settlements are well-connected to each other, and (2) national nodes are well-connected to the rest of the world through a range of transport modes and communications networks. This requires that:

- Road and rail routes that are of national importance be built, maintained and upgraded, as and where necessary;
- Rail be prioritised over road for freight movement; and
- The availability, affordability, accessibility, safety and quality of mass public passenger transport be drastically improved.

Water availability: Given our dire water situation, water demand must be curbed, water sources must be augmented, and the little water we have, protected from loss through well-maintained infrastructure. In addition to this, (1) our ecological infrastructure must be protected, and its use be well managed, and (2) in water-stressed catchments and regions, existing settlement growth must be carefully managed, and new settlement development only be allowed in 'exceptional cases'.

Figure 41:
Sub-Frame Two: National System of Nodes and Corridors



5.3.2 National System of Nodes: Spatial Development and Investment Priorities

Spatial Development and Investment Guidance	National Spatial Development Priorities
National Urban Regions (see **Figure 41**) • Consolidate urbanisation in compact, productive, sustainable, inclusive and well-governed urban core regions. • Prioritise infrastructure maintenance to (1) mitigate against the expected impact of natural and climate change-related hazards on the inhabitants of these regions, especially the poor and most vulnerable members of society, and (2) avoid repetitive infrastructure repair costs. • Manage demand and maintain, expand and refocus the infrastructure network to enable and sustain bulk water supply and energy distribution to and within urban regions. • Effectively utilise, protect and manage high-value agricultural lands, ecological infrastructure and national man-made and natural environmental assets, and mitigate downstream impacts on water bodies, water catchments and other natural resources. • Actively support national and international programmes aimed at climate change mitigation of CO_2 emissions, and introduce local policies and measures to assist such programmes. • Pursue, create and support innovation, enterprise development and job creation opportunities in (1) agro-eco-industries, (2) tertiary and service sectors, (3) tourism, (4) knowledge-creation, and (5) cultural and entertainment industries. • Maintain and upgrade road and rail routes in urban regions, prioritise rail for bulk freight, and improve the affordability of intercity public passenger transport.	***Strengthen and Consolidate Existing Urban Regions, ie:*** • The Gauteng Urban Region; • The KwaZulu-Natal Urban Region; and • The Greater Cape Town Urban Region.
National Urban Nodes (see **Figure 41**) • Consolidate and direct the rapid population growth in the eastern half of the country to national urban nodes, clusters and corridors by (1) creating quality human settlements and centres of human capital excellence, innovation, trade, inclusive green economies and regional enterprises, and by doing so (2) *reaping the urban (youth) dividend*.	***Strengthen Existing Urban Nodes,* eg:** • Mbombela, Richards Bay, Buffalo City and Mangaung in existing and identified growth corridors.

- Within *distressed and sparsely populated areas*, and areas that are becoming *increasingly more arid*, consolidate settlement growth in (1) existing large urban nodes, and (2) emerging and fast-growing urban nodes.
- In addition to strengthening and consolidating expected population growth in urban regions, existing cities and intermediary cities, proactively support the development and emergence of a number of new cities in identified densely populated and high-potential transformation corridors.

***Support stressed Urban Nodes,* eg:**
- Kimberley and Rustenburg in economically stressed regions.

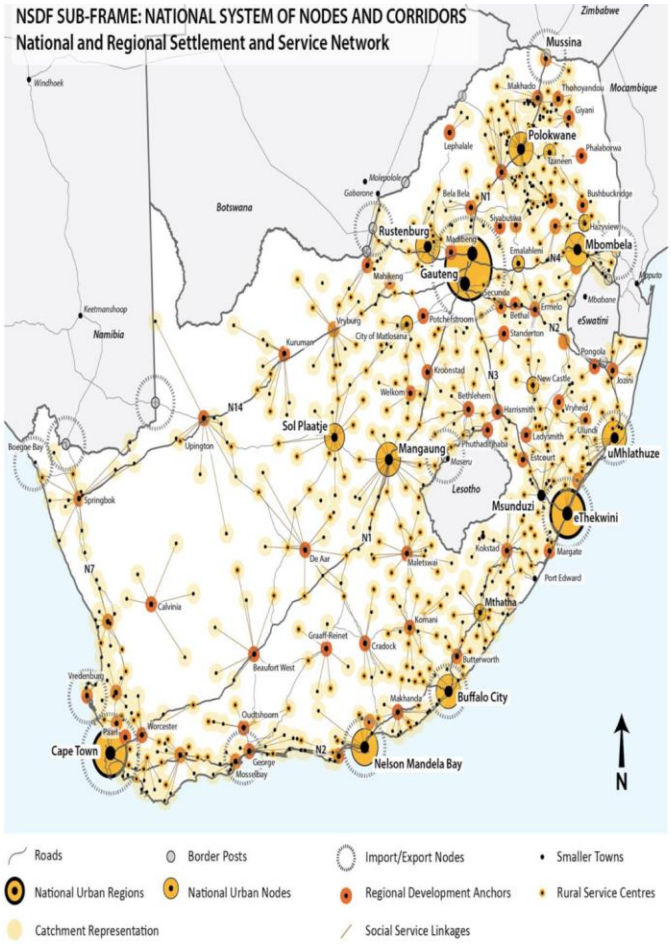
***Develop New/Emerging Urban Nodes,* eg:**
- Support the emergence of new cities, eg Mthatha, Hazyview, Tzaneen and Lephalale.

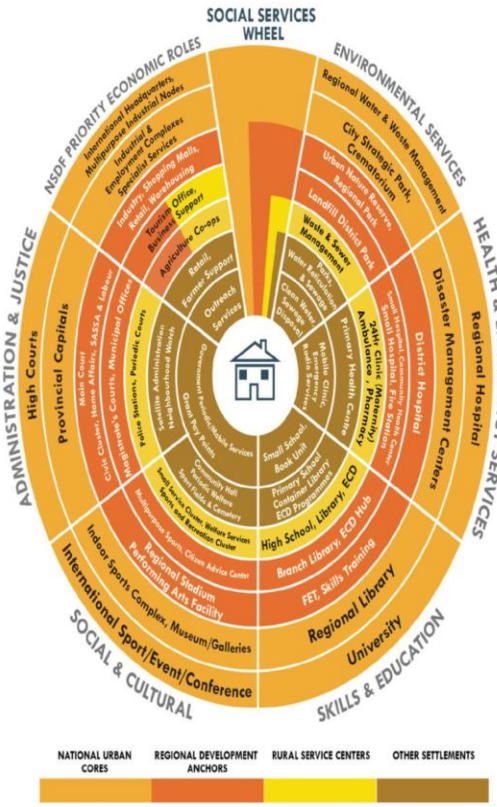
Spatial Development and Investment Guidance	National Spatial Development Priorities
National Network of Regional Development Anchors (see **Figures 41**and **42**) • Prioritise and strengthen strategically located regional development anchors in productive rural regions and priority national development, trade and transport corridors to provide a range of services within the specific towns/cities and surrounding network of settlements and productive rural regions (see **Figures 40**and **41**). • Support and strengthen strategically located regional development anchors through (1) targeted settlement planning and development, (2) higher-order social infrastructure provision, and (3) focused support for small and medium-sized enterprise development, industrialisation and economic diversification. • Use the investment and enhanced social service provision (see **Figure 42**) in regional development anchors to encourage officials working in these rural regions to stay in these settlements and contribute to the local economy, instead of commuting to larger towns or cities on a daily or weekly/monthly basis. • Clearly identify the role of specific settlements as gateways and interchanges on the regional public transportation network, and incorporate these as such into the planning of 'functional rural regions'. • Strengthen the connectivity of traditional areas and rural settlements with (1) higher-order urban *settlement s*, and (2) *economic systems* in functional rural regions, by making use of the road and rail network and regional corridor development. • Plan social infrastructure provision within a regional-rural setting using the 'Social Services Wheel', and use such investment to establish and create well-functioning, compact and lively rural settlements and 'regional rural systems' (see **Figure 42**).	***Strengthen and Consolidate Existing Regional Development Anchors, eg:*** • Nodes on strategic routes, eg Harrismith, Estcourt and Clanwilliam; and • Bigger nodes in denser regions, eg Phalaborwa, George and Mossel Bay. ***Support stressed Regional Development Anchors, eg:*** • In fast-growing towns with extended service delivery demands in densely-developed border regions, eg Musina, Pongola, Mmabatho, Mokopane, Tzaneen and Makhado; • In nodes requiring consolidation and management support in arid and environmentally vulnerable regions, eg Upington and Kuruman; • In nodes on strategic national routes, eg Beaufort West and Vryburg; and • In smaller nodes in sparsely populated regions, eg Springbok and Calvinia that serve large surrounding rural areas. ***Create New/Transform towns into Regional Development Anchors eg:*** • Towns in National Spatial Transformation and Economic Transition Regions, eg Giyani, Thohoyandou, Bushbuckridge, Mahikeng, Kuruman, Jozini, Ulundi, Kokstad and Butterworth.

Spatial Development and Investment Guidance	National Spatial Development Priorities
National Network of Rural Service Centres (see **Figure 41**) • Rural development must be supported through a network of prioritised service centres (see **Figure 42**) where people in rural areas and settlements can be optimally provided with municipal and social services, and where rural logistics and support can be provided to support rural development. • Specific support must be provided to (1) towns that act as border towns and trade posts, and (2) growing towns in border regions. • In arid areas and areas experiencing a decline in population, settlements must be consolidated, and maintenance prioritised in such core towns. • In dense rural settlement regions, consolidation within nodal centres and rural design is required.	***Strengthen and Consolidate Existing Service Centres, eg:*** • Towns and border and trade posts, such as Manguzi, Komatipoort, Ladybrand and Kamaqhekeza. ***Support Service Centres in Stressed Regions, eg:*** • Victoria West, Carnarvon, Groblershoop and Koffiefontein. ***Create New Service Centres and Transform Existing Settlements:*** • Settlements in dense rural settlement regions, eg Barkley East, Bizana, Dundee, Madibogo and

	Flagstaff.
Other Smaller Towns and Settlements in South Africa • Consolidate and provide basic services to the local population in a network of small towns and settlements. • Urban consolidation and basic service delivery in growing regions must keep pace with population growth and economic development. • In densely populated and growing rural regions, (1) settlement must be consolidated in nodes, and (2) spatial planning and rural design done to ensure managed and quality future settlement development. • In areas that are ecologically sensitive and that experience harsh climatic conditions, and are set to experience even harsher such conditions, existing settlement expansion and new settlement formation/development must be discouraged. • In arid areas and areas experiencing a decline in population, settlements must be consolidated, and maintenance prioritised in core towns.	***Strengthen and Consolidate Existing Towns, eg:*** • Service Towns: Modjadjiskloof, Maclear, Marblehall and Paul Pietersburg; and • Trade posts and growing towns in border regions, eg Alldays, Clarens, Maluti and Rhodes. ***Support Towns in Stressed Regions, eg:*** • Areas experiencing a decline in population, eg Reivilo, Sannieshof and Pofadder.
• Mining development must be decoupled from settlement development, and existing settlement expansion or formation/development of new settlements in the case of new mining developments be carefully considered and decisions based on a full life-cycle analysis of the mining activities and the life of the settlement/s after mine-closure.	***Develop New Towns and Transform Existing Dense Settlements:*** • In dense growing rural regions, eg Qumbu and Pomeroy.

Figure 42:
NSDF Sub-Frame Two: National Systems of Nodes and Corridors: National and Regional Settlement and Service Network





*Please note: The image on the left is a conceptual depiction of the Service Network Linkages and not an accurate representation of such linkages.

5.3.3 National Urban Development Corridors and Growth Regions: Spatial Development and Investment Priorities

Spatial Development and Investment Guidance	National Spatial Development Priorities
Development within Existing National Corridors (see **Figure 41**) • The corridors along the east and south coasts (N2) are supported as areas of strong interconnection between (1) high-value rural resource production areas, (2) ecological resource regions, (3) popular tourist destinations, (4) 'comfortable climatic zones', and (5) urban nodes. • These corridors also provide opportunities for the consolidation of existing cities and the development of 'new' cities supported by well-developed multi-modal connectivity infrastructure, which will require that: ◦ Port and airport development be strengthened in support of inter-regional trade flows and efficiency; and ◦ Small harbour development in support of the fishing, tourism and maritime economy at identified coastal regional development anchor and rural service centres be maintained, expanded and accelerated.	***Strengthen and Consolidate Existing Corridors:*** • The KwaZulu-Natal Coastal Corridor (Port Shepstone to Richards Bay); and • The Garden Route Coastal Corridor (Mossel Bay to Nelson Mandela Bay).
Development alongside Inter-Regional and National Freight and Development Corridors (see **Figure 41**) • Consolidate nodal development to support inter-regional development corridors and trade with SADC, which includes (1) a focus on SADC corridors, and (2) improving efficiencies at border and port facilities on these routes, to handle greater international and regional trade flows. • Strengthen regional trade to support the development of cities and towns on these corridors. • Prioritise infrastructure (ports, harbours and logistics infrastructure) and efficient operations of nationally significant trade and movement networks.	***Existing National and Inter-Regional Freight and Development Corridors to be Strengthened:*** • Significant export and import trade routes from Gauteng (1) via the N4 to Komatipoort, (2) via the N3 to eThekwini, and (3) via the N1 north to Musina.

5.3.4 National Action and Key Role-Players

Strategic investment in existing urban areas and areas experiencing rapid growth or set to experience such growth will require (1) high levels of intergovernmental coordination and alignment, and the introduction of (2) a collaboratively prepared and mutually agreed to *'intergovernmental spatial transformation accountability model'* by which all three spheres of government, sector departments and non-State actors will *individually and collectively hold each other accountable* for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base. Crucial actions that will have to be undertaken in these regards are the following:

- *Urban areas experiencing large-scale urbanisation* will need (1) the support of initiatives such as the IUDF and the DHS' Priority Human Settlement and Housing Development Areas (PHSDAs) programme, *with a focus on* ensuring financial viability in human settlement development, and (2) regional-scale collaboration, *with a focus on* private sector, civil society and local government involvement;
- *Coordination will need to take place in long-term infrastructure planning, implementation and maintenance,* with a specific focus on (1) national water storage, allocation and availability, and (2) the national rail and road network, which necessitates harmonisation between especially NATMAP 2050, the National Infrastructure Plan 2050 (NIP), and the NSDF;
- *Capacity shortfalls* in the construction, maintenance and upgrading of bulk water, energy and transport infrastructure at local level will require dedicated support from the national and provincial departments responsible for municipal and spatial planning, with care having to be taken to ensure that such support assists in the creation and maintenance of resilient and sustainable urban regions; and
- *Urban land reform* through the timeous identification, acquisition, and release of suitable land in the right places must be done, which may require the provision of support to municipalities in (1) undertaking these tasks, as well as (2) initiating, establishing and supporting economic activities on such lands that could assist in ensuring catalytic regional and local economic development, spatial transformation, and inclusive growth.

5.4 NSDF Sub-Frame Three: National Resource Economy Regions

5.4.1 Spatial Development and Investment Guidance

Spatial development and investment directives and identified **national spatial development priorities** to develop the envisaged national resource economy regions (see **Figure 43**) are outlined below.

Rural regions and regional development anchors: The development of productive, functional rural regions throughout South Africa requires:

- The development of *viable, robust and resilient regional rural economies* that recognise and respect the limitations and interdependencies of the country's natural resource base;
- The (1) 'delineation' of 'functional rural regions', and (2) the identification of regional development anchors in such regions that are located on the *national transport network*;
- High levels of (1) *national-regional connectivity* between such regional development anchors, and urban nodes and regions, and (2) *regional-local connectivity* between such anchors and the towns and villages in their respective 'functional rural regions'; and
- Sound spatial planning, urban consolidation, and densification of urban settlements, to minimise the urban footprint and impact in such regions.

Diversity, strengths and cautions: While the concept of regional rural development is a generic one, the spaces in which it is to be utilised are far from that. When considering the diverse endowments and assets of these rural regions, it emerges that:

- The *eastern half* of the country has areas with moderate to high levels of *'agricultural potential'*:
    - Although agriculture has been developed in many of the areas where this potential exists, there still remain areas of high-agricultural potential that have not yet been fully utilised; and
    - At the same time, there are also significant areas of dense human settlement on high-value agricultural land;
- The *western half* of the country has less agricultural potential, primarily due to far less annual rainfall in these areas than in the eastern half of the country:
    - Regions in this half of the country do, however, have a range of other economic opportunities, notably tourism, conservation and mining;
- Both halves include national ground and surface-water production areas that are critical for water supply to the country's major urban regions, cities and towns, and, which, as such, necessitates spatial planning, the wise use of natural resources and effective land use management in such areas; and
- A number of key national conservation areas feature prominently in the areas identified as 'productive rural regions', and although some communities already do benefit from these resources, much more can be gained from this relationship, notably in the area of eco-tourism and the management of ecological infrastructure.

Sustainable resource use and land-use management: Intergovernmental cooperation and collaboration in (1) the development of productive rural regions, and (2) the well-planned, well-considered, and well-managed use of natural resources in such regions will be required. This is especially important in municipalities with significant parcels of high-value agricultural land that are under pressure from human settlement expansion and/or mining activities. The focus of such collaboration, which should have a (1) spatial planning, (2) land use management, and (3) inclusive growth component, must *at least* be on:

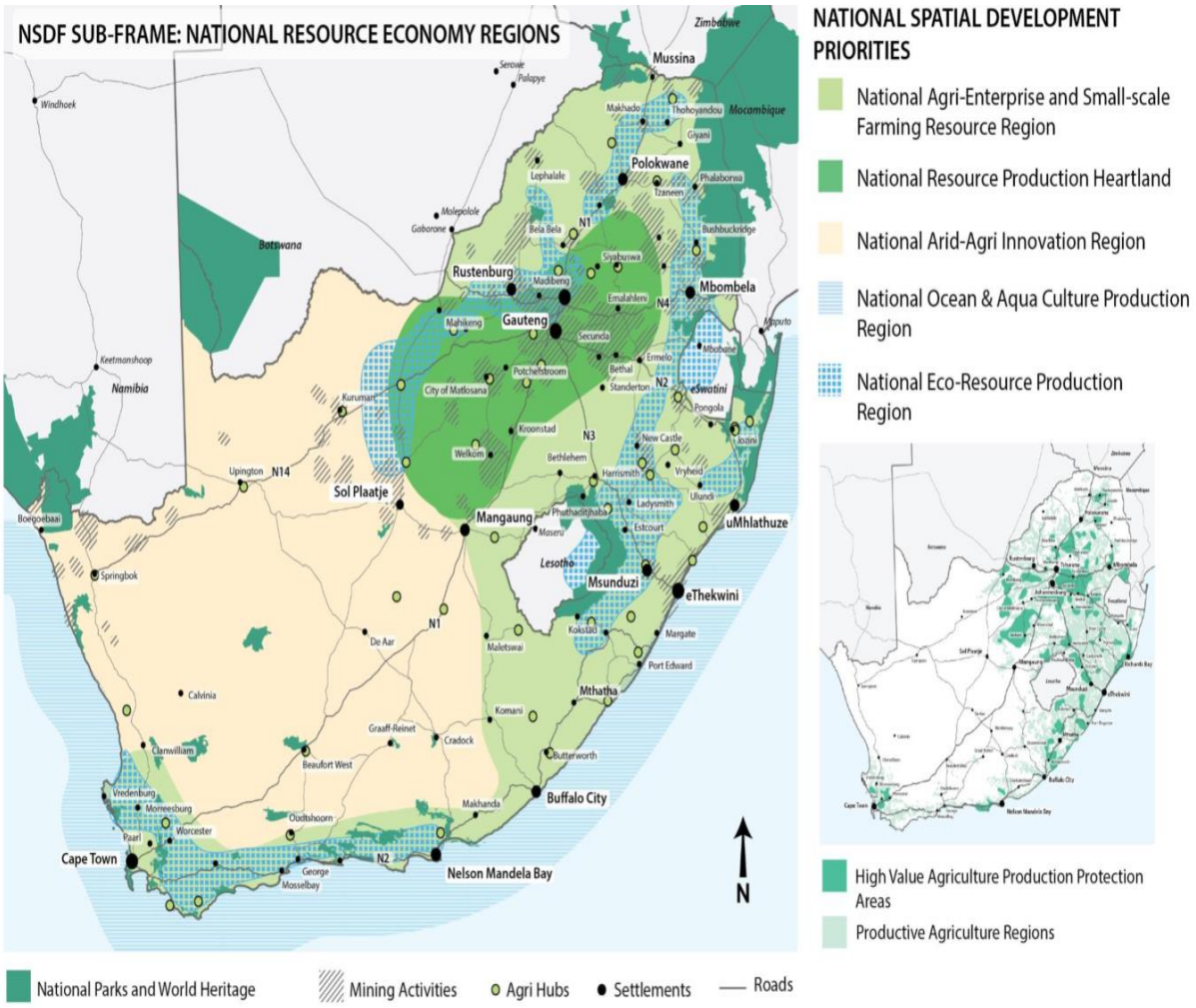
- *Water security, including* the mitigation of the impacts of regional rural development on national water resource availability and quality;
- *Food security,* including (1) the sustainable use of high-value agricultural land, and (2) the protection of national food production areas; and
- *Land reform,* including (1) the pursuit of justice in the access to high-value agricultural land, and (2) the provision of support to new and emerging farmers in such areas.

Climate change mitigation and adaptation: Climate change in the form of (1) less rain, (2) greater unpredictability in rainfall, (3) higher temperatures, (4) more very hot days, and (5) greater risk of veld-fires has far-reaching implications for agricultural produce and habitation in all of South Africa's productive rural regions. Even in regions where the impacts of climate change will be less severe, the more severe impacts in other regions will lead to increased pressure on the use of land and other natural resources in such 'less severely affected regions'.

In order to mitigate and adapt to the impacts of climate change, *innovative agricultural adaptation,* involving a move to (1) *agricultural commodities* that are more resistant to extreme and harsh conditions, and (2) *agricultural practices* that are better suited to the anticipated adverse climatic conditions, will be required. Maintenance and restoration of functional ecological corridors should be prioritised in terms of the *2016-National Protected Area Expansion Strategy* (NPAES). Protected areas need to be expanded to incorporate (1) altitudinal and topographic gradients, (2) intact river corridors, (3) coastal dunes, and (4) a greater range of microhabitats. The protection of SWSAs should also be considered in the expansion of protected areas.

The impact of climate change on the infrastructure of rural settlements should be managed, especially in terms of flooding risks. At the same time, climate change may open up opportunities for new economic activities in some regions, notably in the *area of solar energy generation* as a mitigation strategy. Research, knowledge production and dissemination, patents, and product development for arid conditions and places are also possible positive outcomes.

Figure 43:
NSDF Sub-Frame Three: National Resource Economy Regions



5.4.2 National Resource Economy Regions: National Spatial Development and Investment Priorities

Spatial Development and Investment Guidance	National Spatial Development Priorities
Resource Production Heartland (see **Figure 43**) • Protection of high-value agricultural land through the use of 'rural edges' at the interfaces of functional rural and urban regions, and the management of competing land uses. • Protection of high-value agricultural land, putting it to good use, and managing competition for development on such land, within the pursuit of (1) national food security, (2) economic growth, and (3) social stability. • Management of the development of land with high-agricultural production potential, and encouragement of small-scale agriculture and resource enterprise development. • Intensive rehabilitation and strict control in accordance with the Mineral and Petroleum Resources Development Act 28 of 2022 (MPRDA) will be required in existing and new mining areas to limit water, air and soil pollution and land degradation.	***Strengthen the Existing Activities in Productive Rural Regions:*** • In the 'Central Heartland Region' around Gauteng, North West, Mpumalanga and Limpopo, which is marked by high-intensity agriculture, extensive mining activities and dense human settlement. ***Support Stressed Rural Regions:*** • Regional economic innovation will need to be undertaken to mitigate the impact of declining demand and employment in stressed mining areas, such as those around Gauteng and the central Free State. ***Create New and Transform Existing Productive Rural Regions:*** • Support and encourage urban agriculture and intensive agri-enterprise production in towns and national urban nodes and regions.

Agri-Enterprise Regions (see **Figure 43**) • Productive use of high-value agricultural land to support national food security. • Rehabilitation of degraded land and effective land-use management. • Improvement of rural-rural connections, market accessibility and key agricultural-production infrastructure. • Enhancement of connectivity through well-planned infrastructure investment and settlement consolidation in well-connected regional development anchors.	***Strengthen Existing Productive Rural Regions:*** • Ensure productive use of high-value agricultural land to support national food security. ***Create New and Transform Existing Productive Rural Regions:*** • Focus on the densely-settled (1) eastern coastal belt in the Eastern Cape and KwaZulu-Natal, and (2) the eastern escarpment areas in Mpumalanga and Limpopo; and • Improve rural-rural and urban-rural connectivity.

Spatial Development and Investment Guidance	National Spatial Development Priorities
Arid Agri-Region (see **Figure 43**) • This region has extensive agricultural activities, with (1) pockets and stretches of intensive irrigation-farming, (2) mining clusters, (3) renewable energy farms/plants, and (4) small, compact settlements. • The impact of climate change in the already drier and hotter western parts of the country (where large tracts of extensive and compact irrigated, locally significant agricultural activities from a (1) economic activity, and (2) job-provision perspective are located) will require regional agricultural adaptation-support and effective land use management. • Innovative farming techniques and technologies should be introduced and/or supported in selected arid and semi-arid areas of the country, *inter alia*, by making wise and smart use of (1) groundwater and/or water transfers, and (2) solar power to pump and/or desalinate water. • Regional development initiatives to share capacity, research and innovation in support of innovative regional development must be encouraged.	***Support Stressed Rural Regions:*** • A good example of this is the current *Karoo Regional SDF* preparation initiative and the intensive multi-stakeholder engagement and collaboration around it. ***Strengthen Existing Productive Rural Regions*** • Strengthen, use and expand on existing irrigation schemes, innovative farming practices and tourism activities. ***Create New and Transform:*** • 'Irrigation innovation areas' that make wise use of existing and new dams, irrigation schemes and canals should be identified, designed and introduced as a matter of urgency.

Spatial Development and Investment Guidance	National Spatial Development Priorities
Eco-Resource Production and Livelihood Regions (see **Figure 43**) • Enhance (1) the productive capacity, (2) environmental and livelihood quality, (3) cultural heritage, and (4) natural resource-access of these regions through effective agrarian practices and enterprise development programmes that are focussed on natural resource restoration and custodianship. • Discourage further land and settlement development, and carefully manage existing settlements and land uses in productive agricultural regions that play a crucial role in national strategic water production, national food security and rural livelihoods. • Pursue effective management and custodianship of national strategic water source production regions. • Ensure efficient rural-rural connectivity in rural regions to enhance the prospects of making a living in these areas. • Rehabilitate degraded land and ensure effective land use management, settlement consolidation, improved rural connectivity and an eco-resource related enterprise focus to (1) provide opportunities for livelihoods and industry development, and (2) support national water availability. • Enhance and further expand the value and contribution of the Oceans and Aqua Economy Areas to (1) local livelihoods, and (2) regional and national economic development.	***Support Stressed Rural Regions:*** • The southwestern parts of the Western Cape where changing climatic conditions will (1) significantly impact national food production, and (2) require regional agricultural adaptation and effective land use management; • The central parts of the country in the northern Free State, Gauteng and southern Limpopo, where nationally significant water and food production are, and/or have been impacted by human settlement and mining activities, and require effective land-use management; • The northern part of KwaZulu-Natal (the Umkhanyakude DM), which includes nationally and regionally significant protected areas; and • The region (1) that encapsulates the Drakensberg mountain range, (2) includes the Natal Midlands, and (3) extends into Mpumalanga along the Eastern Escarpment. ***Create New and Transform:*** • The densely-settled eastern coastal belt in the Eastern Cape and KwaZulu-Natal, and the eastern escarpment areas in Mpumalanga and Limpopo; • The arid region on the southwestern border of the Northwest Province extending into the Northern Cape; and • The eastern half of the highly productive central region located in western Mpumalanga and eastern Gauteng.

Spatial Development and Investment Guidance	National Spatial Development Priorities
Mining and Energy Production Areas and Supportive Infrastructure • In the case of new mines, where (1) the levels of automation and mechanisation are low, and (2) sizeable numbers of workers will still be required, housing provision and/or settlement expansion should preferably take place in *existing regional development anchors* and/or *small towns where adequate basic municipal and social services are available*. • In deciding on the licencing of new mining operations, (1) national and regional development priorities, and (2) the cumulative impacts of the envisaged mining and related settlement activities and further such activities on the creation of *'functional rural regions'* should ideally be considered. Where possible, mining companies should be prompted to become actively involved in the development of such *'functional rural regions'* that can survive post the mining era. Instead of spatially scattered piecemeal investments, mining companies, individually, or collectively could, by agreement with the DMRE and the provincial and local governments involved, invest in key *'regional-rural development focused'* (1) hard, transport and connectivity, and (2) soft, social services-infrastructure. • In undertaking such *regional-rural development focused investment,* collaborative, *long-term regional planning,* which includes (1) scenario development, (2) population migration projections, (3) diversification strategies, (4) cost/benefit-modelling of regional infrastructure provision, municipal service delivery, and the cumulative impacts of the mining activities, and (5) the optimisation of regional and local development opportunities, would be of great value, and should ideally be undertaken. • The DMRE must ensure that rehabilitation and negative-impact-mitigation, as provided for in the MPRDA, must extend beyond agreements on paper and be enforced on the ground.	***Existing Productive Rural Regions to be Strengthened:*** • Long-term infrastructure planning must be done with a *regional-rural development-focused* approach; • *Regional-rural development planning* and natural resource management must be undertaken to support new and expanding mining and associated activities in the buoyant mining regions in the Limpopo and the Northern Cape; and • Research institutes and universities in urban areas should undertake research and product development into (1) enterprise opportunities, (2) innovations in service delivery, and (3) new technologies to be used in mining activities and regions with sizeable mining economies and related settlements. ***Support in Stressed Rural Regions:*** • Support and diversification of economies in declining mining towns and regions should be (1) considered, (2) planned for, and (3) undertaken within a *'functional regional-rural development'* approach; and • The *'Mpumalanga coal mining and coal-fired power generation and coal-to-liquid production region'* is already stressed and is set to experience more such stress, as a result of (1) environmental concerns regarding the burning/gasification of coal, (2) the resource being 'mined-out' and/or a decline in the demand for coal, and (3) large-scale employment losses, which requires joint, multi-stakeholder regional-scale engagement and active, coordinated and sustained long-term support.

5.4.3 National Action and Key Role-Players

The strategic development of productive rural regions and regional development anchors, and the consolidation of regional settlement patterns, will require (1) high levels of intergovernmental coordination and alignment, as well as (2) the introduction of *'joint intergovernmental monitoring, assessment and accountability'* in terms of the achievement of clearly-defined regional spatial development outcomes. Crucial actions that will have to be undertaken in these regards are the following:

- Ensuring *broad-based buy-in to, and support for the 'functional regional-rural development approach',* and *sustained, active collaboration* by national and provincial sector departments, traditional leaders/authorities, municipalities, the private sector and communities in (1) undertaking the necessary regional-rural planning and related long-term infrastructure investment, (2) tying-in key settlement development plans and initiatives, such as the IUDF, the DHS' PHSHDAs programme, municipal IDPs and SDFs and the DDM One Plans in such regional-rural development plans, (3) implementing the plans in a coordinated and integrated manner, (4) monitoring the implementation of the plans, and (5) building the necessary capacity to undertake region-based/focused data-gathering analyses and synthesis, planning, budgeting, and investment and spending;
- Supporting national food security through the *protection and productive use of high-value agriculture land,* as identified and directed by DFFE, and ensuring that legislation to manage and protect this valuable resource is passed as a matter of extreme urgency; and

- Introducing, pursuing and assisting with initiatives aimed at ensuring regional economic diversification and *''just transitions'* in all mining areas', but especially so in stressed mining regions, including (1) scenario development, (2) research, (3) piloting of proposals, and (4) the provision of enterprise development and support, by, amongst other stakeholders and role-players, the organised mining industry, organised labour, municipalities, traditional leaders/authorities, SALGA, universities and research councils.

5.5 NSDF Sub-Frame Four: National Movement and Connectivity Infrastructure System

5.5.1 Spatial Development and Investment Guidance

Spatial development and investment directives and identified **national spatial development priorities** to develop the envisaged national connecting and movement infrastructure (see **Figure 44**) are outlined below.

Long-term planning and investment: Given the high costs and long life cycles involved in large-scale infrastructure investment, timeous planning, evaluation and design of appropriate geo-specific national economic infrastructure are critical. Transitions in (1) national settlement patterns, (2) major economic activities and sectors, (3) climate change, and (4) technological advances, notably in transport, energy generation and communication networks, need to be planned for well in advance, and modes and patterns of infrastructure investment adjusted accordingly. These actions require (1) the *phasing* of new connections and extensions and the maintenance of existing infrastructure, and (2) the *initiation of long-term collaborative planning* with regard to national and inter-regional land and sea-based connecting and enabling infrastructure.

Movement and connection infrastructure networks: These networks are fundamental to (1) international, continental and SADC trade and connectivity, (2) national spatial development, (3) the utilisation of national economic opportunities, and (4) the creation of a 'national settlement system' consisting of national urban cores and 'functional rural regions' including regional development anchors, rural service centres and small towns and villages/hamlets.

The **effective functioning** of these networks requires that:

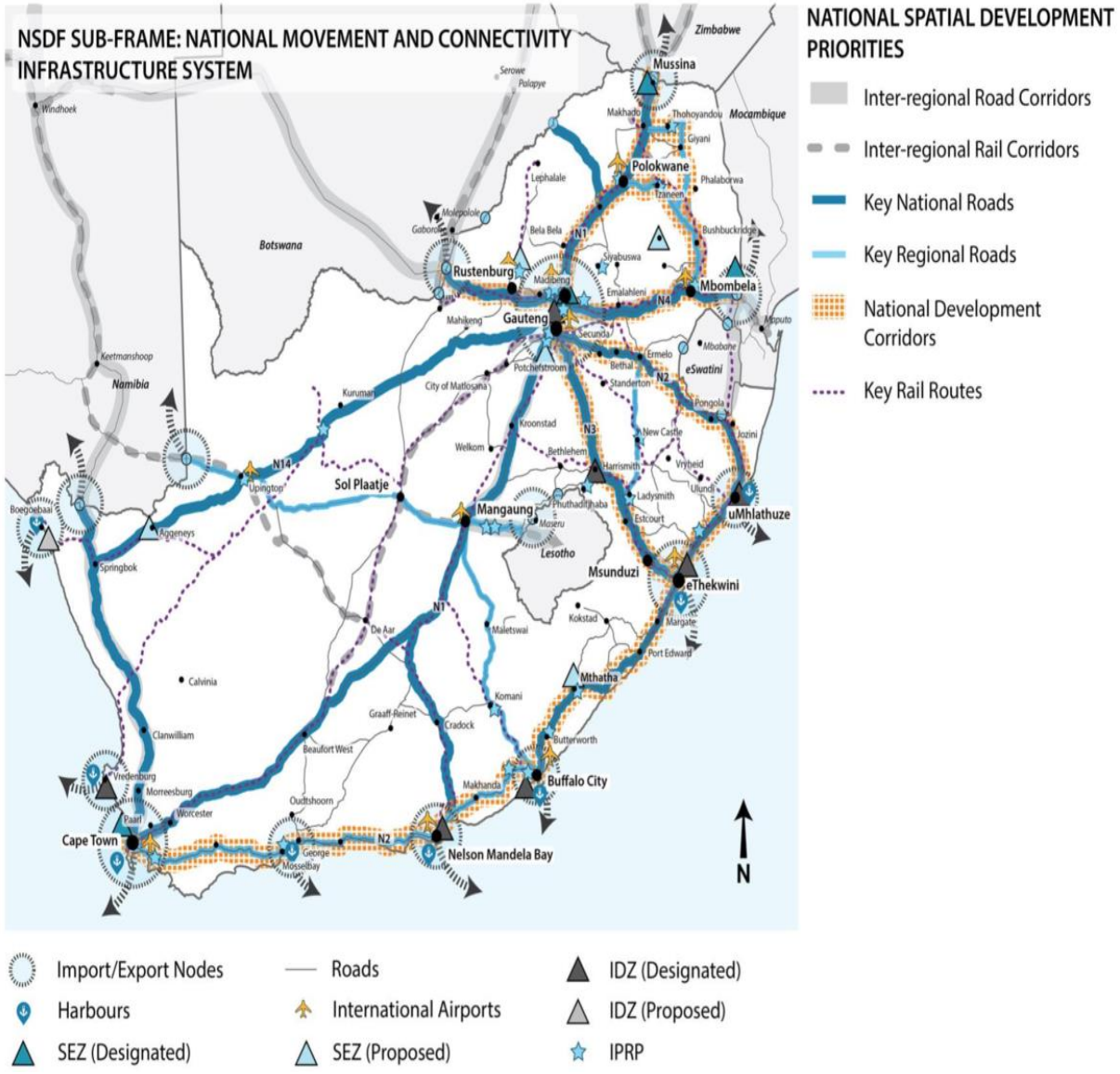
- *Investment in rail* is prioritised over road for economic, ecological and efficiency reasons;
- *Rail infrastructure* is rehabilitated and expanded to support national and SADC-focused freight movement and trade;
- All the roads in the core national network are appropriately surfaced and the key routes prioritised for *regular maintenance*;
- *Logistics hubs, ports (airports and harbours) and border posts are maintained and timeously expanded* to support and strengthen national economic growth and reduce delays at ports; and
- *ICT networks* are extended to the whole country with national corridors, urban regions, cities, regional development anchors, and rural service centres being prioritised, and the rest of the country incrementally covered/serviced over time.

Energy-transmission networks: Maintenance of the national electricity grid infrastructure is crucial, and timeous expansion of the network must be done, as and where required, from a *national development perspective*. Where new sources of energy are to be introduced to the national energy mix, the following should be observed:

- *Solar and wind:* Production is to be located in close proximity to the national grid or users, and in off-grid micro-networks in low-density areas/small remote towns/areas where it should ideally be delivered, operated and serviced/maintained by small-scale, local operators;

- *Nuclear:* Nuclear power stations must be located in close proximity to large water bodies (for cooling), ie the ocean, and the existing national distribution network; and
- *Gas:* Gas pipelines must be spatially located in such a way that they do not encumber, but support national economic development.

Figure 44:
NSDF Sub-Frame Four: National Movement and Connectivity Infrastructure System



5.5.2 National Movement and Connectivity Infrastructure System: National Spatial Development and Investment Priorities

Spatial Development and Investment Guidance	National Spatial Development Priorities
Inter-Regional and National Development Corridors (Road and Rail) (see **Figure 44**) • Adequately plan for and enable SADC-focused trade, which includes (1) a focus on SADC corridors, and (2) improving cost and efficiency at border and port facilities to handle greater international and regional trade flows. • Ensure that all the roads in the core national network are appropriately surfaced and the key routes prioritised for regular maintenance. • Logistics hubs, ports (airports and harbours) and border posts are maintained and expanded, and their capacity and efficiency optimised.	***Maintain and Strengthen National Development Corridors:*** • The N4-Maputo Corridor between Gauteng and Maputo; • The N4 west, continuing as the Trans-Kalahari Corridor in Botswana, with the port of Walvis Bay as destination; • The N3 from Gauteng to Durban port; • The N1 north from Gauteng to Musina and the Beitbridge border into Zimbabwe; • The N1 south from Gauteng to Cape Town; and • The N2 Coastal Corridor. ***Support Development in Stressed Regions:*** • The N2 from Nelson-Mandela Bay, via Mthatha to Port Shepstone; and • The N2 from Richards Bay to Pongola. ***Create New:*** • From Mbombela to Makhado and Polokwane.
Inter-Regional and related National Freight Corridors (Road and Rail) (see **Figure 44**) • Investment in rail is prioritised over road for economic, ecological and efficiency reasons. • Rail infrastructure is rehabilitated and expanded to support national freight movement and SADC-focused trade.	***Maintain and Strengthen Existing Inter-Regional and related National Development Corridors:*** • Existing inter-regional and related national freight and development corridors along significant export and import trade routes, from Gauteng via (1) the N4 to Komatipoort, (2) the N3 to eThekwini, and (3) the N1 north to Musina.
Access Roads to Service Towns and Surrounding Areas (Rural to Rural) (see **Figure 44**) • Improve rural-urban and rural-rural connections to support (1) 'regional-rural development', (2) innovation and enterprise development through infrastructure investment, (3) access to services, (4) rural logistics, (5) market gateways, and (6) 'agglomeration economies'.	***Existing Connections to be Strengthened and Maintained:*** • Maintain and enhance the road and rail connections (1) between the country's urban areas, and (2) between these areas and the country's more rural-based resource production areas; and

Spatial Development and Investment Guidance	National Spatial Development Priorities
	• Maintain access roads and strategic infrastructure to (1) enhance the development prospects, and (2) strengthen the resilience of regional development anchors and rural service centres. ***Create New and Transform:*** • Improve rural-rural and urban-rural connectivity, and specifically so in the National Eco-Resource Production Regions in the eastern, south-eastern, western and northern parts of the country.

5.5.3 National Action and Key Role-Players

The maintenance, expansion and upgrading of the country's national transport and communications network will require coordination and collaboration by a variety of role-players, notably NDoT, DMRE, DHS, DALRRD, DWS, CoGTA, the NPC, the PICC, ESKOM, SANRAL, PRASA, and provincial sector departments responsible for long-term infrastructure planning and development, municipalities, mining companies, organised labour, traditional authorities and community representatives. The huge costs involved in such maintenance, expansion and upgrading, and the many other pressing development needs facing the country may lead to it being neglected. Ways in which timeous planning, budgeting and investment can be secured are as follows:

- Preparing *a long-term National Infrastructure Plan that is aligned with the NSDF*, (1) using the appropriate scenario development modelling techniques, (2) with involvement of a wide range of role-players and interest groups, including communities, and (3) introducing a phased approach to spread the cost over time;
- Creating a broad-based awareness of national and supra-national interdependencies and the need for investing in the network;

- Building the capacities amongst the key role-players to undertake the necessary tasks;
- Establishing an infrastructure monitoring institution/agency to provide regular, independent updates on (1) the state of the national network, and (2) the key contributing factors for this state of affairs; and
- Using the proposed *'intergovernmental spatial transformation accountability model'* by which all three spheres of government, sector departments and non-State actors will individually and collectively hold each other accountable for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base (see **section 6.1**), to monitor the contribution of key role-players to the maintenance, expansion and upgrading of the National Movement and Connectivity Infrastructure System in accordance with the intentions and provisions of the NSDF and the *long-term National Infrastructure Plan.*

5.6 NSDF Sub-Frame Five: National Ecological Infrastructure Network

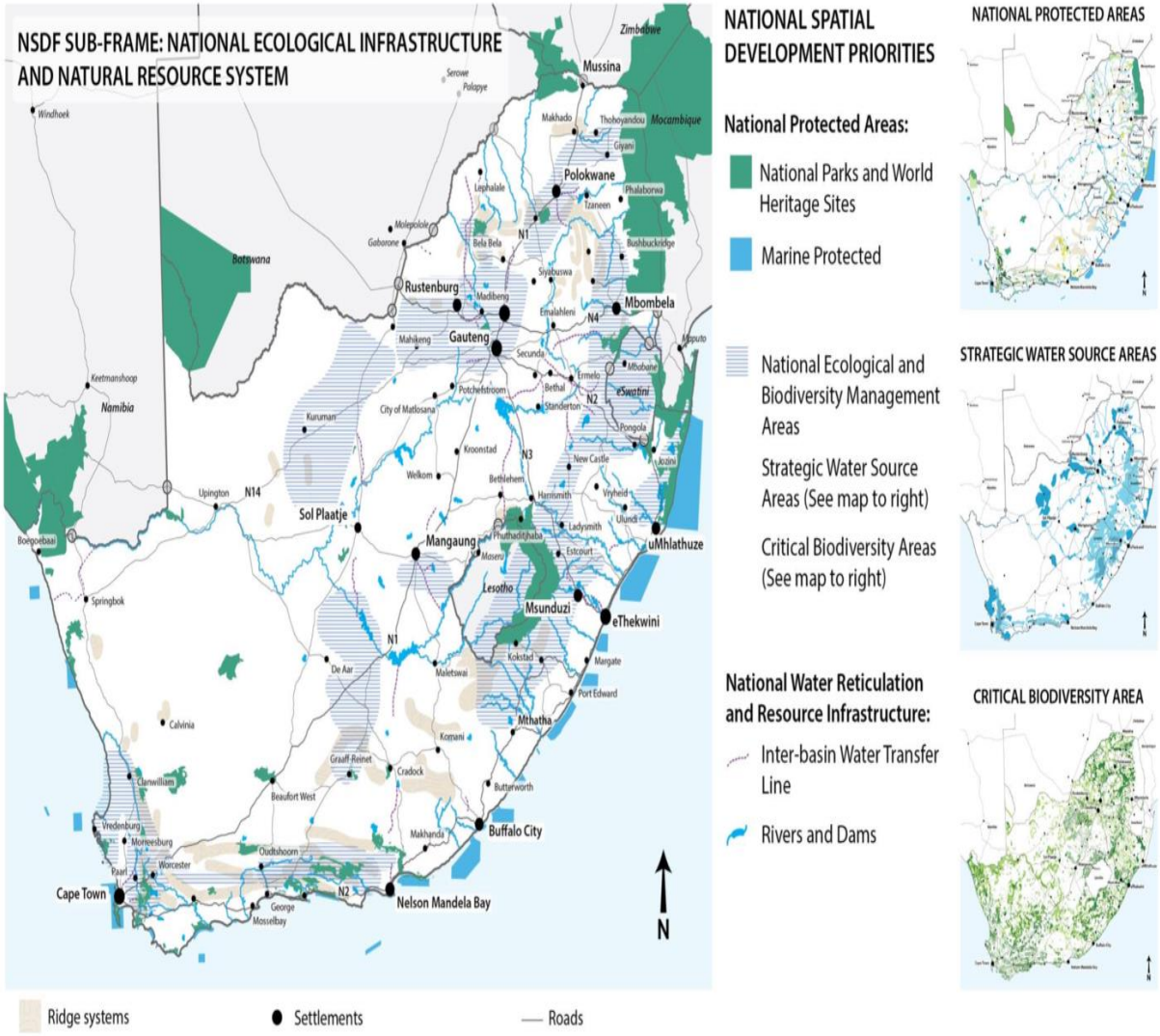
5.6.1 Spatial Development and Investment Guidance

Spatial development and investment directives and identified **national spatial development priorities** to develop the envisaged national ecological infrastructure and natural resource network (see **Figure 45**) are outlined below.

Protecting the national ecological infrastructure network: This network provides a *natural resource foundation* that enables all life and activity in the country, and must, as such, be wisely used, managed and protected. It includes areas regarded as *strategic assets* within the country's national and international biodiversity, ecology and tourism areas (including *Ramsar Sites* and *Transfrontier Parks)*. The maintenance and protection of this network requires that:

- National spatial development is well-planned and well-managed to (1) limit negative impacts on ecological infrastructure, (2) ensure that urban growth and land-use fits within national and regional water resource availability profiles, and (3) prevent that land and/or settlement development from threatening or compromising SWSAs;
- National water use is curbed through effective water demand management, recycling, infrastructure maintenance and water augmentation projects; and
- Strategic national water resource infrastructure is well maintained, and the restoration of degraded strategic water source areas prioritised.

Figure 45:
NSDF Sub-Frame Five: National Ecological Infrastructure Network



5.6.2 National Ecological Infrastructure Network: National Spatial Development and Investment Priorities

Spatial Development and Investment Guidance	National Spatial Development Priorities
Protected Areas (see **Figure 45**) • The *National Protected Areas Expansion Strategy* is implemented. • National spatial development is well-planned and well-managed to enable (1) protection, as well as the (2) effective use and beneficiation of protected areas in accordance with the relevant regulatory framework. • Protected areas contribute to human life and the economy, as (1) strategic nature-based tourism and wildlife economy assets, and (2) nodes for regional and local economic development, especially in rural areas. • Biodiversity stewardship and land reform programmes work hand-in-hand to give communal landholders access to the social and economic opportunities associated with nature-based tourism and 'the wildlife economy'. • Biodiversity stewardship agreements are used to expand the protected area network in a cost-effective way on private land, reducing the costs to the State, notably so the establishment, protection and management of protected areas.	***Maintain and Expand the Full Range of Priority Protected Areas:*** • Transfrontier Parks; • National Parks, Nature Reserves and Protected Environments through, amongst others, biodiversity stewardship programmes; and • Marine Protected Areas. ***Support Development in Stressed Regions:*** • Ensure that protected areas support social and economic development in stressed rural regions. ***Create New and Transform:*** • Further explore and use the contribution that 'land reform biodiversity stewardship'

	can potentially make, especially so in areas where conventional agriculture is not economically viable; and • Consolidate and expand the protected area network to provide greater protection for SWSAs and other ecological infrastructure assets.

Spatial Development and Investment Guidance	National Spatial Development Priorities
National Ecological and Biodiversity Management Areas *(see **Figure 45**)* • Critical Biodiversity Areas (CBAs) and Strategic Water Source Areas (SWSAs) have been identified as key components of the National Ecological Infrastructure Network. • SWSAs are of strategic importance for national water-security. As such, the management and restoration of these areas, which are of socio-economic benefit to people, places and economies - both in the regions in which they are located, and the regions that they supply water to - must be approached and undertaken as a joint/shared responsibility. • Land-uses that reduce run-off or streamflow, or affect water quality (eg mining, plantations, crop production and overgrazing) should be avoided in SWSAs. • Wetlands should be kept in good condition or rehabilitated, and invasive alien plants should be cleared. • CBAs are areas of strategic importance for conserving a representative sample of South Africa's wealth of ecosystem types and species, which are of national and international significance. • CBAs should remain in a natural or near-natural ecological condition, ie no intensive land uses should take place in these areas. As such, CBAs should be integrated into municipal SDFs and Land Use Schemes, with appropriate restrictions placed on intensive land-uses in these areas. • 'Developmental co-benefits' must be created through effective management and use of strategic ecological and biodiversity management areas, to support rural livelihoods, especially with regard to custodianship and tourism opportunities.	***Maintain and Strengthen National Ecological and Biodiversity Management Areas:*** • Manage and conserve CBAs; and • Restore SWSAs. ***Support Stressed Areas:*** • Ensure effective land development management in CBAs and SWSAs; • Use environmental management instruments to prohibit or restrict incompatible activities in CBAs and SWSAs, as and where appropriate; • Restore CBAs and SWSAs that are in poor ecological condition; • Ensure that existing and new economic activities adhere to (1) national development, and (2) land use management regulations and guidelines; and • Ensure effective management of SWSAs for groundwater, especially in Agri-Arid Regions that rely heavily on this source. ***Create New and Transform:*** • Prioritise CBAs and SWSAs for inclusion in the 'national protected area network'.
National Water Reticulation and Resource Infrastructure (see **Figure 45**) • Maintenance, extension and upgrading of the SWSA resource infrastructure network (including dams, reservoirs and transfer pipelines) is prioritised, to support nationally significant spatial development areas. • Waterpipes must be maintained and extended to connect/cover national urban regions and cores, regional development anchors and rural service centres and key economic production sites in line with national spatial, social and economic development priorities.	***Maintain and Strengthen National Water Reticulation and Resource Infrastructure in:*** • National Urban Regions; • National Urban Nodes; • Regional Development Anchors; and • Rural Service Centres. ***Support Stressed Areas:*** • Maintenance of the national and supra-national water-transfer infrastructure network that sustains core national urban regions, nodes and development corridors; and • Management of settlement growth in (1) arid areas, and (2) areas set to experience significant pressure with regards to the availability of water as a result of climate change, which may include imposing restrictions (within the provisions of the Constitution) on further growth in such areas.

5.6.3 National Action and Key Role-Players

Effective protection, management and restoration of the National Ecological Infrastructure Network will require collaboration between a range of organs of State and non-State entities.

Ecological infrastructure and SWSAs, in particular, have been prioritised for protection, management and restoration in a range of national policies. Protection and regulatory implementation with regard to SWSAs is imperative. While a set of guidelines for the management of development in such areas has been prepared, further actions have to be taken to see them implemented, ie (1) an intergovernmental team led by DWS and DFFE has to be put together, (2) awareness of the importance of SWSAs must be raised, and (3) the regulatory instruments must be finalised and promulgated. In the interim, awareness of these guidelines *can and needs to be raised*, specifically with regard to activities such as (1) agriculture, (2) mining, (3) land and settlement development, (4) infrastructure investment, and (5) spatial planning and land use management in areas that have experienced, and are set to experience significant development pressures.

With regard to accountability for the protection of environmental quality in SWSAs and CBAs, provinces and municipalities responsible for the management of these areas, and their upstream impacts, will have to (1) account for their actions, as well as the ways and extent to which they (2) managed to regulate those of non-State actors in these areas. In addition to this, provinces and municipalities must ensure that the development pursued, or provided for in their SDFs in these key ecological areas, is (1) *not to their detriment*, and (2) *enhances* their ability to provide their crucial, life-enabling and life-enhancing ecosystem services.

Given the enormity of these tasks, and the depth and levels of capacity they (will) require, they will need to be supported and jointly attended to by the national and provincial sector departments responsible for environmental affairs, local government, rural development, agriculture and spatial planning.

5.7 National Spatial Action Areas

5.7.1 Introduction

Following on from the *directive in the NDP,* the NSDF identifies areas of *significant national risk and opportunity/potential*. In sharp contrast to the *centrifugal forces, ie 'outward-pushing forces away from the core*', that shaped Apartheid national spatial development planning, the NSDF provides a development perspective aimed at *'drawing all South Africans closer to the core*':

- *Nationally,* in the form of a shared and smaller, yet more viable, more sustainable and more resilient national spatial footprint that places less pressure on our core national natural resource areas and ecological systems, and is more affordable to service and sustain;
- *Regionally,* in functionally integrated areas focused on regional development and wellbeing that (1) are supported by regional development collaboration agreements between State and non-State actors, and (2) provide an interface between 'the national and the local'; and
- *Locally,* in high-quality, serviced, compact, diverse and connected places with viable, robust and resilient economies.

In order to create such a *'shared, smaller, better connected and more sustainable South Africa'*, the NSDF identifies the most urgent short-term, strategic spatial development catalysts to (1) bring about radical spatial transformation at scale, (2) manage and mitigate rising national risks, and (3) move our country at speed towards the long-term **Ideal National Spatial Development Pattern** (see **Figure 46**). These areas, of which there are **five types**, are called **National Spatial Action Areas (NSAAs)** (see **Figure 47**).

In short, these *NSAAs represent:*

- The **most critical** sub-national regions/areas for *bringing about and/or catalysing national spatial transformation and economic transition at scale;* and/or
- The **most stressed** sub-national regions/areas in terms of *current, rising and anticipated national risks*.

As such, these NSAAs require urgent, concerted, targeted and sustained collaborative and integrated intergovernmental action (see **Table 1**) in both (1) **the respective sub-national region or area's interest**, and (2) **the national interest**, starting with:

- *Aligning plans, budgets and action/implementation plans* in and between spheres of government around these priority regions/areas; and
- Identifying, initiating and/or undertaking *the most beneficial catalytic actions/interventions* in these regions/areas.

Importantly though, is that the NSAAs are key components of our **Ideal National Spatial Development Pattern**, and as such, they also require planning, budgeting and action/investment, along with the rest of the country, until 2050. Focusing on the next five years is just **the beginning**, and **the first in a series** of **carefully sequenced five-year** NSAA-plans.

The selection of the **five types** of **NSAAs** was informed by:

- The *challenges and trends* that are most likely to impact our country over the course of the (1) immediate, (2) medium-term, and (3) longer-term futures;
- The *underutilised opportunities/potentials* in parts of our country;
- The *stated development objectives* in national and provincial development and sector plans; and
- The *gap* between our ideal national spatial development pattern and the status quo.

The identification of the **NSAAs** does, however, not propose (1) an overhaul, or (2) detailed spatial alignment of every existing planning instrument or initiative. Instead, the introduction of these **national priority areas** seeks to strategically impact government planning, budgeting and infrastructure investment and social and economic development spending-processes by:

- Identifying (1) *urgently required interventions* in sub-national spaces, and (2) *priority catalytic spatial development enablers* for accelerated development impact in these spaces; and
- Restoring and managing *the sustainable utilisation of our country's rich natural resource foundation and ecological infrastructure base* in environmentally-stressed areas.

In the following sections, the **NSAAs** are briefly outlined, a few key statistics for each of these are provided, and key action areas and role-players identified. These statistics were generated by the use of the national Mesozone data set [*****], with the exception of the population growth scenarios for 2030 and 2050, for which the Green Book [†††††] was used.

***** Meso-Frames: [Online] available at: http://stepsa.org/socio_econ.html. Maritz, J., van Huyssteen, E. Green, C. and Sogoni, Z. South African Functional Town Typology (CSIR 2018 v2). [Online] available at: www.stepsa.org.za.

††††† Green Book. 2019. Green Book: Adapting South African settlements to climate change. [Online] available at: www.greenbook.csir.co.za. Link to the climate change projections findings: Engelbrecht, F., Le Roux, A. & Arnold, K. 2018. Green Book – Detailed projections of future climate change over South Africa. [Online] available at: https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=b161b2f892194ed5938374fe2192e537. Pretoria: CSIR: Link to the population projections findings: Le Roux, A., Arnold, K., Makhanya, S. & Mans,

Table 1:
An Overview of the Actions required in the National Spatial Action Areas in accordance with four of the NSDF Sub-Frames

National Spatial Action Areas	Relevant NSDF Sub-Frames			
	National System of Nodes and Corridors	**National Resource Economy Regions**	**National Movement and Connectivity Infrastructure System**	**National Ecological Infrastructure Network**
National Spatial Transformation and Economic Transition Regions	• Consolidating development in fully-fledged and transformed national urban regions and nodes. • Supporting and strengthening regional development anchors to play their crucial (1) national connecting, and (2) regional development anchoring and enhancing roles.	• Supporting and strengthening and emerging farmers and small and medium-scale agriculture. • Supporting eco-production and eco-entrepreneurs. • Ensuring sustainable food production for national food security.	• Creating new connections, eg the N2-extension, and strengthening existing connections.	• Managing land development and land-use to ensure the protection of critical national water resources. • Supporting agricultural practices and human settlement patterns and forms that (1) optimise the utilisation of land, and (2) limit their impact on the country's ecological infrastructure.
Central Innovation Belt	• Diversifying the economy, rebuilding, supporting and upscaling the secondary sector, and strengthening the tertiary sector. • Creating transformed, well-functioning settlements.	• Supporting agro-processing, viable mineral and metals beneficiation and alternative energy production.	• Strengthening existing connections to, and links with the core areas of the Gauteng Urban Region.	• Managing and mediating the impacts of (1) dense human settlement, and (2) intense economic activity on critical national water resources, eg the pollution-mitigation actions in the case of the Vaal River.
National Resource Risk Areas	• Ensuring the sustainable use of resources, and preventing pollution and resource depletion.	• Managing competing and incompatible land uses, eg mining, agriculture and eco-tourism.	• Strengthening infrastructure networks to facilitate regional, national and cross-border flows.	• Prioritising natural resource management by, amongst others, introducing far more stringent protection and wise management of the country's scarce natural resources, notably so its high-value agricultural land.
National Urban Spatial Transformation and Economic Transition Regions	• Strengthening (1) the network, and (2) nodes on the network to become national centres of economic growth, human resource development, and innovation.	• Managing national and cross-border interdependencies for national and wider SADC benefit.	• Refurbishing and developing infrastructure to enable and support (1) economic diversification and expansion, and (2) more youthful and larger populations. • Strengthening regional, national and cross-border linkages.	• Managing national and regional cross-border interdependencies for the benefit of all concerned. • Managing the impact of human settlement and economic activities on SWSAs.
Arid-Innovation Region	• Strengthening regional development anchors as connecting, catalytic and interface points.	• Supporting intensive, high-value agriculture by innovative means. • Strengthening and expanding alternative energy generation.	• Supporting connections between national urban nodes and regional development anchors.	• Ensuring sustainable aquaculture activities that assist with ensuring regional and national food security. • Managing land and settlement development and economic activities, to ensure the protection of critical natural resources.

G. 2018. Green Book – South Africa's urban future. Growth projections for 2050. [Online] available at: https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=5180459a765c4e63bfb3fa527c7302b3.

Figure 46:
From Ideal National Spatial Development Pattern to National Spatial Action Areas

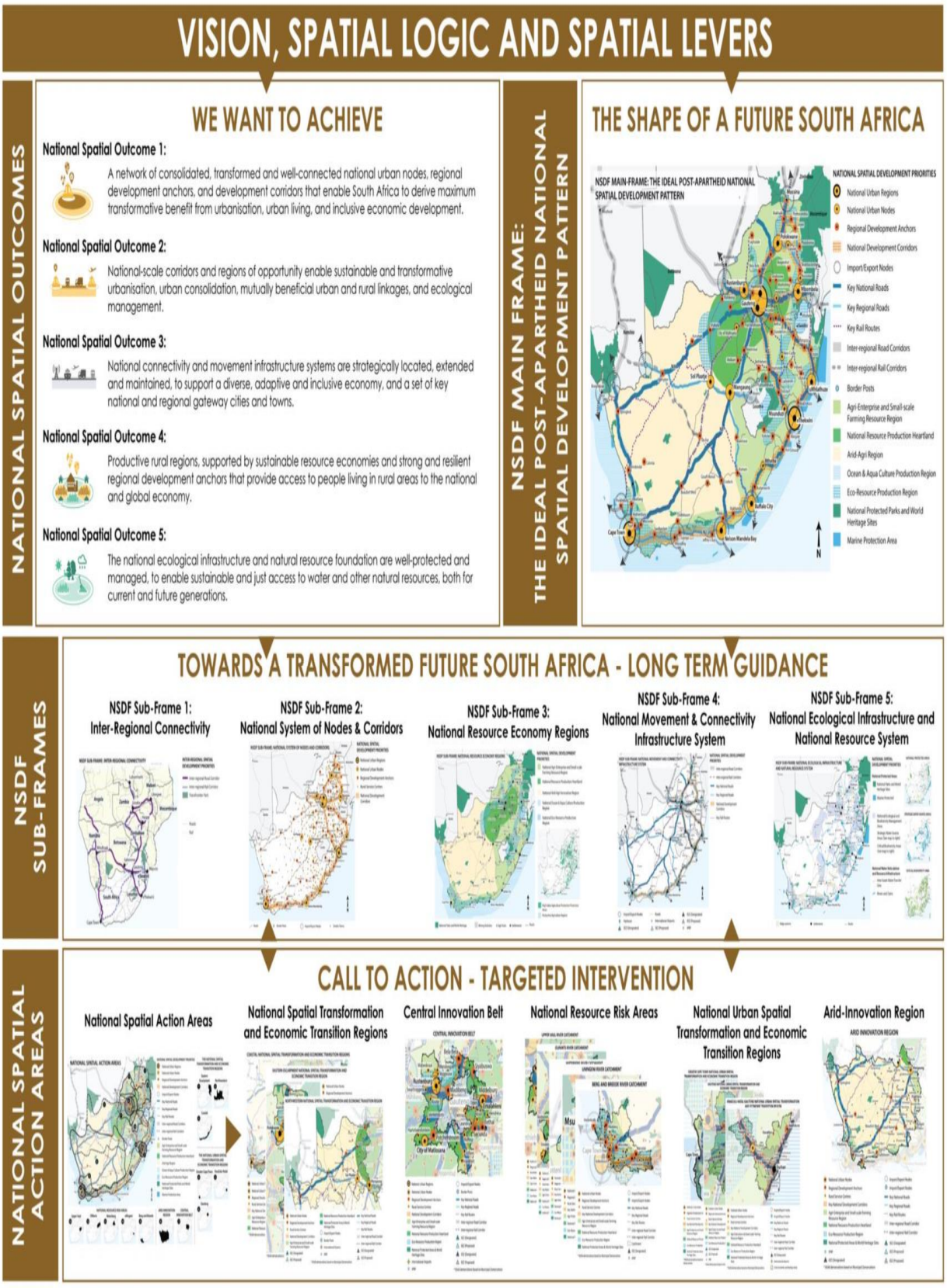
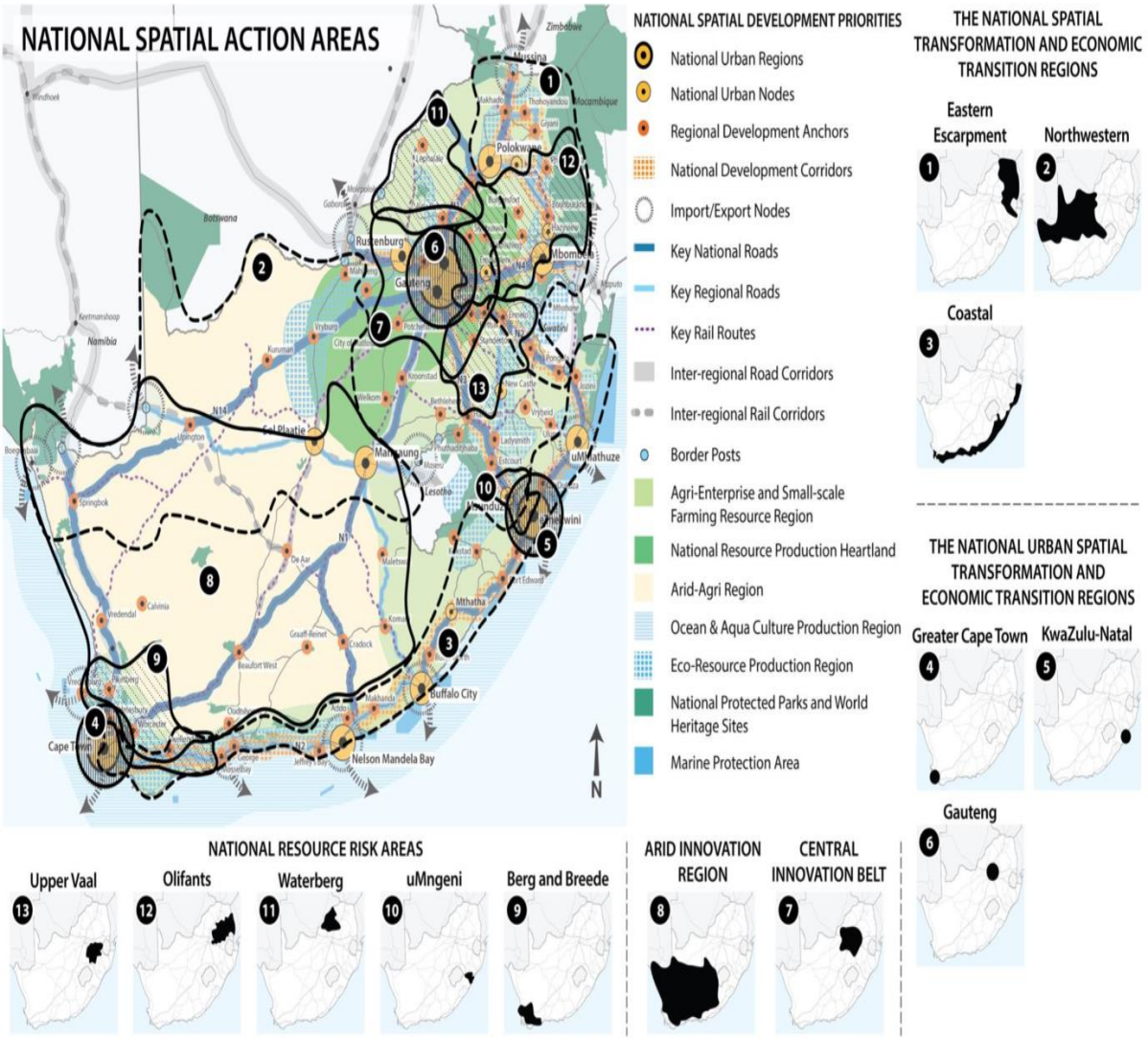
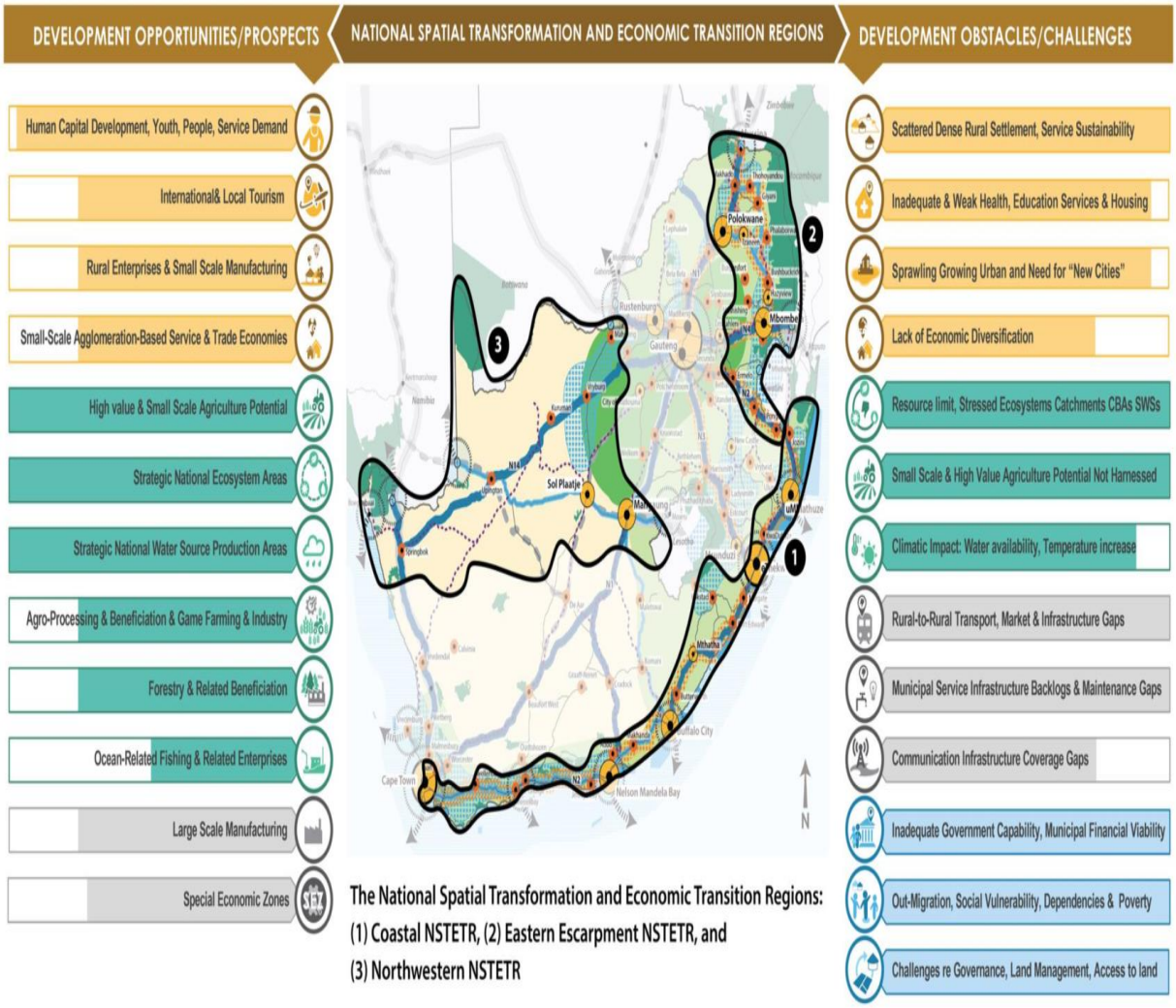


Figure 47:
National Spatial Action Areas



5.7.2 NSAA One: National Spatial Transformation and Economic Transition Regions

Figure 48:
The National Spatial Transformation and Economic Transition Regions: Overview



5.7.2.1 Significance of the National Spatial Transformation and Economic Transition Regions (NSTETRs) as NSAAs

While these three regions each have their own unique contexts and challenges, they share many similarities: They all have (1) large, youthful populations, (2) shared histories of deep deprivation and neglect as former Apartheid Bantustans, (3) high levels of poverty and unemployment, and (4) large tracts of dense and sprawling rural settlement forms. They are also areas of high ecological value for the country, as (1) surface water producers in the case of the **Coastal National Spatial Transformation and Economic Transition Region (Coastal NSTETR)** and the **Eastern Escarpment Spatial Transformation and Economic Transition Region (Eastern Escarpment NSTETR)**, and (2) an enormous source of groundwater, in the case of the **Northwestern Spatial Transformation and Economic Transition Region (Northwestern NSTETR)**. In addition to this, the Coastal and Eastern Escarpment NSTETRs include large portions of the country's very limited high-value agricultural land, and as such are key to the long-term food security of the country. The Northwestern NSTETR, in turn, includes crucial livestock and irrigation-agriculture and related agro-processing activities.

In terms of climate change predictions, the Coastal and Eastern Escarpment NSTETRs will be called upon to provide (1) water and food, (2) key ecosystems services, and (3) a place to call home for millions of South Africans, due to the relatively more favourable climatic conditions in these parts of the country *vis-à-vis* the far less favourable conditions envisaged in the western, north-western and central parts of the country. In contrast to this, larger parts of the Northwestern NSTETR are set to experience very harsh climatic conditions in the not-too-distant future. However, (1) due to intensive irrigation, farming has become established as a regionally and nationally important economic activity in the region, and (2) mining has a become a huge employer, contributor to the national fiscus, and significant earner of foreign exchange for the country.

Given their shared histories, similar challenges, and importance for the future of the country, declaring these areas as **NSAAs** is crucial, for: (1) the sake of historical redress; (2) attending to pressing rural spatial, social and economic development challenges by optimising vast economic opportunities available within these regions at scale; (3) national food and water security; and (4) realising our desired future **Ideal National Spatial Development Pattern**. Failure to turn the tide on the challenges these NSAAs face, and ensuring sustainable (1) service delivery, and (2) regional economic development, would not only be to the detriment of these areas and the people who live in them, but also the country as a whole, due to significant sub-national regional interdependencies.

5.7.2.2 Focus of Actions and Interventions

Guided by the **NSDF Main-Frame** and five **Sub-Frames**, the following national priorities require strategic spatial action to (1) bring about transformation in the national spatial pattern, (2) enable national and regional-scale climate and developmental adaptation, and (3) achieve developmental impact *at scale*:

- Extend and improve the transportation networks, ensure *regular maintenance* and *upgrading* of existing infrastructure, notably roads, increase investment in high-speed ICT infrastructure and enhance urban-rural and rural-rural connectivity;
- Consolidate settlement development, and support the development of new cities in areas (1) of significant population growth, and (2) that are facing significant challenges, but offer sizeable opportunities for spatial transformation;
- Develop a *network* of (1) strong and vibrant existing and emerging cities and large towns to fulfil the role of fully-fledged national urban nodes, (2) viable regional development anchors, and (3) well-capacitated rural service centres;
- Introduce and upgrade built environment, transport, basic service and communication infrastructure with a focus on (1) housing, (2) basic service delivery, (3) public transport, and (4) rural-urban and rural-rural connections, which will also act as a trigger for enterprise development and expansion;
- Introduce innovative settlement planning, rural design, urban land reform, urban and rural edges, and ensure effective city and town and land-use management land administration to (1) curtail sprawl, and (2) consolidate place-specific urbanisation in dense rural settlements and fast-growing formal and traditional settlement areas within a strategic network of rural service centres and villages/hamlets;
- Ensure the protection and management of ecological infrastructure, national resources and protected areas, including SWSAs and high-value agricultural land, by means of regional and municipal resource management and eco-agri-development strategies;
- Introduce and/or strengthen effective regional collaboration, partnerships and cooperative governance models, to ensure (1) mutually beneficial natural resource-

use and land development, and (2) optimise national, regional and local economic development benefits;

- Undertake integrated human capital development to enable a generation of young people to reap the benefits of urbanisation through (1) human capital development, and (2) the opening-up of urban economies to enable and support a multiplicity of livelihood options and opportunities;
- Provide catalytic, innovative and contextually suitable infrastructure and deliver life-enhancing social and basic services to support enterprise development, well-being and inclusive growth with both an ecological and human-focussed approach;
- Prioritise human capital and people-centred enterprise development, eg arts and culture, tourism, knowledge creation, education and innovation;
- Capitalise on the vast opportunities that the universities and research entities in NSAAs offer for regional development, transformation and transition;
- Optimise the agricultural opportunities in the regions and support the establishment of small-scale farming activities, agri-enterprises and agri-led industrialisation, to foster productive regional-rural development, enhance national food security, and strengthen national water security;
- Develop the tourism sector and creative industries in the regions, with an emphasis on small-and-medium-sized farming activities and agri-eco production;
- Accelerate small harbour development in support of the fishing, tourism and maritime economy in regional development anchors and rural service centres *as and where applicable* along the coast in the Coastal and Northwestern NSTETRs; and
- *Establish strong regional growth and development compacts,* including all role-players, ie the three spheres of government, traditional leaders/authorities, communities (notably youth), the private sector, CBOs, NGOs and organised labour, and ensure regional, cross-provincial and cross-municipal boundary collaborative spatial development planning and governance.

In the following figures (**Figures 49 to 51**) and tables (**Tables 2 to 7**), (1) a spatial image of each of the three NSTETRs, (2) a summary of the key statistics regarding each of the regions, (3) the names of the affected municipalities in each of the regions, and (4) the names of the key settlements in each of the regions is provided.

Figure 49:
The Coastal NSTETR: Close-Up

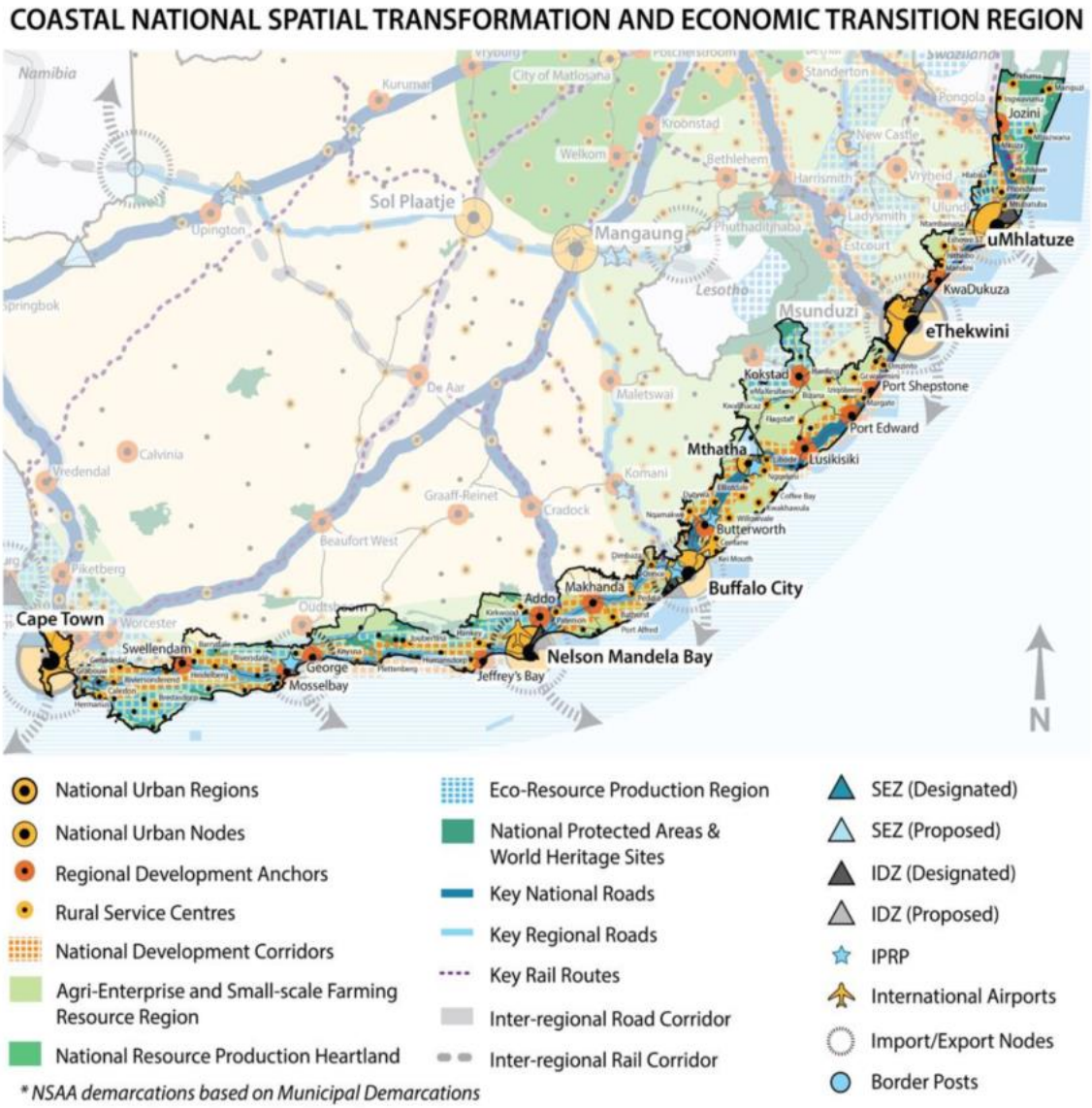


Table 2:
The Coastal NSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	16 663 562	29.6%
Youth (under 35)	10 800 436	29.4%
Population 2030 (medium growth)	19 272 417	29.5%
Population 2050 (medium growth)	22 334 096	29.7%
Total GVA 2016 (R mil)	1 159 318 992	29.8%
Unemployed 2016	1 512 797	26.8%
Poor Households 2011	834 305	28.1%
Total Area (km^2)	110 502	9.1%
Productive Land (km^2)	87 944	13.5%

National Nodal System Elements:

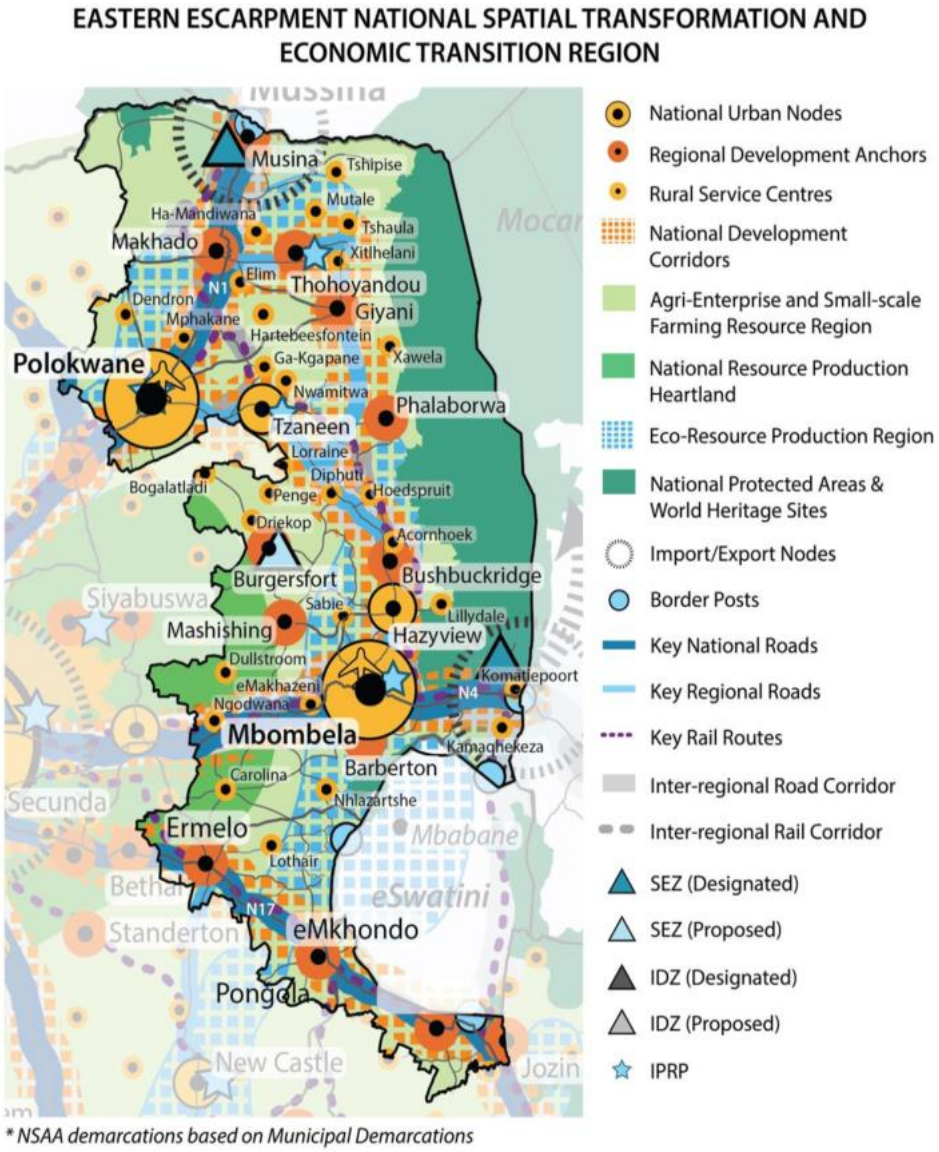
- **National Urban Regions:** Cape Town and eThekwini;
- **National Urban Cores:** Buffalo City, Gqeberha, Mthatha and Richard's Bay;
- **Regional Development Anchors:** Addo, Butterworth, George, Jeffrey's Bay, Jozini, Kokstad, KwaDukuza, Lusikisiki, Makhanda, Mossel Bay, Port Edward, Port Shepstone, and Swellendam; and
- **Rural Service Centres:** Barrydale, Bathhurst, Bizana, Bredasdorp, Caledon, Centane, Coffee Bay, Dimbaza, Dutywa, Elliotdale, eMaXesibeni, Eshowe ST, Flagstaff, Gcwalemini, Genadendal, Grabouw, Hankey, Harding, Heidelberg, Hermanus, Hlabisa, Hluhluwe, Humansdorp, Ingwavuma, Isithebe, Iziqolweni, Joubertina, Kei Mouth, Kirkwood, Knysna, KwaBhaca, Kwakhawula, Libode, Mandini, Manguzi, Margate, Mbazwana, Mkuze, Mtubatuba, Ndumu, Ngqeleni, Nqamakwe, Ntambanana, Paterson, Peddie, Phondweni, Plettenberg Bay, Port Alfred, Qonce, Riversdale, Riviersonderend, Umzinto and Willowvale.

Table 3:
The Coastal NSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
EC	Mbizana	Alfred Nzo
EC	Ntabankulu	Alfred Nzo
EC	Umzimvubu	Alfred Nzo
EC	Great Kei	Amathole
EC	Mbhashe	Amathole
EC	Mnquma	Amathole
EC	Ngqushwa	Amathole
EC	Buffalo City	Buffalo City
EC	Nelson Mandela Bay	Nelson Mandela Bay
EC	King Sabata Dalindyebo	O R Tambo
EC	Mhlontlo	O R Tambo
EC	Ngquza Hill	O R Tambo
EC	Nyandeni	O R Tambo
EC	Port St Johns	O R Tambo
EC	Kouga	Sarah Baartman
EC	Kou-Kamma	Sarah Baartman
EC	Makana	Sarah Baartman
EC	Ndlambe	Sarah Baartman
EC	Sundays River Valley	Sarah Baartman
KZN	eThekwini	eThekwini
KZN	Greater Kokstad	Harry Gwala
KZN	KwaDukuza	iLembe

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
KZN	Mandeni	iLembe
KZN	Mfolozi	King Cetshwayo
KZN	uMhlathuze	King Cetshwayo
KZN	uMlalazi	King Cetshwayo
KZN	Ray Nkonyeni	Ugu
KZN	Umdoni	Ugu
KZN	uMuziwabantu	Ugu
KZN	Umzumbe	Ugu
KZN	Big Five Hlabisa	Umkhanyakude
KZN	Jozini	Umkhanyakude
KZN	Mtubatuba	Umkhanyakude
KZN	Umhlabuyalingana	Umkhanyakude
WC	City of Cape Town	City of Cape Town
WC	Bitou	Garden Route
WC	George	Garden Route
WC	Hessequa	Garden Route
WC	Knysna	Garden Route
WC	Mossel Bay	Garden Route
WC	Cape Agulhas	Overberg
WC	Overstrand	Overberg
WC	Swellendam	Overberg
WC	Theewaterskloof	Overberg

Figure 50:
The Eastern Escarpment NSTETR: Close-Up



** NSAA demarcations based on Municipal Demarcations*

Table 4:
The Eastern Escarpment NSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	6 382 517	11.3%
Youth (under 35)	4 456 915	12.1%
Population 2030 (medium growth)	7 323 139	11.2%
Population 2050 (medium growth)	7 952 979	10.6%
Total GVA 2016 (R mil)	323 146 627	8.3%
Unemployed 2016	477 972	8.5%
Poor Households 2011	350 930	11.8%
Total Area (km^2)	112 182	9.2%
Productive Land (km^2)	72 500	11.1%

National Nodal System Elements:

- **National Urban Cores:** Mbombela, Polokwane, Hazyview and Tzaneen;
- **Regional Development Anchors:** Barberton, Burgersfort, Bushbuckridge, eMkhondo, Ermelo, Giyani, Makhado, Mashishing, Musina, Phalaborwa, Pongola and Thohoyandou; and
- **Rural Service Centres:** Acornhoek, Bogalatladi, Carolina, Dendron/Dikgale, Diphuti, Driekop, Dullstroom, Elim, eMakhazeni, Hoedspruit, Kamaqhekeza, Komatiepoort, Lillydale, Lorraine, Lothair, Malamulele, Mutale, Ngodwana, Nhlazartshe, Nwamitwa, Penge, Sabie, Siloam, Tshabelane, Tshaulu and Tshipise.

Table 5:
The Eastern Escarpment NSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
LIM	Ba-Phalaborwa	Mopani
MP	Bushbuckridge	Ehlanzeni
MP	Chief Albert Luthuli	Gert Sibande
MP	City of Mbombela	Ehlanzeni
LIM	Collins Chabane	Vhembe
MP	Emakhazeni	Nkangala
LIM	Fetakgomo Tubatse	Sekhukhune
LIM	Greater Giyani	Mopani
LIM	Greater Letaba	Mopani
LIM	Greater Tzaneen	Mopani
LIM	Makhado	Vhembe
LIM	Maruleng	Mopani
MP	Mkhondo	Gert Sibande
LIM	Molemole	Capricorn
MP	Msukaligwa	Gert Sibande
LIM	Musina	Vhembe
MP	Nkomazi	Ehlanzeni
LIM	Polokwane	Capricorn
MP	Thaba Chweu	Ehlanzeni
LIM	Thulamela	Vhembe
KZN	uPhongolo	Zululand

Figure 51:
The Northwestern NSTETR: Close-Up

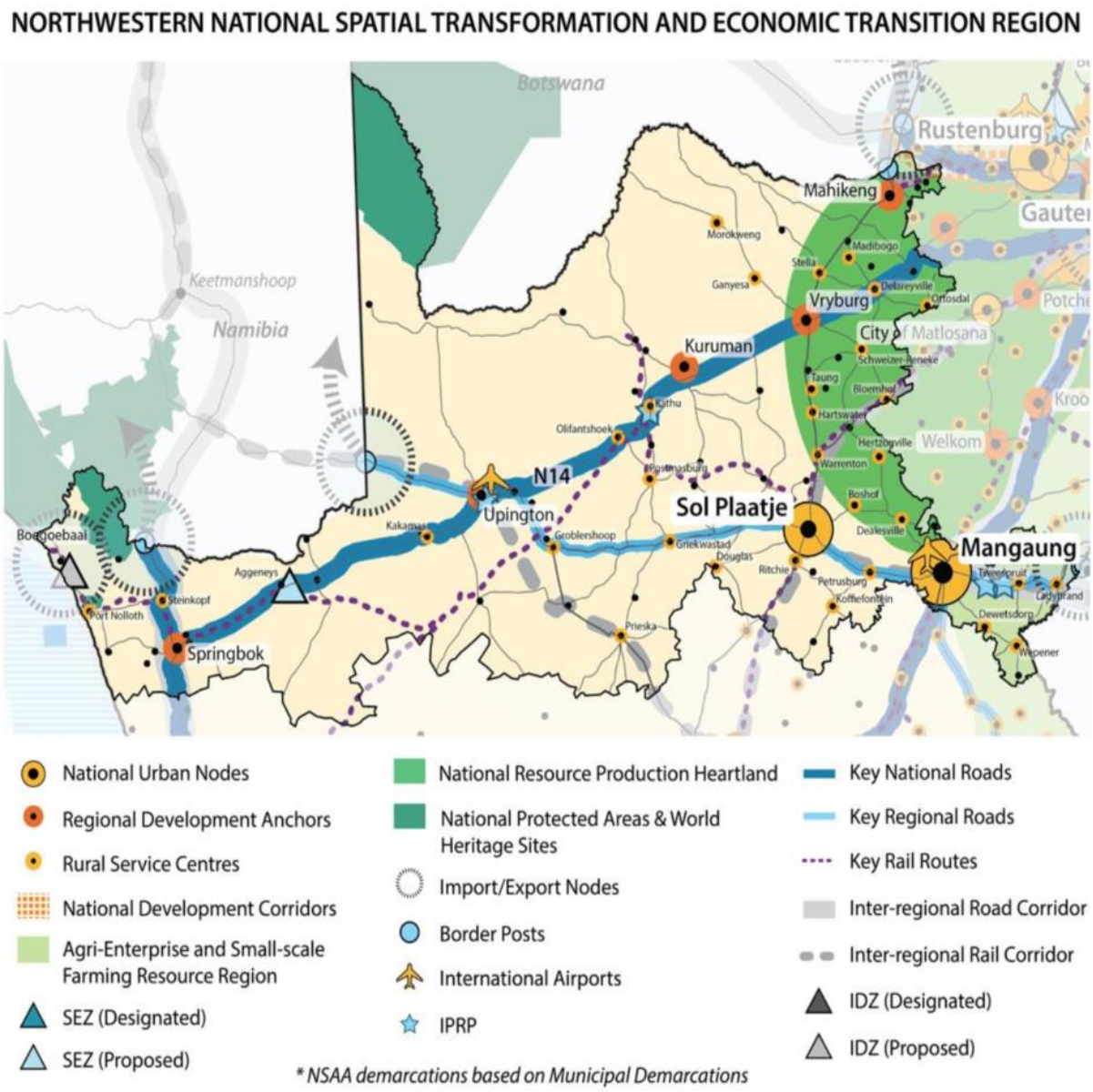


Table 6:
The Northwestern NSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	3 092 982	5.5%
Youth (under 35)	1 967 872	5.4%
Population 2030 (medium growth)	3 223 118	4.9%
Population 2050 (medium growth)	3 389 268	4.5%
Total GVA 2016 (R mil)	193 182 053	5.0%
Unemployed 2016	301 911	5.3%
Poor Households 2011	151 979	5.1%
Total Area (km^2)	308 911	25.3%
Productive land (km^2)	97 491	15.0%

National Nodal System Elements:

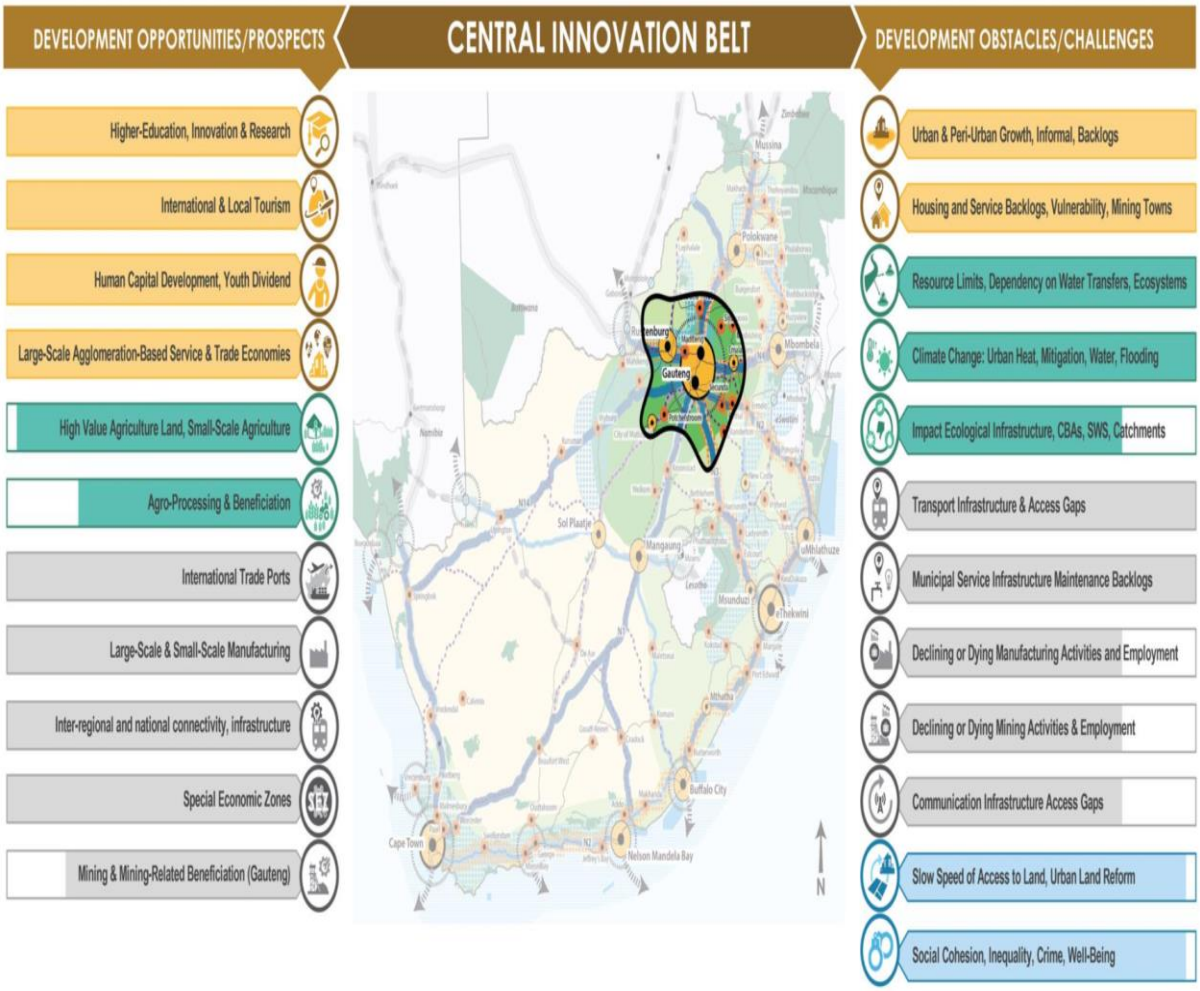
- **National Urban Cores:** Sol Plaatje and Mangaung;
- **Regional Development Anchors:** Kuruman, Mahikeng, Springbok, Upington and Vryburg; and
- **Rural Service Centers:** Bloemhof, Boshof, Dealesville, Delareyville, Dewetsdorp, Douglas, Griekwastad, Groblershoop, Hartswater, Hertzogville, Kakamas, Kathu, Koffiefontein, Ladybrand, Madibogo, Olifantshoek, Ottosdal, Petrusburg, Port Nolloth, Postmasburg, Prieska, Ritchie, Schweizer-Reneke, Steinkopf, Stella, Taung, Tweespruit, Warrenton, Wepener, Morokweng and Ganyesa.

Table 7:
The Northwestern NSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
NC	!Kheis	Z F Mgcawu
NC	Dawid Kruiper	Z F Mgcawu
NC	Dikgatlong	Frances Baard
NC	Gamagara	John Taolo Gaetsewe
NC	Ga-Segonyana	John Taolo Gaetsewe
NW	Greater Taung	Dr Ruth Segomotsi Mompati
NC	Joe Morolong	John Taolo Gaetsewe
NW	Kagisano/Molopo	Dr Ruth Segomotsi Mompati
NC	Kai !Garib	Z F Mgcawu
NC	Kgatelopele	Z F Mgcawu
NC	Kh├ói-Ma	Namakwa
NW	Lekwa-Teemane	Dr Ruth Segomotsi Mompati
FS	Letsemeng	Xhariep
NW	Mafikeng	Ngaka Modiri Molema
NC	Magareng	Frances Baard
NW	Mamusa	Dr Ruth Segomotsi Mompati
FS	Mangaung	Mangaung
FS	Mantsopa	Thabo Mofutsanyane
NW	Naledi	Dr Ruth Segomotsi Mompati
NC	Nama Khoi	Namakwa
NC	Phokwane	Frances Baard
NW	Ratlou	Ngaka Modiri Molema
NC	Richtersveld	Namakwa
NC	Siyancuma	Pixley ka Seme
NC	Siyathemba	Pixley ka Seme
NC	Sol Plaatje	Frances Baard
FS	Tokologo	Lejweleputswa
NC	Tsantsabane	Z F Mgcawu
NW	Tswaing	Ngaka Modiri Molema

5.7.3 NSAA Two: The Central Innovation Belt

Figure 52:
The Central Innovation Belt: Overview



5.7.3.1 Significance of the Central Innovation Belt (CIB) as NSAA

The area surrounding the core of the Gauteng Urban Region is spatially positioned to be an economically strong, diverse production area that forms an integral part of the core economic driver of the country and the sub-continent. The **Central Innovation Belt (CIB)** is (1) a key contributor to national economic growth and employment, and (2) a crucial surface water production area, ie the Vaal Catchment.

The CIB is characterised by:

- A long history of high-value gold, platinum and coal mining and industrial production that is, and has been, experiencing (1) significant shrinkage in some cases, and (2) job losses in a number of areas, with more very likely to come due to automation, and/or the resource being either 'mined out' or too expensive to extract;
- Intensive agriculture and related agro-enterprises, as well as tourism activities that are not necessarily at odds, but also not enhanced by the mining and heavy industrial activities (and their remnants and legacies) in the same area;
- Sustained strong natural population growth and in-migration, still driven by the prospect of employment in the mining and heavy industrial sectors, but increasingly so the construction, trade and service sectors in the area;

- High levels of regional economic and socio-economic vulnerability, due to the economic decline and job losses and uncertainties about the future of especially mining in the area; and
- Pressures on natural resources, notably productive agricultural land and surface water production by population growth, urban sprawl and pollution.

The eastern part of the Region intersects with another NSAA, ie the Olifants River catchment in Mpumalanga, which is a **National Resource Risk Area** in Mpumalanga, where similar changes in the mining and energy-generation sectors, as well as competition for land and water for food production, require a transition in the regional economy and mitigation of environmental risk factors. The **Vaal River** catchment area, also a **National Resource Risk Area**, covers the southern portion of the region, where severe challenges around contamination of the river and its tributaries have been, and are being, experienced.

5.7.3.2 Focus of Actions and Interventions

Guided by the **NSDF Main-Frame** and five **Sub-Frames**, the following proposals are made:

- Support large-scale regional economic and employment change in the region through innovation, diversification, adaptation and the repurposing of existing industrial land and associated infrastructure;
- Expedite urban and rural land reform, consolidate existing small-and-medium-scale agriculture support programmes, protect and optimise high-value agricultural land, and strengthen the focus on job-intensive agro-processing in the area;
- Introduce a special collaborative programme in government (including DMRE, DTI, CoGTA, DALRRD, DPME, NT, provincial sector department and municipalities) with a specific focus on ensuring (1) innovation and economic diversification, and (2) quality human settlement development in the region, and involve universities, research councils, the private sector, communities and organised labour in this urgent initiative; and
- Establish a joint public-private action group to manage the threat to nationally and regionally important (1) water resources, and (2) productive land, with the priority being on the impact of formal and informal urban sprawl, acid mine drainage, the maintenance of productive agriculture – especially for small scale farmers close to urban centres – and the rehabilitation and management of the Vaal River system.

In the following figure (**Figure 53**) and tables (**Tables 8** to **9**), (1) a spatial image of the CIB, (2) a summary of key statistics regarding the region, (3) the names of the affected municipalities in the region, and (4) the names of the key settlements in the region are provided.

Figure 53:
The CIB: Close-Up

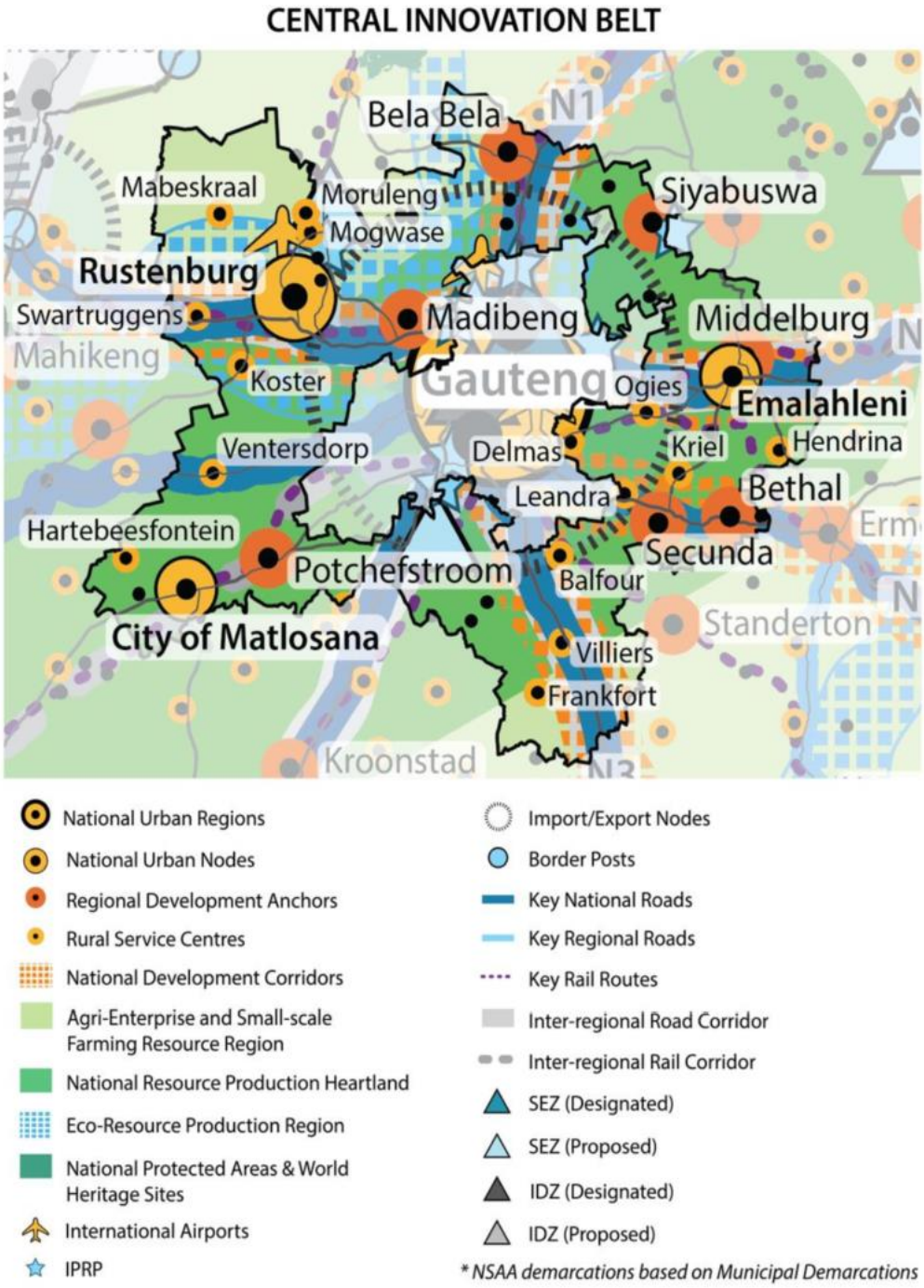


Table 8:
The CIB: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	**5 331 680**	**9.5%**
Youth (under 35)	**3 410 006**	**9.3%**
Population 2030 (medium growth)	**6 365 894**	**9.8%**
Population 2050 (medium growth)	**7 563 214**	**10.1%**
Total GVA 2016 (R mil)	**405 019 996**	**10.4%**
Unemployed 2016	**659 073**	**11.7%**
Poor Households 2011	**304 315**	**10.3%**
Total Area (km^2)	**57 738**	**4.7%**
Productive Land (km^2)	**53 667**	**8.3%**

National Nodal System Elements:

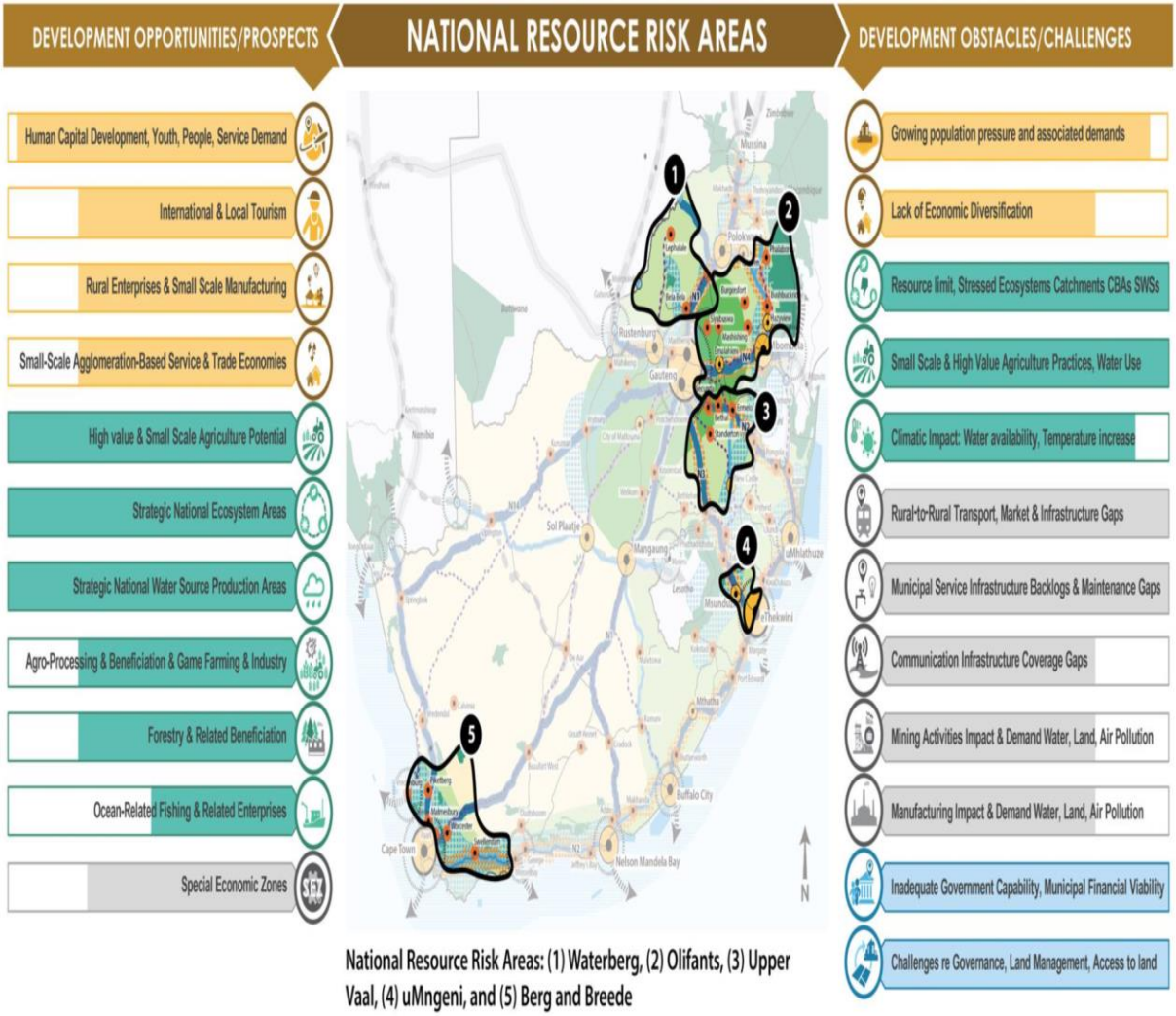
- **National Urban Cores:** City of Matlosana, Rustenburg and Emalahleni;
- **Regional Development Anchors:** Bela-Bela, Bethal, Madibeng, Middelburg, Potchefstroom, Secunda and Siyabuswa; and
- **Rural Service Centres:** Balfour, Delmas, Frankfort, Hartbeesfontein, Hendrina, Koster, Kriel, Leandra, Mabeskraal, Mogwase, Moruleng, Ogies, Swartruggens, Ventersdorp and Villiers.

Table 9:
The CIB: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
LIM	Bela-Bela	Waterberg
NW	City of Matlosana	Dr Kenneth Kaunda
MP	Dipaleseng	Gert Sibande
MP	Dr J S Moroka	Nkangala
MP	Emalahleni	Nkangala
GT	Emfuleni	Sedibeng
MP	Govan Mbeki	Gert Sibande
NW	J B Marks	Dr Kenneth Kaunda
NW	Kgetlengrivier	Bojanala
NW	Local Municipality of Madibeng	Bojanala
FS	Mafube	Fezile Dabi
FS	Metsimaholo	Fezile Dabi
GT	Midvaal	Sedibeng
NW	Moretele	Bojanala
NW	Moses Kotane	Bojanala
NW	Rustenburg	Bojanala
MP	Steve Tshwete	Nkangala
MP	Thembisile	Nkangala
MP	Victor Khanye	Nkangala

5.7.4 NSAA Three: National Resource Risk Areas

Figure 54:
The National Resource Risk Areas: Overview



5.7.4.1 Significance of the National Resource Risk Areas (NRRAs) as NSAAs

These are areas that are of crucial importance to the economy of the country and the lives of all its people. The **National Resource Risk Areas (NRRAs)** are all water catchments that under severe stress from an ecological perspective, while at the same also being 'resource-critical regions' for a range of economic activities.

Water is not only a vital resource in the mining activities that drive the energy sector in a number of the NRRAs, ie the coal-fired power plants in the Olifants, Upper Vaal and Waterberg catchment areas, but is also of critical importance for the sizeable agricultural sectors and human settlements in most of these areas. Keeping the mining and energy-production activities going, and expanding them further, as is currently happening in a number of these catchment areas, (1) poses a serious risk to the quantity and quality of the water supplied by these areas to the country as a whole, and (2) presents the country with a serious conundrum and set of trade-offs calling for urgent attention and action.

Currently, the complicated trade-offs between water, food and energy security in these areas (and the knock-on effects in other places) are largely playing out in an *ad hoc* way. It is, however, not due to lack of awareness and concern, as numerous national and province-focused plans refer (and have referred) to the challenge. The problem is

that *not much has been done to date,* with *urgent engagement being required* with regard to the following trade-offs:

- **Upper Vaal River Catchment** *(Mpumalanga and Free State):* Coal mining, coal-fired energy-generation SWSAs and high-potential agricultural land;
- **uMngeni River Catchment** *(KwaZulu-Natal):* Water supply for the eThekwini Urban Region, intensive agriculture and rapidly expanding, sprawling settlements;
- **Waterberg River Catchment** *(Limpopo):* Mining, water, coal-fired energy-generation, agriculture and tourism;
- **Olifants River Catchment** *(Mpumalanga and Limpopo):* Irrigation schemes, serious water quality issues, and pressure from mining activities and coal-fired energy-generation; and
- **Berg and Breede River Catchments** *(Western Cape):* High-production agriculture, food security and water supply for the Cape Town Urban Region.

5.7.4.2 Focus of Actions and Interventions

Guided by the **NSDF Main-Frame** and five **Sub-Frames**, the following proposals are made:

- Attend, as a matter of urgency, to areas where land-use and water competition and pollution are (1) causing severe risks to stressed catchments in fulfilling their ecosystem sustenance and service roles, and (2) placing downstream dependent regions at risk;
- Rehabilitate degraded and/or contaminated areas to play their crucial roles in national (1) food production, and (2) surface and ground water production and supply;
- Plan and prepare for climate change, not only in the areas themselves, but also for the knock-on effects of climate change in other parts of the country and in neighbouring countries;
- Attend to capacity and resource-constraints at provincial, regional and local levels, with national sector departments responsible for environmental affairs and spatial planning playing a key role in this regard;
- Avoid approving applications and proposals for land-uses that reduce stream flow or affect water quality (eg mining operations and huge plantations) in SWSAs;
- Keep wetlands in good condition, rehabilitate ones in need, and remove invasive alien plants;
- Restore, manage and wisely use CBAs and SWSAs to support eco-enterprise activities and related livelihood opportunities;
- Prepare integrated development and resource management plans with an explicitly (1) spatial approach, and (2) a strategic national perspective for each of the NRRAs – possibly a Regional SDF; ‡‡‡‡‡ and
- Ensure coordinated State intervention in these regions, with the DALRRD, DPME, DFFE and affected Premiers' Offices, in collaboration with the municipalities involved, spearheading such action.

In the following figures (**Figures 55 to 59**) and tables (**Tables 10 to 19**), (1) a spatial image of each of the five NRRAs, (2) a summary of the key statistics regarding each of the areas, (3) the names of the affected municipalities in each of the areas, and (4) the names of the key settlements in each of the areas, is provided.

‡‡‡‡‡ A Regional Spatial Development Framework, which serves as an example of such an initiative, is being proposed for the Vaal River area in the Northern Free State.

Figure 55:
The Upper Vaal River Catchment NRRA: Close-Up

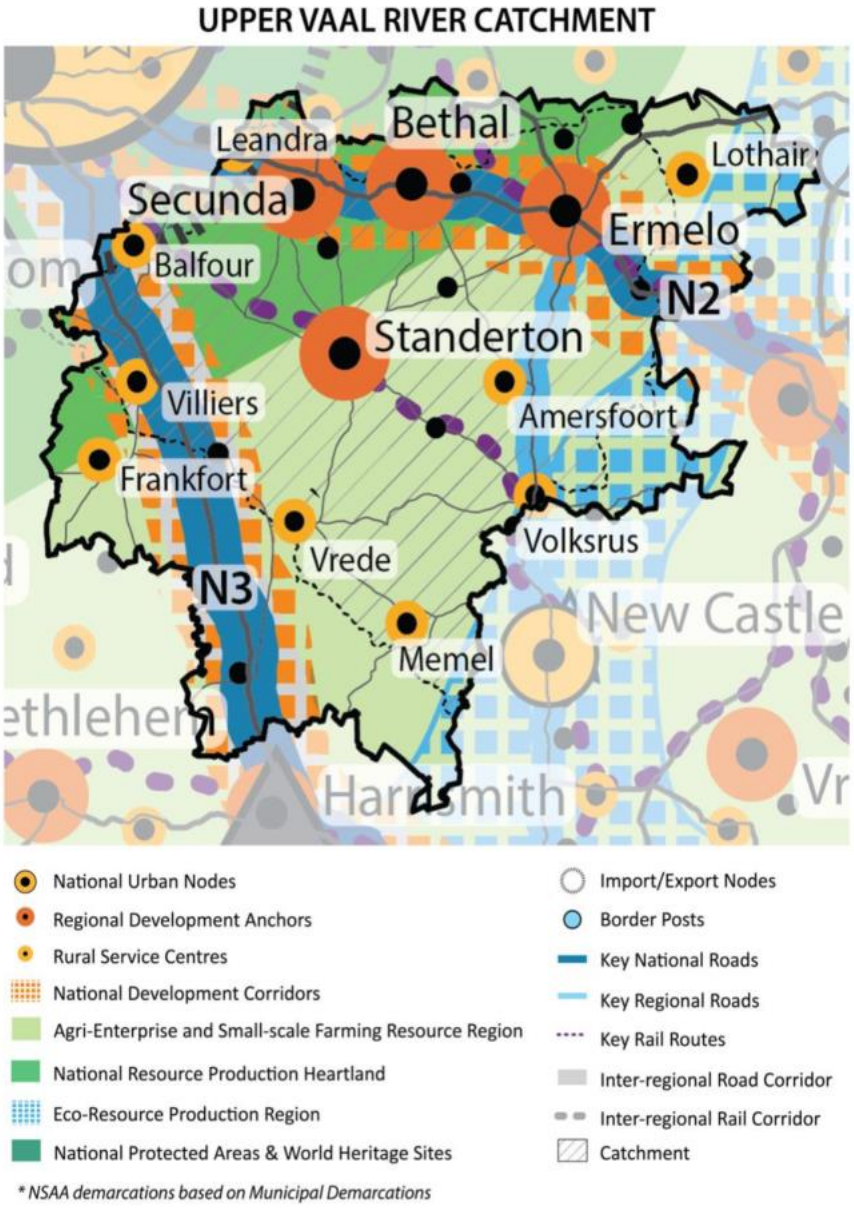


Table 10:
The Upper Vaal River Catchment NRRA: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	824 740	1.5%
Youth (under 35)	552 360	1.5%
Population 2030 (medium growth)	1 006 651	1.5%
Population 2050 (medium growth)	1 221 702	1.6%
Total GVA 2016 (R mil)	68 989 681	1.8%
Unemployed 2016	87 345	1.5%
Poor Households 2011	41 022	1.4%
Total Area (km^2)	33 567	2.8%
Productive Land (km^2)	32 016	4.9%

National Nodal System Elements:

- **Regional Development Anchors:** Standerton, Ermelo, Bethal and Secunda; and
- **Rural Service Centres:** Amersfoort, Balfour, Frankfort, Leandra, Lothair, Memel, Villiers, Volksrust and Vrede.

Table 11:
The Upper Vaal River Catchment NRRA: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
MP	Dipaleseng	Gert Sibande
MP	Dr Pixley Ka Isaka Seme	Gert Sibande
MP	Govan Mbeki	Gert Sibande
MP	Lekwa	Gert Sibande
FS	Mafube	Fezile Dabi
MP	Msukaligwa	Gert Sibande
FS	Phumelela	Thabo Mofutsanyane

Figure 56:
The Olifants River Catchment NRRA: Close-Up

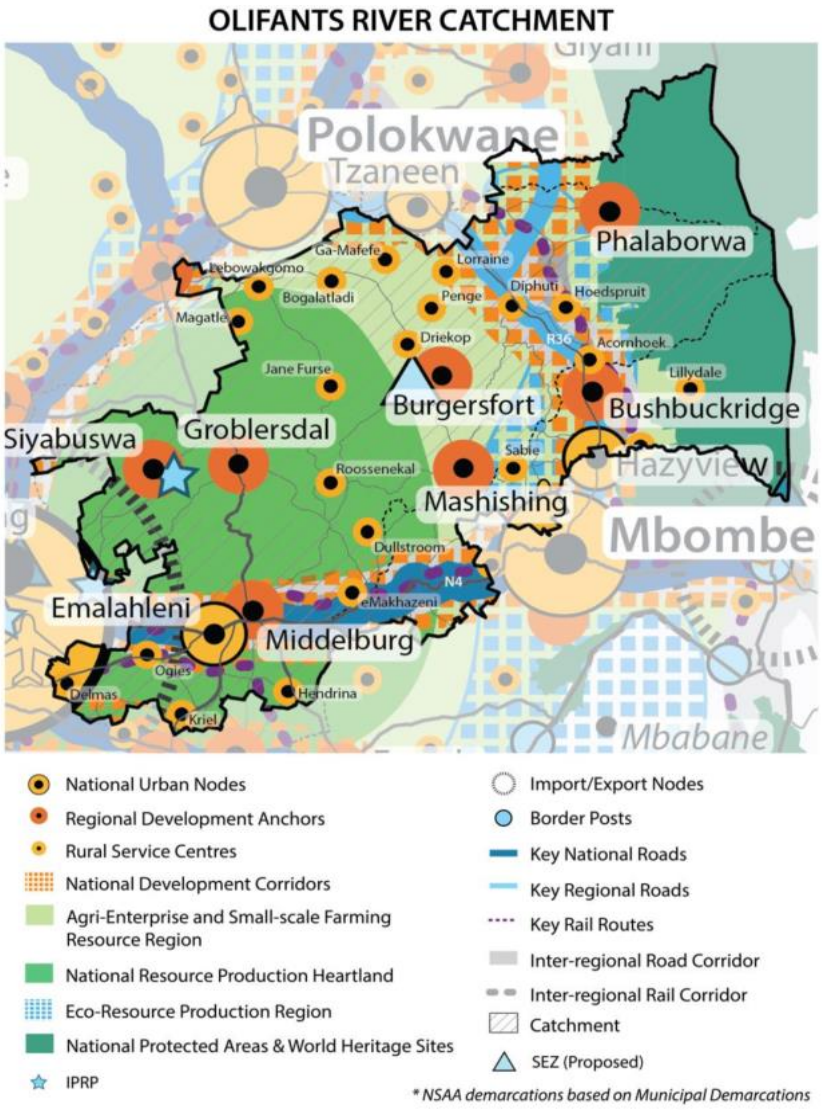


Table 12:
The Olifants River Catchment NRRA: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	**3 730 044**	**6.6%**
Youth (under 35)	**2 547 267**	**6.9%**
Population 2030 (medium growth)	**4 404 730**	**6.7%**
Population 2050 (medium growth)	**4 939 113**	**6.6%**
Total GVA 2016 (R mil)	**201 690 884**	**5.2%**
Unemployed 2016	**380 100**	**6.7%**
Poor Households 2011	**198 276**	**6.7%**
Total Area (km^2)	**60 796**	**5.0%**
Productive Land (km^2)	**38 991**	**6.0%**

National Nodal System Elements:

- **National Urban Node:** Emalahleni;
- **Regional Development Anchors:** Burgersfort, Bushbuckridge, Groblersdal, Mashishing, Middelburg, Phalaborwa and Siyabuswa; and
- **Rural Service Centres:** Acornhoek, Bogalatladi, Delmas, Diphuti, Driekop, Dullstroom, eMakhazeni, Ga-Mafefe, Hendrina, Hoedspruit, Jane Furse, Kriel, Lebowakgomo, Lillydale, Lorraine, Magatle, Ogies, Penge, Roossenekal and Sabie.

Table 13:
The Olifants River Catchment NRRA: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
LIM	Ba-Phalaborwa	Mopani
MP	Bushbuckridge	Ehlanzeni
MP	Dr J S Moroka	Nkangala
LIM	Elias Motsoaledi	Sekhukhune
MP	Emakhazeni	Nkangala
MP	Emalahleni	Nkangala
LIM	Ephraim Mogale	Sekhukhune
LIM	Fetakgomo Tubatse	Sekhukhune
LIM	Lepele-Nkumpi	Capricorn
LIM	Makhuduthamaga	Sekhukhune
LIM	Maruleng	Mopani
MP	Steve Tshwete	Nkangala
MP	Thaba Chweu	Ehlanzeni
MP	Thembisile	Nkangala
MP	Victor Khanye	Nkangala

Figure 57:
The Waterberg River Catchment NRRA: Close-Up

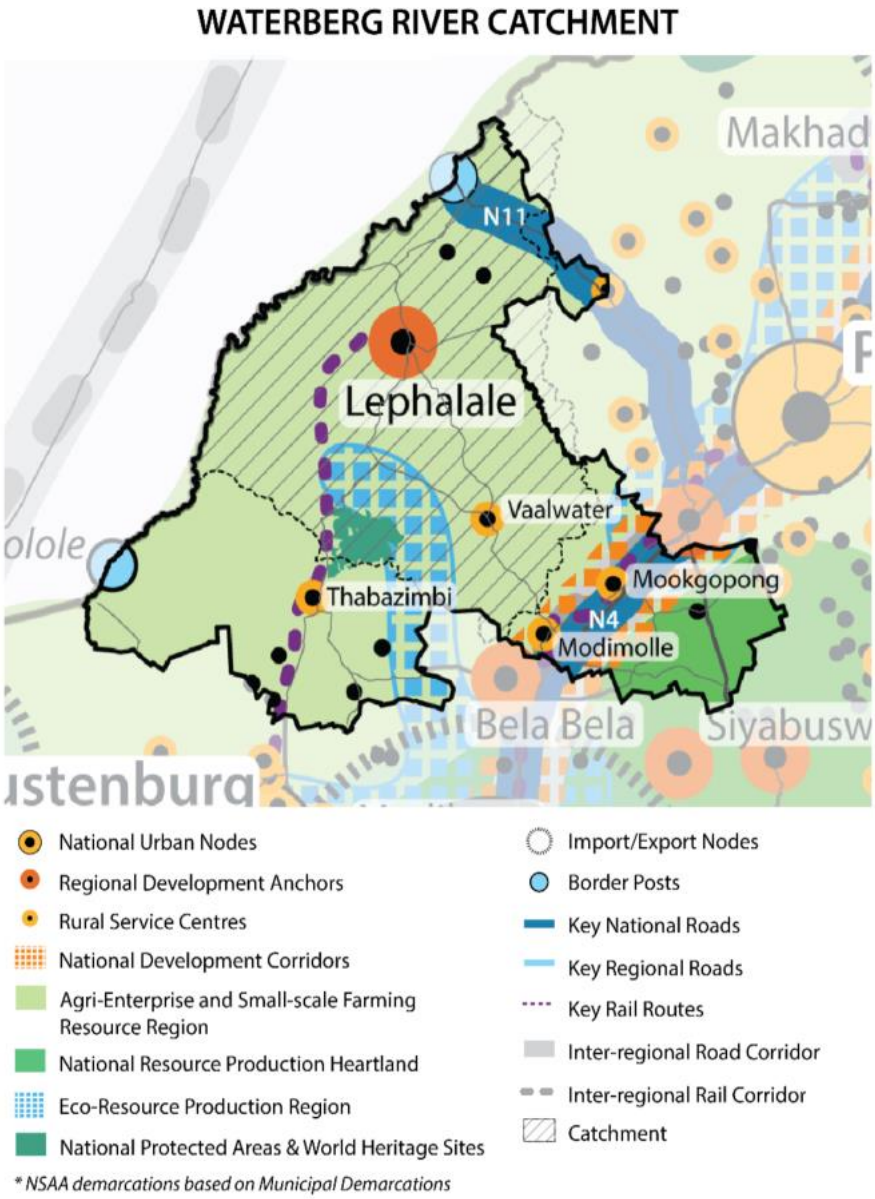


Table 14:
The Waterberg River Catchment NRRA: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	347 370	0.6%
Youth (under 35)	228 679	0.6%
Population 2030 (medium growth)	454 376	0.7%
Population 2050 (medium growth)	601 871	0.8%
Total GVA 2016 (R mil)	43 292 418	1.1%
Unemployed 2016	14 603	0.3%
Poor Households 2011	13 397	0.5%
Total Area (km^2)	35 351	2.9%
Productive Land (km^2)	27 726	4.3%

National Nodal System Elements:

- **Regional Development Anchor:** Lephalale; and
- **Rural Service Centre:** Modimolle, Mookgophong, Thabazimbi and Vaalwater.

Table 15:
The Waterberg River Catchment NRRA: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
LIM	Lephalale	Waterberg
LIM	Modimolle-Mookgophong	Waterberg
LIM	Thabazimbi	Waterberg

Figure 58:
The uMngeni River Catchment NRRA: Close-Up

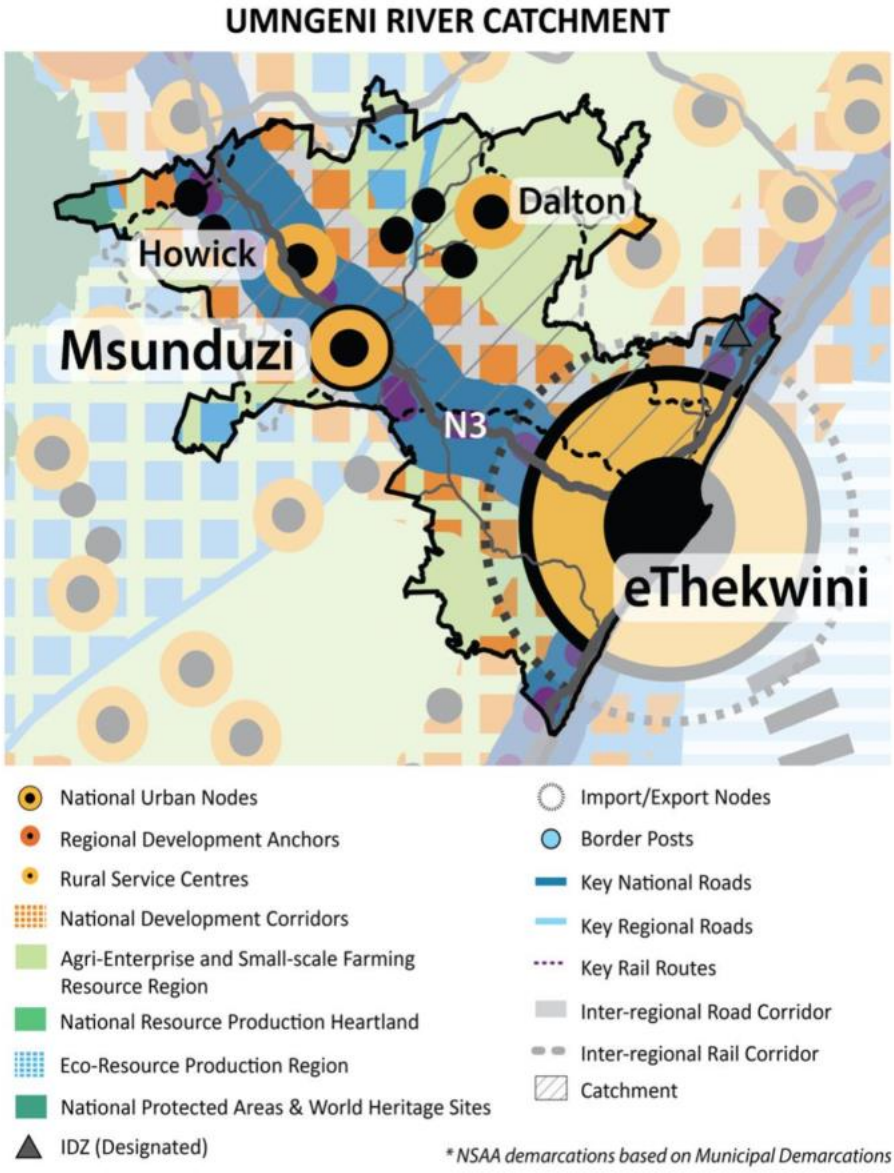


Table 16:
The uMngeni River Catchment NRRA: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	**4 801 389**	**8.5%**
Youth (under 35)	**3 086 447**	**8.4%**
Population 2030 (medium growth)	**5 654 183**	**8.7%**
Population 2050 (medium growth)	**6 557 608**	**8.7%**
Total GVA 2016 (R mil)	**438 923 543**	**11.3%**
Unemployed 2016	**343 024**	**6.1%**
Poor Households 2011	**260 204**	**8.8%**
Total Area (km^2)	**7 557**	**0.6%**
Productive Land (km^2)	**7 368**	**1.1%**

National Nodal System Elements:

- **National Urban Region:** eThekwini;
- **National Urban Nodes:** Msunduzi; and
- **Rural Service Centres:** Dalton and Howick.

Table 17:
The uMngeni River Catchment NRRA: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
KZN	N/A	eThekwini
KZN	Mkhambathini	Umgungundlovu
KZN	The Msunduzi	Umgungundlovu
KZN	uMngeni	Umgungundlovu
KZN	uMshwathi	Umgungundlovu

Figure 59:
The Berg & Breede River Catchments NRRA: Close-Up

Table 18:
The Berg and Breede River Catchments NRRA: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	1 387 979	2.5%
Youth (under 35)	838 646	2.3%
Population 2030 (medium growth)	1 605 754	2.5%
Population 2050 (medium growth)	1 874 479	2.5%
Total GVA 2016 (R mil)	90 584 044	2.3%
Unemployed 2016	70 272	1.2%
Poor Households 2011	47 624	1.6%
Total Area (km^2)	44 379	3.6%
Productive Land (km^2)	24 257	3.7%

National Nodal System Elements:

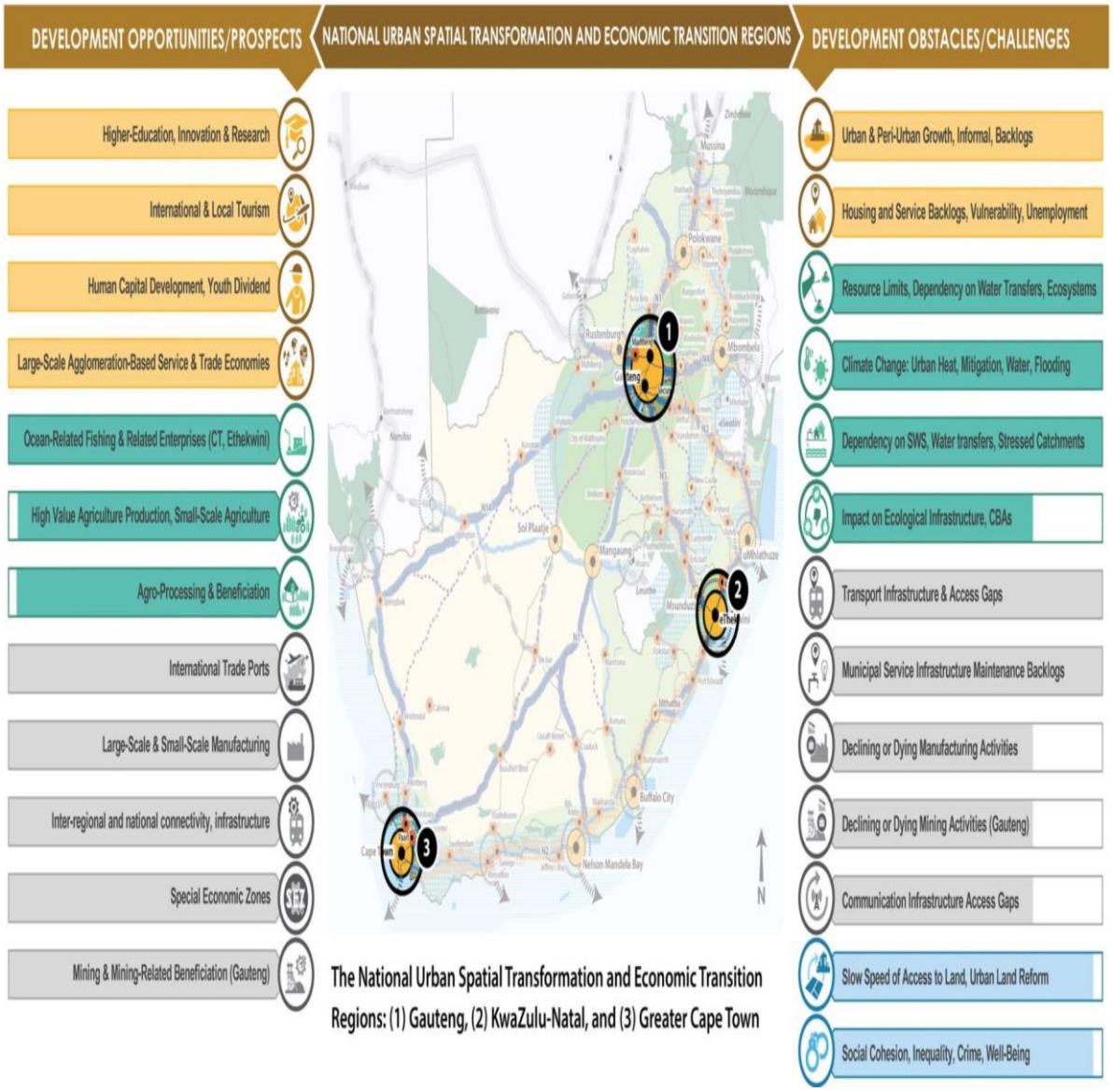
- **National Urban Region:** Small parts of the Cape Town Urban Region;
- **Regional Development Anchors:** Malmesbury, Paarl, Swellendam, Vredenburg, Worcester, Stellenbosch, Barrydale and Piketberg; and
- **Rural Service Centres:** Ceres, Darling, Franschhoek, Genadedal, Grabouw, Heidelberg, Morreesburg, Montagu, Caledon, Riebeek West, Riversdale, Riviersonderend, Robertson, Saldanha, Wellington and Wolseley.

Table 19:
The Berg and Breede River Catchments NRRA: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
WC	Bergrivier	West Coast
WC	Breede Valley	Cape Winelands
WC	Drakenstein	Cape Winelands
WC	Hessequa	Garden Route
WC	Langeberg	Cape Winelands
WC	Saldanha Bay	West Coast
WC	Stellenbosch	Cape Winelands
WC	Swartland	West Coast
WC	Swellendam	Overberg
WC	Theewaterskloof	Overberg
WC	Witzenberg	Cape Winelands

5.7.5 NSAA Four: National Urban Spatial Transformation and Economic Transition Regions

Figure 60:
The National Urban Spatial Transformation and Economic Transition Regions: Overview



5.7.5.1 Significance of the National Urban Spatial Transformation and Economic Transition Regions (NUSTETRs) as NSAAs

More than half of the country's population already live in metros and large cities, with this trend set to continue well into the future. In addition to being 'home' to millions of our people, *the three largest of these urban conurbations stand out as having to undergo significant (1) spatial transformation, and (2) economic transition for the sake of their current and future inhabitants, and the country as a whole.* These are the (1) **Gauteng**, (2) **Greater Cape Town**, and (3) **KwaZulu-Natal National Urban Spatial Transformation and Economic Transition Regions (NUSTETRs)**. These are regions where:

- The bulk of the country's economic activities, and many of the non-mining related economic activities of the highest value, are concentrated;

- The national transition to a high-value service-based economy will be driven and accomplished;
- Prospects for job creation through (1) upstarts, (2) small-scale activities, and (3) the arts, culture and entertainment industries, are greatest;
- The bulk of the youth dividend must be reaped – not only for the sake of these regions, but also to act as *'demonstrators to other areas of what is possible'*; and
- The majority of (1) imports and exports, and (2) tourists visiting the country 'pass through'.

As such, these spaces, small in size but huge in terms of population, economic activity and opportunity, are fundamental to the future of the country and the realisation of the desired **Ideal National Spatial Development Pattern**.

Powerful and important as they are, they are increasingly struggling to deal with the challenges of service provision, housing, unemployment, crime, environmental degradation, transport and infrastructure maintenance. At the same time, they all still need to decisively deal with the historical legacies of spatial segregation, economic exclusion and inequality, which is showing little sign of disappearing, and has, in many cases, taken on worrying new forms. Yet, despite the many challenges these regions face, they are still zones of hope and opportunity for millions of migrants from within our national borders and further afield.

The challenge and call for huge, focused, sustained and coordinated integrated State and non-State action in these crucial NSAAs, is loud, urgent and clear.

5.7.5.2 Focus of Actions and Interventions

Guided by **the NSDF Main-Frame** and the five **Sub-Frames**, the following proposals are made:

- Plan for, and undertake infrastructure maintenance at scale to (1) ensure economic vitality, and (2) avoid human health and safety risks due to ageing infrastructure, lack of maintenance, and damage by climate change-related hazards on water, sanitation, stormwater, transport and electricity infrastructure grids/networks;
- Develop specific funding, land access, land tenure and municipal service and transport provision mechanisms to (1) enable higher residential densities, (2) provide a range of housing options, (3) alleviate pressure on basic and social service provision, (4) optimise urban land reform dividends, especially its catalytic possibilities, (5) manage urban growth, and (6) provide effective and universally accessible mass public transport;
- Support small-scale farmers in these NUSTETRSs to improve food security and employment;
- Support innovation and skills development in growing economic sectors, with a focus on youth development and employment at scale;
- Support and maintain key export routes and harbours, ports and logistics infrastructure; and
- Prepare for climate change by, amongst other measures, initiating an in-depth study into *the long-term impacts of climate change on the core urban areas of the country* and developing mitigation and adaptation strategies, eg desalination, urban food production, and low/no-carbon energy generation, based on the findings of the study.

In the following figures (**Figures 61 to 63**) and tables (**Tables 20 to 25**), (1) a spatial image of each of the three **NUSTETRs**, (2) a summary of the key statistics regarding each of the regions, (3) the names of the affected municipalities in each of the regions, and (4) the names of the key settlements in each of the regions, is provided.

Figure 61:
The Gauteng NUSTETR: Close-Up

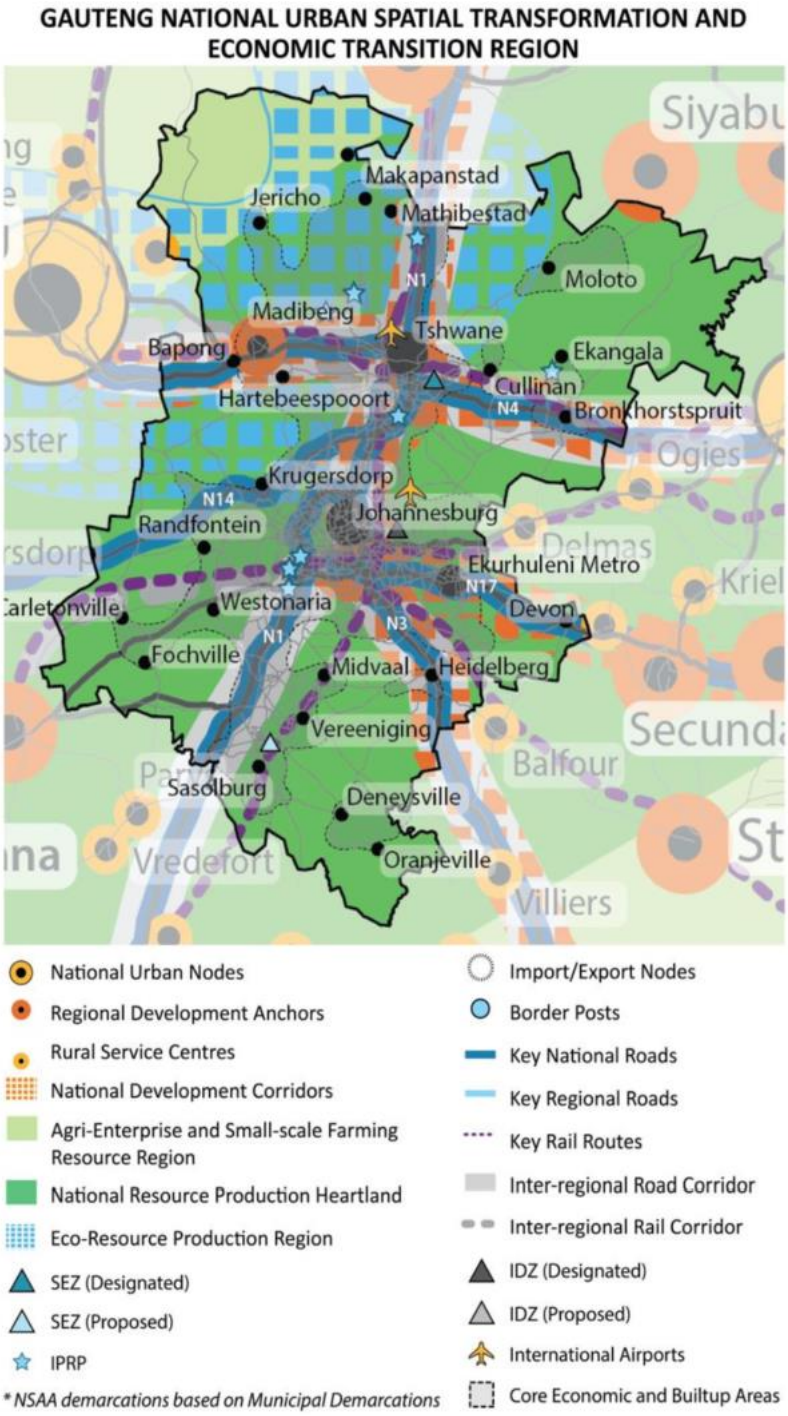


Table 20:
The Gauteng NUSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	**15 025 083**	**26.7%**
Youth (under 35)	**9 540 235**	**26.0%**
Population 2030 (medium growth)	**18 132 915**	**27.8%**
Population 2050 (medium growth)	**21 971 355**	**29.3%**
Total GVA 2016 (R mil)	**1 447 154 023**	**37.2%**
Unemployed 2016	**2 050 947**	**36.3%**
Poor Households 2011	**874 037**	**29.5%**
Total Area (km^2)	**27 498**	**2.3%**
Productive Land (km^2)	**25 103**	**3.9%**

National Nodal System Elements:

- **National Urban Region:** Gauteng; and
- **Regional Development Anchors:** Madibeng.

Table 21:
The Gauteng NUSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
GT	N/A	City of Johannesburg
GT	N/A	City of Tshwane
GT	N/A	Ekurhuleni
GT	Emfuleni	Sedibeng
GT	Lesedi	Sedibeng
NW	Local Municipality of Madibeng	Bojanala
GT	Merafong City	West Rand
FS	Metsimaholo	Fezile Dabi
GT	Midvaal	Sedibeng
GT	Mogale City	West Rand
NW	Moretele	Bojanala
GT	Rand West City	West Rand
MP	Thembisile	Nkangala

Figure 62:
The Greater Cape Town NUSTETR: Close-Up

Table 22:
The Greater Cape Town NUSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	4 581 427	8.1%
Youth (under 35)	2 827 824	7.7%
Population 2030 (medium growth)	5 368 125	8.2%
Population 2050 (medium growth)	6 232 190	8.3%
Total GVA 2016 (R mil)	411 341 448	10.6%
Unemployed 2016	527 163	9.3%
Poor Households 2011	200 608	6.8%
Total Area (km^2)	4 859	0.4%
Productive Land (km^2)	3 529	0.5%

National Nodal System Elements:

- **National Urban Region:** Cape Town;
- **Regional Development Anchors:** Paarl and Stellenbosch; and
- **Rural Service Centres:** Franschhoek and Wellington.

Table 23:
The Greater Cape Town NUSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
WC	N/A	City of Cape Town
WC	Drakenstein	Cape Winelands
WC	Stellenbosch	Cape Winelands

Figure 63:
The KwaZulu-Natal NUSTETR: Close-Up

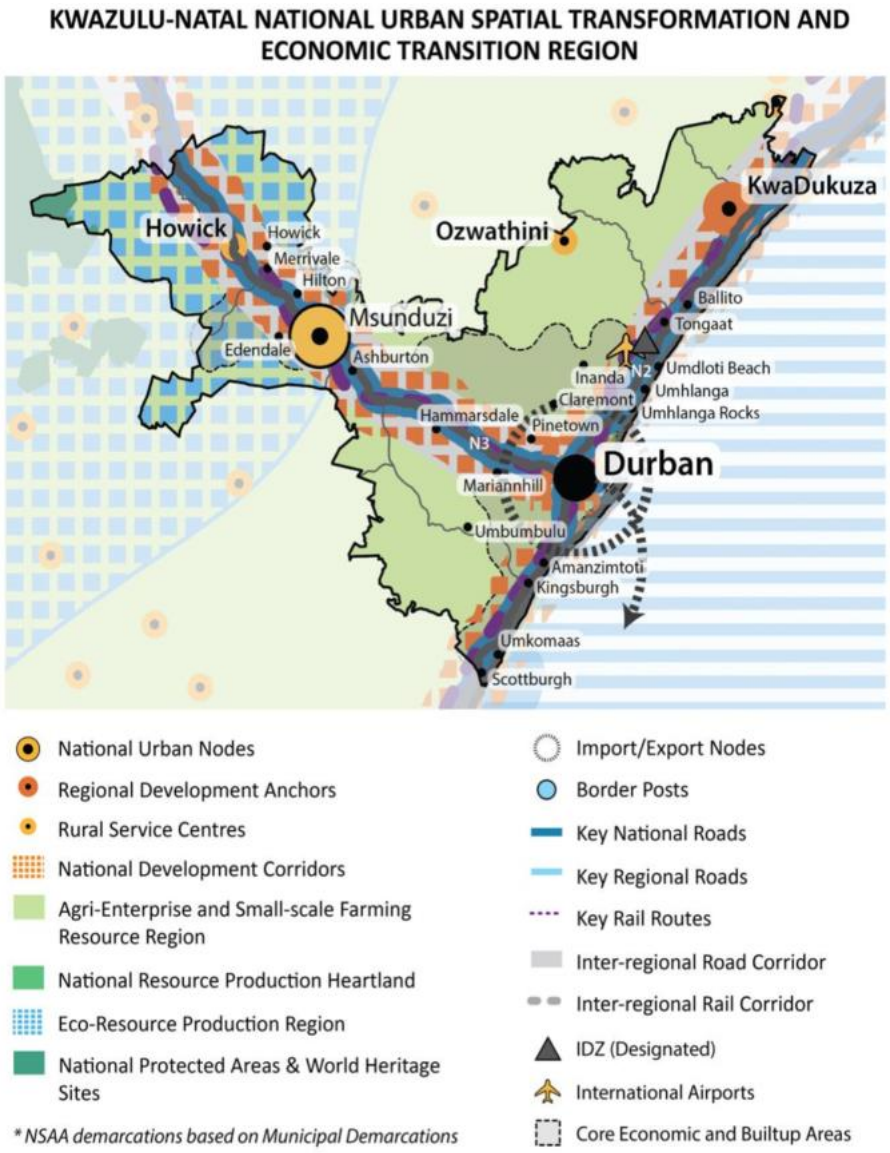


Table 24:
The KwaZulu-Natal NUSTETR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	5 107 153	9.1%
Youth (under 35)	3 297 181	9.0%
Population 2030 (medium growth)	6 060 536	9.3%
Population 2050 (medium growth)	7 106 705	9.5%
Total GVA 2016 (R mil)	444 801 585	11.4%
Unemployed 2016	367 716	6.5%
Poor Households 2011	274 361	9.2%
Total Area (km^2)	7 520	0.6%
Productive Land (km^2)	7 357	1.1%

National Nodal System Elements:

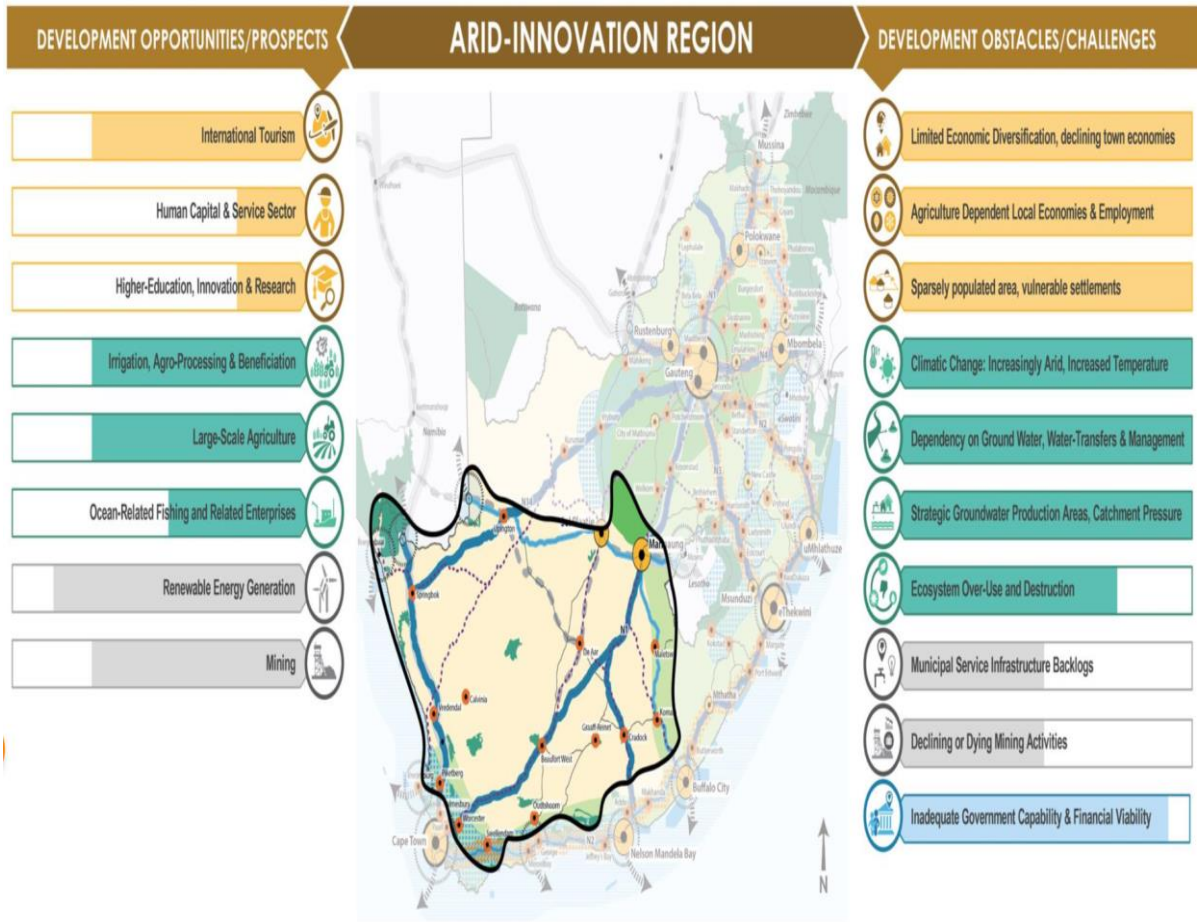
- **National Urban Region:** eThekwini;
- **National Urban Node:** Msunduzi;
- **Regional Development Anchor:** KwaDukuza; and
- **Rural Service Centres:** Howick, Ozwathini.

Table 25:
the KwaZulu-Natal NUSTETR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
KZN	Umdoni	Ugu (part of)
KZN	KwaDukuza	iLembe (part of)
KZN	Ndwedwe	iLembe (part of)
KZN	Richmond	Umgungundlovu (part of)
KZN	uMshwathi	Umgungundlovu (part of)
KZN	N/A	eThekwini
KZN	Mkhambathini	Umgungundlovu (part of)
KZN	Msunduzi	Umgungundlovu (part of)
KZN	uMngeni	Umgungundlovu (part of)

5.7.6 NSAA Five: The Arid-Innovation Region

Figure 64:
The Arid-Innovation Region: Overview



5.7.6.1 Significance of the Arid-Innovation Region (AIR) as NSAA

This region comprises the arid and sparsely populated western and southwestern central parts of the country. It has already, and is set to be significantly affected by future climate change trends, notably (1) higher temperatures, (2) more very hot days, and (3) more erratic and less rainfall in large parts of the region.

The *limited availability of water* is a key determinant in the region and everything that happens in it (and not), affecting the lives of the inhabitants of the region on a daily base, and limiting and shaping their livelihoods and life chances. In addition to this, and in large measure shaped by the lack of water and the harsh climate, most of the towns in the region are heavily reliant on a *single economic sector,* typically agriculture, mining or government services, which makes them highly vulnerable to (1) *external factors,* such as currency fluctuations, trade disputes and changes in the demand for commodities, as well as (2) *more local factors,* notably climate change, veld fires and road and railway conditions.

At the same time, however, the region offers *substantial, nationally significant opportunities* that require careful and considered utilisation, including (1) unique and niche agricultural activities and fisheries, (2) internationally recognised and sought-after tourist attractions, (3) large and varied mineral deposits and vast shale gas reservoirs, (4) enormous potential for alternative energy generation, and (5) the Square Kilometre Array (SKA), which is already making a significant contribution to the work of the local and the international scientific community, and offers many more opportunities.

Based on the *existing challenges and increasing climatic pressures and concerns,* coupled with the *many opportunities* it offers, the region necessitates a well-considered and planned set of interventions to ensure (1) the wise and well-managed utilisation of its natural resources, (2) the well-being of its inhabitants, and coupled with this, (3) the health of its economy.

5.7.6.2 Focus of Actions and Interventions

Guided by **the NSDF Main-Frame** and the five **Sub-Frames**, the following proposals are made:

- Pursue regional adaptation, economic diversification and agri-innovation at scale to ensure greater resilience of livelihoods in the region;
- Carefully consider expansion and development of new settlements in very arid areas, and instead pursue and support compact settlement development (1) around social service nodes and public transport facilities, and (2) along taxi routes in existing regional development anchors, rural service centres and/or villages/hamlets;
- Enhance regional, cross-provincial and cross-municipal boundary collaborative spatial development planning and governance;
- Establish strong regional growth and development compacts, including all role-players, ie the three spheres of government, traditional leaders/authorities, communities (notably youth), the private sector, CBOs, NGOs and organised labour;
- Encourage and support the inhabitants of isolated small towns and villages/hamlets in the region to become self-sufficient and 'go off the grid' with regard to (1) water, electricity and sanitation services, and (2) food production; and
- Enhance ICT linkages to support distance learning and provide access to other social services and economic opportunities.

Figure 65:
The AIR: Close-Up

Table 26:
The AIR: Population and Economy

CATEGORY	TOTAL	% OF NATIONAL
Population 2016	2 541 637	4.5%
Youth (under 35)	1 548 877	4.2%
Population 2030 (medium growth)	2 630 576	4.0%
Population 2050 (medium growth)	2 854 862	3.8%
Total GVA 2016 (R mil)	171 365 358	4.4%
Unemployed 2016	230 205	4.1%
Poor Households 2011	107 813	3.6%
Total Area (km^2)	486 547	39.9%
Productive Land (km^2)	123 086	18.9%

National Nodal System Elements:

- **Urban Core:** Mangaung;
- **Regional Development Anchors:** Beaufort West, Calvinia, Cradock, De Aar, Graaf-Reinet, Komani, Maletswai, Oudtshoorn, Piketberg, Springbok, Swellendam, Vredendal and Worcester; and
- **Rural Service Centres:** Aberdeen, Adelaide, Barrydale, Bethulie, Boshof, Britstown, Burgersdorp, Carnarvon, Ceres, Citrusdal, Clanwilliam, Colesberg, De Rust, Dealesville, Dewetsdorp, Douglas, Fort Beaufort, Griekwastad, Groblershoop, Hertzogville, Hopetown, Jamestown, Jansenville, Kakamas, Koffiefontein, Ladismith, Laingsburg, Lamberts Bay, Middelburg, Middeldrift, Molteno, Murraysburg, Petrusburg, Petrusville, Port Nolloth, Prieska, Prince Albert, Reddersburg, Richmond, Ritchie, Rouxville, Seymour, Smithfield, Somerset East, Steinkopf, Tarkastad, Trompsburg, Venterstad, Victoria West, Wepener, Willowmore, Whittlesea, Wolseley and Zastron.

Table 27:
The AIR: Affected Municipalities

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
EC	!Kheis	Z F Mgcawu
EC	Beaufort West	Central Karoo
EC	Bergrivier	West Coast
EC	Blue Crane Route	Sarah Baartman
EC	Cederberg	West Coast
EC	Dr Beyers Naude	Sarah Baartman
FS	Emthanjeni	Pixley ka Seme
FS	Enoch Mgijima	Chris Hani
NC	Hantam	Namakwa
NC	Inxuba Yethemba	Chris Hani
NC	Kai !Garib	Z F Mgcawu
NC	Kamiesberg	Namakwa
NC	Kannaland	Garden Route
NC	Kareeberg	Pixley ka Seme
NC	Karoo Hoogland	Namakwa
NC	Kh├│i-Ma	Namakwa
NC	Kopanong	Xhariep
NC	Laingsburg	Central Karoo
NC	Letsemeng	Xhariep
NC	Mangaung	Mangaung
NC	Matzikama	West Coast

PROVINCE	LOCAL MUNICIPALITY	DISTRICT/METROPOLITAN MUNICIPALITY
NC	Mohokare	Xhariep
NC	Nama Khoi	Namakwa
NC	Oudtshoorn	Garden Route
NC	Prince Albert	Central Karoo
NC	Renosterberg	Pixley ka Seme
NC	Richtersveld	Namakwa
NC	Siyancuma	Pixley ka Seme
NC	Siyathemba	Pixley ka Seme
NC	Swellendam	Overberg
NC	Thembelihle	Pixley ka Seme
NC	Tokologo	Lejweleputswa
NC	Ubuntu	Pixley ka Seme
NW	Umsobomvu	Pixley ka Seme
NW	Walter Sisulu	Joe Gqabi
WC	Witzenberg	Cape Winelands

5.7.7 National Risks of Non-Action in the NSAAs

The NSDF seeks to fundamentally and decisively change and transform South Africa from a country shackled by its past into a truly free, prosperous and just country that offers a (1) decent quality of life, and (2) a fair chance to make a living to all who live in it. To this effect, it puts forward a series of proposals to bring this transition about and identifies a set of NSAAs, as briefly described in **section 5.7.6**, to assist in doing so. Yet, it may be that there is a reluctance, slowness or unwillingness to implement the proposals as provided. The table below (**Table 28**) sets out the risks associated with failure to act in the NSAAs.

Table 28:
Risks of Non-Action in the NSAAs

POSSIBLE AREAS OF NON-ACTION	RESULTANT IMPACTS/IMPLICATIONS
A lack of development management in national ecological and biodiversity management areas.	• Unmanaged settlement growth and land development with potentially hugely detrimental impacts on (1) sensitive ecological infrastructure, (2) the tourism sector, and (3) other natural resource-based economic opportunities of national significance. • 'Running out of water', which will have detrimental effects on (1) all the inhabitants dependant on this resource, but notably so vulnerable communities, (2) job creation, (3) agriculture and food production, and (4) living costs. • Destruction of high-value agriculture lands and strategic national surface water production areas. • Huge losses of biodiversity and the crucial ecosystem services required for human, animal and plant life.
A lack of action in areas where land-use and water bodies and production are in competition.	• Will most likely (1) compromise already stressed catchments and their ability to provide their key ecosystem services even further, and (2) place downstream catchments and areas dependent on the services provided by these catchments at risk. • Could lead to costly pollution and life-threatening toxicity of water bodies and streams with a resultant threat to human, animal and plant life, and require huge financial expenses to resolve. • Loss of water required for agricultural purposes could lead to shortages in food production and loss of farmers' incomes, and job losses throughout the agricultural and agro-processing value-chain.
A failure to maintain and improve international trade and movement infrastructure (routes and ports).	• A loss in South Africa's competitive advantage with regard to quality transport infrastructure. • Restricting growth and limiting national, SADC, African and global trade and regional integration. • An increased burden on road networks, should the rail network not be attended to.
A failure to address rural neglect, and optimise development opportunities in especially former Bantustan areas.	• An increase in (1) urban and rural sprawl, (2) the loss of high-value agricultural land and SWSAs, (3) joblessness and frustration, and (4) risks to national cohesion and stability. • The squandering of a real opportunity to (1) turn around the dreadful spatial, social, economic and ecological legacies of Apartheid, and (2) actively assist in national reconstruction through decisive spatial transformation and economic transition in these areas.

A lack of nationally-targeted, systemic, long-term focused (1) infrastructure investment, maintenance and upgrading, and (2) social and economic	• A failure to harness and capitalise on the 'triple dividend' of a youthful population, many of whom are located in urban areas.

POSSIBLE AREAS OF NON-ACTION	RESULTANT IMPACTS/IMPLICATIONS
development spending in urban areas, large towns and in settlements along major transport corridors.	• Sprawling settlement growth in urban and rural South Africa, which will severely (1) constrict our ability to create viable livelihoods at scale, (2) threaten our natural resource base and related agricultural and tourism activities and opportunities, and (3) compromise national food security. • The further entrenchment and deepening of the legacies of our colonial and Apartheid pasts. • An increasing inability of even large municipalities to meet the growing demands of fast-growing populations, provide municipal services, and sustain environments in which economies can take root and grow, leading to: (1) outbreaks of disease with associated chronic public health risks; (2) business closures; (3) more unemployment and an increase in crime; (4) a loss in the quality of life; (5) daily occurrences of social unrest throughout the country and an increase in xenophobic attacks and violence; (6) the collapse of our currency, and the large-scale departure of local and foreign investors; and (7) the mass emigration of millions of (especially young) South Africans.

Part Six:
Implementation Framework

6.1 Introduction

The implementation framework outlines (1) the approach, and (2) key actions required to realise our **Ideal National Spatial Development Pattern** in a collaborative, coherent, systematic and affordable way.

The NSDF was compiled to assist in the implementation of the **NDP** by providing *national spatial development guidance, direction and impetus*. As such, the **NSDF** seeks to *close the gap between planning, plans and action* **within our system of cooperative government**, by:

- *Directing, focusing and consolidating* State action in national space, and *providing clear national spatial investment guidance* to the non-State sector; and
- Introducing a collaboratively prepared and mutually agreed to **'intergovernmental spatial transformation accountability model'** by which all three spheres of government, sector departments and non-State actors will *individually and collectively hold each other accountable* for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base.

Key in this regard will be to ensure that *all (1) planning, (2) investment decisions, and (3) delivery programmes:*

- Advance the national development objectives of the **NDP** and the **NSDF**; and
- Adhere to the national spatial development guidance and directives of the **NSDF**.

6.2 Preparing for Implementation

The (1) scale of spatial change required over the 2050-horizon, as well as (2) the limited window of opportunity in which to realise our *demographic and urban* dividends, means that there has to be *rapid acceleration along the desired national spatial future pathway,* to achieve the desired national spatial, social, economic and ecological outcomes.

This will require:

- A renewed and broad-based *'national development vigour', belief* in the possibility to make a difference, and *urgency*;
- A posture of *excellence* and *'country success'*; and

- A retooled and new set of *managerial, administrative, technical and collaborative capabilities.*

The **NSDF** guides and promotes *coordinated focus and action* across all three spheres of government and society, which requires of (1) every national department, state entity, province and municipality, (2) civil society organisation, and (3) private sector actor to:

- Be *informed, aware and mindful of* the national spatial transformation and economic transition imperatives of the country, and *pursue* these in all their actions; and
- Individually and collectively *hold each other accountable* for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and related economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base.

In particular, the NSDF:

- Indicates the *desired spatial development pattern* of the country, and spatially frames, guides and directs sub-national regional, provincial and municipal SDFs;
- Provides *spatial guidance and direction* to all planning, development, funding, investment and spending decisions and actions *in, by,* and *across* all sectors of the national sphere of government; and
- Contributes to the *crafting of a coherent, collaborative and shared approach* to spatial development and *all related infrastructure investment and development spending decisions and actions* in all three spheres of government.

Ensuring that all of these (1) objectives are pursued, and (2) necessary tasks undertaken, ie **implementing the NSDF**, is a huge and complex endeavour, and will **require additional and more appropriate capacity** to be developed across government. Capability enhancements to the spatial planning system include (1) building 'spatial literacy' amongst officials and elected representatives within Government, and (2) enhancing the coordination and alignment roles played by spatial planners in intergovernmental systems. As such, all departments, State entities, provinces and municipalities will have to (1) retool and refocus their existing capabilities, (2) find, or augment capacity for the new task at hand, and (3) where necessary, work together with industry, tertiary institutions, and professional and interest-group bodies, such as SALGA, in doing so.

This need presents an ideal opportunity to (1) tap into the agility and resourcefulness of **young Planners**, and (2) nurture and fast-track the progression of Planners in Government structures with *the passion and drive for making a better future*. To do so successfully will, however, require a recognition of the hurdles and challenges young Planners face, and the provision of the necessary support to see them through the difficult years from 'graduate to competent Planner'.

6.3 Roll-Out

The promulgation of *SPLUMA* has clarified the role of **spatial planning and land-use management**. At the same time, systems and frameworks for **intergovernmental planning and budgeting** have been institutionalised in accordance with the *Intergovernmental Relations Framework Act, 2005 (IGRFA)*.

Implementation, like planning, is, however, not a once-off step. In the case of the **NSDF**, it is a continuous process of (1) mobilising resources, (2) gearing, directing and sustaining developmental and transformative action, focused and guided by the national development objectives of the **NDP**, and (3) making improvements and refinements through continuous monitoring and review. Accordingly, **five key Tasks** (see **Figure 66** below) for rolling out the NSDF have been identified, and are dealt with below:

- **Task One:** Championing;

- **Task Two:** Communication;
- **Task Three:** Institutionalisation;
- **Task Four:** Embedding; and
- **Task Five:** Actioning.

6.3.1 Task One: Championing

The DALRRD and DPME, together with the nine Premiers' Offices, will be given the responsibility of championing the NSDF. The aim of this **joined-up intergovernmental arrangement** is to:

- Provide collaborative, shared and mutually agreed to *advice and guidance* on ways to maximise *national spatial impact and transformation* across all of government;
- Actively *coordinate action* across government for ensuring better national and sub-national spatial development outcomes;
- Report on the *implementation* of the NSDF and the extent to which national spatial development outcomes are being achieved; and
- Build and strengthen (1) spatial literacy within government, (2) the capacity and capability of Planners, and (3) the 'intergovernmental spatial planning system'.

These actions will be strongly supported by championing and adequately budgeting for *research* into *(1) spatial development planning, and (2) social, demographic, economic and ecological trends in national space,* in collaboration with learning organisations, civil society and other bodies.

6.3.2 Task Two: Communication

Communication is an essential and cost-effective way of building shared understandings and ensuring joint action. People and institutions can only act on, and invest in a plan they know, understand, and believe in. As such, an effective communication strategy that targets all spheres of government, the private sector, academia, and civil society will have to be introduced. The DALRRD and the DPME, together with the nine Premiers' Offices should be tasked with developing and implementing such a strategy.

This communication strategy, developed and rolled out with the support of communication experts, would need to (1) target a range of actors, and (2) work on, and across a range of platforms. Included in the strategy should be the following **two key components:**

- A *strong web presence and profiling of the NSDF on key government websites,* notably those Departments dealing with overarching, integrated spatial and developmental policy, ie DPME, CoGTA, DALRRD, NT and the nine Premiers' Offices; and
- The use of existing inter-governmental engagement platforms to *profile and explain the NSDF*, including key government partners, such as SALGA, who would be a crucial ally in (1) introducing the NSDF to municipalities, and (2) championing the pursuit of its objectives in this key sphere of government that is of cardinal importance in the planning for, and realisation of *sub-national spatial transformation*.

6.3.3 Task Three: Institutionalisation

The NSDF must become a 'formal component' of the existing systems of intergovernmental planning, budgeting, implementation, monitoring, and evaluation. This includes ensuring that the NSDF:

- Informs, supports and strengthens the *Medium Term Strategic Framework (MTSF)*;

- Improves *alignment of the planning and budgeting processes of all sectors and spheres of government*, as and when plans and budgets are being prepared or reviewed, especially in cases where (1) spatially-targeted capital spending, and (2) long-term infrastructure investment is concerned;
- Contributes, through exposure to, and awareness of it, to (1) national, and (2) sub-national provincial, regional and settlement-scale *spatial transformation*; and
- Assists in identifying *special grants or other funding mechanisms* to support spatial targeting, regional development planning and other programmes aimed at spatial transformation at national and sub-national scales.

Indicators of progress with regard to this component are the following:

- **The five-year horizon:** The next *MTSF* makes reference to, is informed by, and includes core components of the NSDF, notably so the NSAAs, as areas for focused infrastructure investment and development spending;
- **The three-to-five year horizon:** (1) National and provincial sector departments formulate their strategic plans, (2) municipalities prepare and review their IDPs and SDFs and compile, in collaboration with other organs of State, the DDM One Plans, and (3) NT puts together the Medium Term Expenditure Framework (MTEF) and the annual budget in accordance with the NSDF-logic and in support of its objectives;
- **Annual actions:** Short-term, measurable *spatial transformation targets* are set in annual performance plans and budgets in terms of, and in support of, the NSDF.
- **Collaborative monitoring and evaluation:** An *'intergovernmental spatial transformation accountability model'* – by which all three spheres of government, sector departments and non-State actors individually and collectively hold each other accountable for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base – is jointly developed by the DALRRD, DPME and DCoGTA in collaboration with the nine Premiers' Offices, and incorporated in the Government-Wide Monitoring and Evaluation System, and included in the MTSF for the 2024-2029 term.

6.3.4 Task Four: Embedding

There are two key *target dates in the implementation of the NSDF*:

- **2030:** In alignment with the target date of the NDP; and
- **2050:** In recognition of the *long-term* investment and expenditure required to completely transform our society and country from colonialism and Apartheid to a truly democratic Post-Apartheid society.

As such, the embedding of the NSDF is set to **take place over the course of three phases**, which already began in 2019:

Phase One: Initiation: 2019 to 2023

During this phase, the focus is on (1) the alignment of long-term plans with the NSDF, and (2) ensuring the development of a *shared understanding of the objectives and actions required* to realise the long-term **Ideal National Spatial Development Pattern**. This will require the setting up of *the intergovernmental collaboration arrangements between the DALRRD, the DPME, DCoGTA, and the nine Premiers' Offices.*

Key activities in this phase include:

- Championing the NSDF, and raising awareness of the framework and its implications across all three spheres of government, learning organisations, civil society and the private sector, which will be measured by (1) acknowledgement of

the NSDF in the MTSF and MTEF, and (2) the targeted and budgeted-for pursuit of the NSDF-objectives in *national* sector plans, and *sub-national* regional SDFs, provincial SDFs and strategic and sector plans, municipal SDFs and IDPs, and the DDM One Plans;

- Preparing the *'NSDF Implementation Charter'*; and
- Preparing the *'Implementation and Institutional and Governance Plans'* for the NSAAs.

Phase Two: Alignment, Budgeting and Execution: 2024 to 2043

In this phase, the focus will be on (1) building on, and strengthening the foundation laid in the **Initiation Phase**, and (2) ensuring the alignment of *long-term* national social, economic, environmental and spatial development objectives and medium-term plans with the NSDF.

By this time strengthening and deepening of 'action on the ground' in accordance with the provisions of the *'Implementation and Institutional and Governance Plans' for the NSAAs* should also be well underway. In some cases, notably the NSAAs relating to the natural resource base, the objectives regarding the stabilisation, preservation, protection and management of these fragile ecosystems would have been realised. As in the case of the **Initiation Phase**, progress will be measured by the targeted and budgeted-for pursuit of the NSDF-objectives in *national* sector plans, and *sub-national* regional SDFs, provincial SDFs and strategic and sector plans, municipal SDFs and IDPs, and the DDM One Plans.

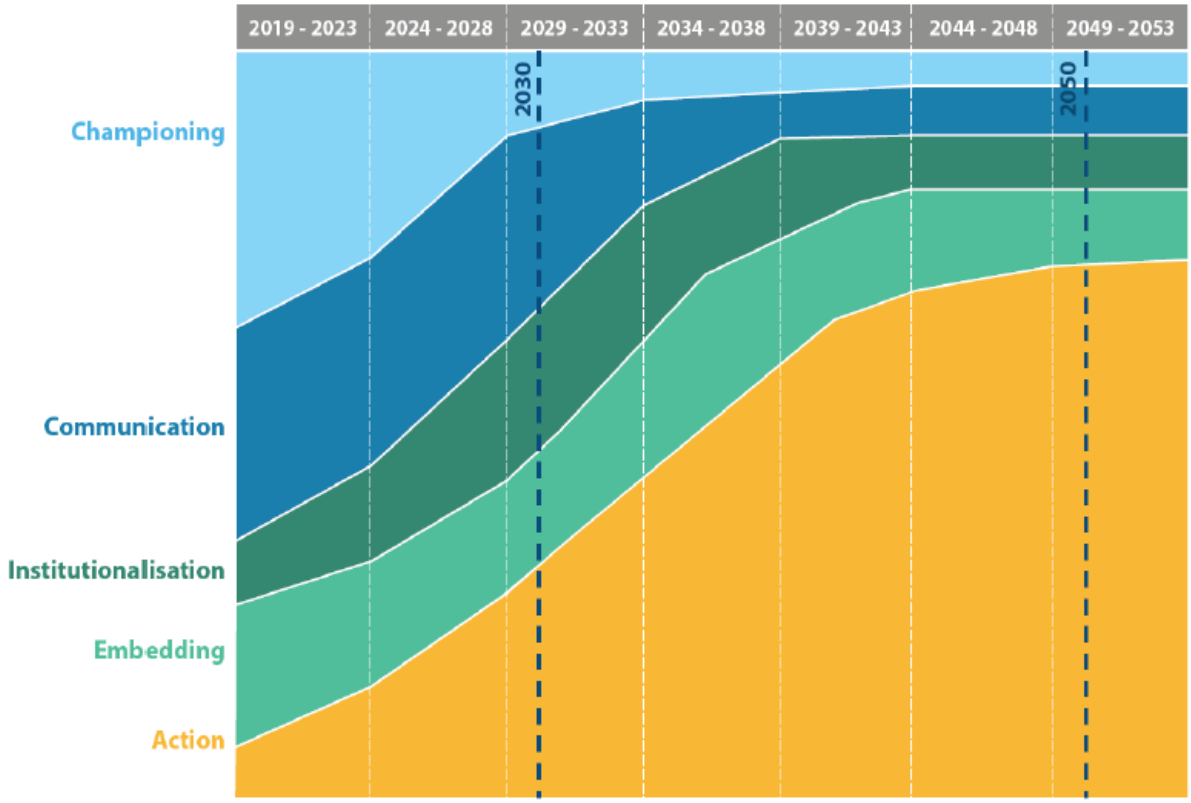
Phase Three: Renew and Re-Do: 2044 to 2049

In this last phase, (1) *implementation* of the NSDF will continue, (2) a full *evaluation* of the framework will be undertaken, and (2) *preparation for the compilation* of **the next 30-50 year NSDF** will begin.

6.3.5 Task Five: Actioning

A core objective of the NSDF is the pursuit of *national* and *sub-national-scale spatial transformation.* For the NSDF to have this outcome and **make an impact on the ground**, it needs to (1) inform, guide, drive, and direct, and, *in turn* (2) be informed, guided, driven, and directed by national and sub-national strategic, spatial and sector plans. The better and more successful the **four other Tasks** are undertaken, the better the chance that the NSDF will be *actioned* and *given spatial expression* through the myriad of (1) strategic, spatial and sector plans, strategies, and frameworks, and (2) budgets and infrastructure investment and development spending plans and programmes prepared in and by Government, the private sector, communities, and traditional leaders/authorities. Importantly, as well, is that such action and achievement of the desired results is not seen as a once-off event – **the process of ensuring that the NSDF is actioned (1) starts tomorrow with the four other tasks, and (2) continues every day thereafter**.

Figure 66:
NSDF Implementation – Level of Focus on the Five Tasks over Time



6.4 NSDF Review

As indicated in **section 6.2**, the NSDF takes a long-term view, with both a 2030-horizon and a 2050-horizon. However, reality dictates that there will [be] many changes and impacts over the course of this period that cannot be foreseen. The *'five-yearly reviews'*, as mandated in SPLUMA, are sure to result in shifts and/or refinements in the **NSDF Main-Frame**, the five **Sub-Frames** and the priority actions as set out and channelled through **the NSAAs**. It is, however, expected that the (1) key transformative elements of the Vision, (2) Transformational Logic, and (3) desired National Spatial Development Outcomes will hold true, and continue to inform, frame, focus, and integrate State and non-State planning, budgeting and implementation.

As for the legal requirements regarding the NSDF review, neither SPLUMA nor the regulations published in terms of the Act, directly address requirements around the NSDF review, apart from the legal requirement that it be done once within five years of it having been adopted by Cabinet, and every five years thereafter.

Despite the lack of further guidance, it is assumed from the other sections of the Act dealing with the NSDF that the drafters of SPLUMA conceived the NSDF as a *'rolling long-term plan'*. This would entail that five *'outer years'* be added to the long-term plan with every review. In the case of this 'first' 2022-NSDF, it would mean that the second NSDF would have as end-date 2057. At the same time, crucial pressure points and priorities would be absorbed, taken on and provided for in medium-term infrastructure investment and development spending plans, notably the MTSF and the MTEF. From here, they would *filter into, find expression in,* and *'see action' through* (1) short to medium-term plans, notably national and provincial government departmental/operational plans, IDPs, and the DDM One Plans, and (2) the annual budgets of organs of State. Given the crucial role of the MTSF in this process, *the review of the NSDF should be sequenced in such a way that it allows for timely incorporation of national spatial development priorities and proposals in the MTSF* for the next political term of office.

6.5 Monitoring and Evaluation

The processes of monitoring and review of the NSDF and its impacts are ideal opportunities to contribute to *the championing and deepening of the understanding* of the framework. As such, they should be used to (1) *bring together,* and (2) *fuse support* for the framework amongst all three spheres of government and civil society, learning and private sector bodies/entities, and traditional leaders/authorities.

On a *technical level*, these processes will also require the development of a *monitoring and evaluation framework* to assess the realisation of the NSDF's national (1) spatial development and transformation, and (2) economic transition objectives. Given that the NSDF is dependent on behavioural change amongst a wide range of stakeholders, it is important to prepare this framework in collaboration with all these stakeholders involved. Coupled with this will be the development of reliable impact indicators that will support the concrete tracking of progress regarding the national (1) spatial development and transformation, and (2) economic transition agendas. As most demographic information is only collected at the national level of disaggregation during a National Census, consideration should be given to indicators that can draw on *sub-national administrative data and proxy indicators*. Such data could be generated by initiatives such as the National Treasury's *City Support Programme*, which has the objective of providing *'City Spatialised Economic Data Reports for the Metropolitan Areas'*. §§§§§

6.6 Priority Actions

These actions, over the course of [the] next five-year cycle, relate to (1) procedural and institutional arrangements, and (2) spatially-targeted interventions.

6.6.1 Procedural and Institutional Arrangements

The following actions are required to integrate the NSDF in (1) government planning, budgeting and implementation processes, and (2) the mandates of government structures:

- Representatives from the DALRRD, DPME, DCoGTA and the nine Premiers' Offices must jointly craft:
    - An ***'intergovernmental cross-subsidiarity model'*** (including the necessary intergovernmental structures) by which *'mutual coordination, integration, and alignment of the NSDF with the plans, strategies, budgets and frameworks different sectors and spheres of government, and vice versa',* can be undertaken and ensured; and
    - *An* ***'intergovernmental spatial transformation accountability model'*** by which all three spheres of government, sector departments and non-State actors will *individually and collectively hold each other accountable* for their planning, funding and investment decisions and delivery programmes in relation to (1) investment in national priority spaces, (2) the pursuit of national spatial transformation and economic transition objectives, and (3) the care and respect for, and well-considered utilisation of our national natural resource base;
- Key stakeholders and institutional structures responsible for the championing, monitoring and evaluation of the NSDF in the national, provincial and local spheres of government must be identified; and
- Linkages to the implementation structures of *Priority 4 of the MTSF* related to Spatial Integration, Human Settlement and Local Government must be clarified and established.

§§§§§ https://csp.treasury.gov.za/csp/pages/newsitem.aspx?itemID=19.

6.6.2 Spatially-Targeted Interventions

The **NSAAs** identified in **section 5.7** represent the most urgent short-to-medium-term, strategic spatial development catalysts to (1) bring about spatial transformation at scale, (2) manage and mitigate rising national risks, and (3) move our country at speed towards the **Ideal National Spatial Development Pattern**. The relationship between the NSAAs and other components of the NSDF is illustrated in **Figure 67** below.

To ensure that **the NSAAs** receive the urgent action they require, the following must be done:

- Craft the *implementation arrangements* in respect of each of the NSAAs in collaboration with the key State and non-State actors involved, including the (1) intergovernmental institutional arrangements and processes, (2) spatial investment priorities, and (3) budgetary provisions and protocols;
- Introduce and/or strengthen cross-boundary, collaborative and cooperative *sub-national 'functional regional development planning'*;
- Deepen the *understanding of the role of regions* and the 'Regional-Rural Development Model' in both *national* and *sub-national* (1) spatial development and transformation, and (2) economic transition; and
- Establish *regional development partnerships* and put in place cross-boundary collaboration and cooperation agreements with key regional role players in each of the NSAAs.

6.7 Matters for Further Attention and/or Engagement

During the compilation of the NSDF and related consultations, issues were identified that require (1) *'in-depth and broad-based debate and the reaching of high-level agreements'*, and/or (1) [sic] action complementary to the NSDF compilation process. These are provided below.

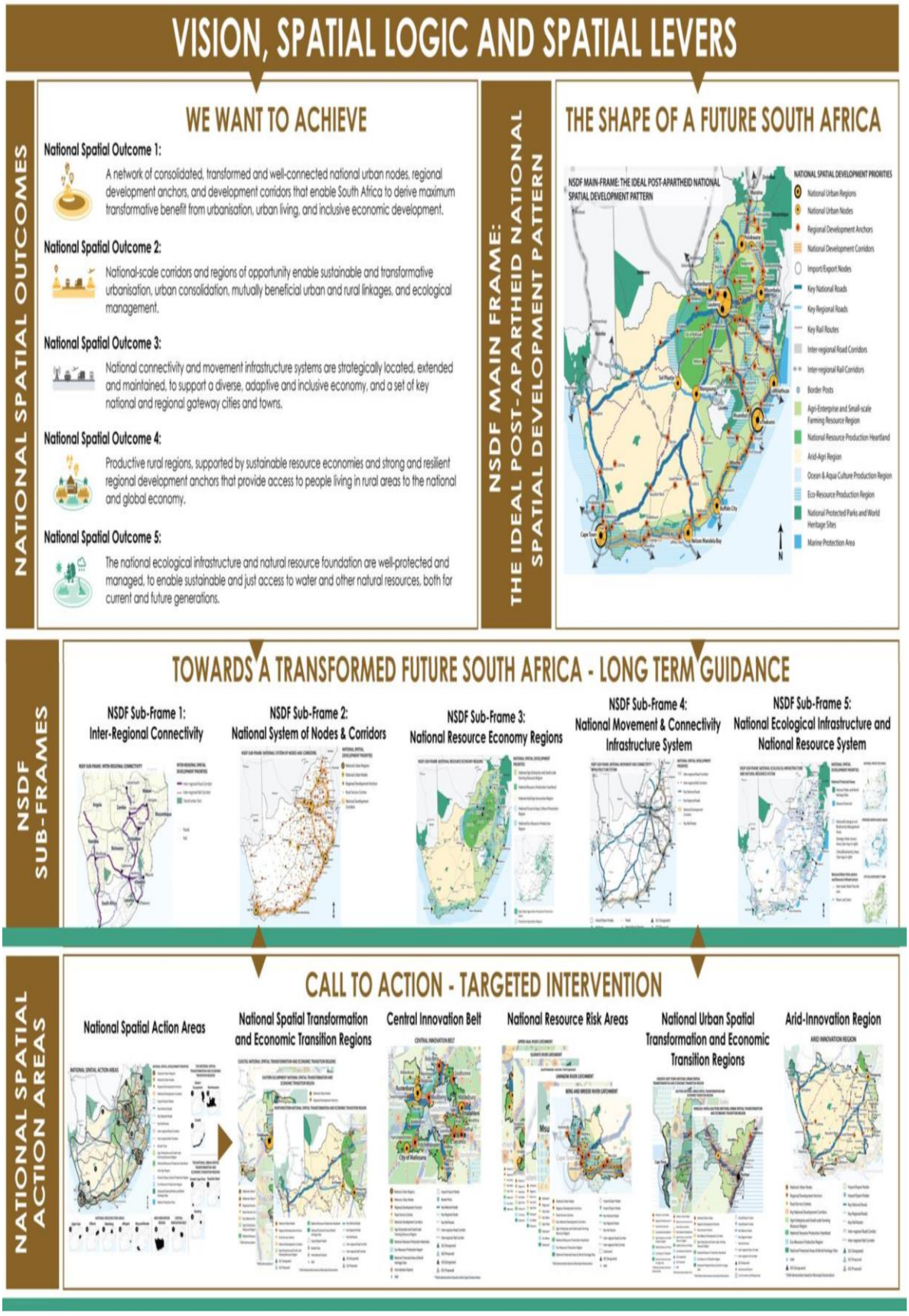
- The development of *norms and standards* to further (1) the aims of the NDP and SPLUMA, and (2) the implementation of the NSDF;
- Guidelines on (1) the consideration of spatial and settlement development planning in *land reform processes,* and (2) *post-land reform development strategies*;
- The preparation of clear, integrated and multi-sectoral policy guidance around (1) *fossil fuel-based energy-generation and related fossil fuel extraction*, and (2) *transitioning to a low-carbon economy,* as per Chapter 5 of the NDP, and working towards the achievement of national climate change reduction targets, for example, the targets set in South Africa's Nationally Determined Contribution (NDC) under the Paris Agreement; ******
- The relation of the *Mineral and Petroleum Resources Development Act, Act 28 of 2002 (MPRDA)* to (1) SPLUMA in general, and (2) the NSDF and provincial, regional and municipal SDFs in particular;
- The role of SPLUMA in the guiding of *infrastructure investment, upgrading and maintenance* in the context of the Critical Infrastructure Protection Act, Act 8 of 2019, and the Government Immovable Asset Management Act, Act 19 of 2007;
- The *mainstreaming of gender and social inclusion in spatial planning* at all scales, and the nuanced and specific data/spatial information input required to support and enable this;
- The role of *traditional leaders/authorities* in (1) championing and furthering the NSDF vision and spatial transformation and economic transition objectives, and (2) realising the Ideal National Spatial Development Pattern;

****** South Africa's updated draft Nationally Determined Contribution (NDC) in term of United Nations Framework Convention on Climate Change (UNFCCC) and its Paris Agreement (PA), 30 March 2021.

- The *identification of 'Regional Development Anchors' and 'Rural Service Centres'* as provided for in the NSDF's *'Regional-Rural Development Model',* through joint, cooperative and collaborative inter-governmental engagement and multi-stakeholder consultation; and
- The (1) clarification of the relationship between National Spatial Development Planning and *Marine Spatial Planning* [††††††]*,* and (2) identification of ways by which the two can be coordinated, harmonised, and aligned.

[††††††] Marine spatial planning in terms of the National Framework for Marine Spatial Planning in South Africa, 26 May 2017.

Figure 67:
The Relationship between the National Spatial Action Areas and the other Core Components of the NSDF



Part Seven: Conclusion

The NSDF highlights the persistence of colonial and Apartheid spatial patterns and their detrimental impact on the ability of Government to meet its core national development objectives of reducing poverty, inequality and unemployment. To rid the country of this stubborn historical spatial stranglehold, a Theory of Change was developed that relies on and proposes decisive and targeted all-of-Government intervention and action in the national:

- Spatial development logic and pattern;
- Natural resource use and maintenance profile; and
- Patterns of ownership of, and access to, land and other natural resources.

The desired National Spatial Development Vision, Logic, and Pattern, as put forward in the NSDF, hold out the real promise of a very different South Africa by 2050.

The NSDF identifies *six National Spatial Development Levers* to realise the spatial development vision:

- Urban Areas and Regions;
- National Development Corridors;
- National Spatial Guided Social-Service Provisioning;
- Productive Rural Regions;
- National Ecological Infrastructure Network; and
- National Transport and Communication Infrastructure Network.

These *levers* form the basis of the *Main-Frame* and *five Sub-Frames* of the NSDF, in which more detailed spatial guidance is provided. The NSDF Sub-Frames provide a 'national spatial schema' as first put forward in the NDP, to inform, direct, prioritise and guide all infrastructure investment and development spending decisions by Government and the private sector. It aims to achieve this by providing strategic spatial development and investment guidance to *spatially direct* plans, budgets and actions of all public and private sector actors. The five NSDF Sub-Frames speak to the six levers, and seek to put in place, or provide for (1) interregional supra-national connectivity, (2) a national system of nodes and corridors, (3) national resource economy regions, (4) a national movement and connectivity infrastructure system, and (5) a national ecological infrastructure network.

Finally, in a call for urgent action, a series of *National Spatial Action Areas* (NSAAs) are identified. These NSAAs represent the most urgent strategic spatial development catalysts to (1) bring about radical spatial transformation at scale, and (2) manage and mitigate rising national risks, and as such, require immediate national action. Concerted and sustained intergovernmental collaboration is required in these NSAAs over the short term to (1) target context-specific, focused and catalytic national spatial development interventions, and (2) kickstart the process of aligning plans, budgets and departmental plans *in* and *between* spheres of government around national spatial development and transformation and economic transition priorities.

The *five NSAAs* are:

- National Spatial Transformation and Economic Transition Regions;
- The Central Innovation Belt;
- National Resource Risk Areas;
- National Urban Spatial Transformation and Economic Transition Regions; and
- The Arid-Innovation Region.

While providing overarching (1) national spatial development direction, (2) catalytic impetus, and (3) spatial development and investment guidance in moving the country towards the Ideal National Spatial Development Pattern, the realisation of this desired South Africa will require of the NSDF to be:

- Championed;
- Communicated;
- Institutionalised;
- Embedded; and
- Actioned.

These five tasks demand significant and decisive change in the ways that investment and spending have been (1) planned, (2) budgeted for, (3) funded, and (4) undertaken in national space. While these changes will not always be easy, and entail very different ways of engaging, collaborating and acting, the rewards of doing so will far outweigh the sacrifices – a *peaceful, prosperous and truly transformed South Africa by 2050!*

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  - Succulent Karoo Programme (SANBI). [Online] available at: https://www.sanbi.org/biodiversity-science/science-policyaction/mainstreaming-biodiversity/succulent-karoo-programme;
  - Ecological Infrastructure (SANBI). [Online] available at: https://www.sanbi.org/biodiversity-science/science-policyaction/mainstreaming-biodiversity/ecological-infrastructure; and
  - CAPE Programme (SANBI) conservation of the Cape Floristic Region. [Online] available at: https://www.sanbi.org/biodiversity-science/science-policyaction/mainstreaming-biodiversity/fynbos-programme.

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Figure Reference and Resource List

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figure 1	**National Transformation Logic**		NSDF Technical Team-work.	NSDF - EUP technical team, 2018.
Figure 2	**The NDPs proposed National Schema for Spatial Targeting**		Published NDP document.	National Planning Commission. 2011. National Development Plan: Vision for 2030. Pretoria. NPC.
Figure 3	**The Role of the NSDF within the 'Family' of Strategic and Sector Plans of Government**		NSDF Technical Team-work.	NSDF - EUP technical team, 2018.
Figure 4	**Document Structure**		NSDF Technical Team-work.	NSDF - EUP technical team, 2018.
Figure 5	**NSDF Preparation Process**		NSDF Technical Team-work.	NSDF - EUP technical team, 2018.
Figure *6*	**NSDF 2018 Development and building blocks to support impact and alignment**	Policies, strategies, frameworks, plans, Reports	Constructed graphically by NSDF technical team. Constructed from various reports reflected in bibliography.	NSDF - EUP technical team, 2018.
Figure 7	**People and Places- Population and Settlement Dynamics- Settlement Typology Distribution**		Population per Settlement Type. Calculated using the CSIR Functional Town Typology, 2018. For more descriptive information on Mesoframe see the following link: http://stepsa.org/pdf/2018_CSIR_Town_Typology.pdf	Spatial data indicators based on StatsSA 2011 and Household Survey 2016. Quantec, 2018. [Online] available at: https://www.quantec.co.za/.
Figure 8	**People and Places- Population and Growth Dynamics- Population Growth Spatial Representation 1996-2016**		Demographic Change using CSIR Town Typology, 2018. Population values presented as 3D value indicating growth for period 1996-2016. For more descriptive information on Mesoframe see the following link: http://stepsa.org/socio_econ.html. For Typology: http://stepsa.org/pdf/2018_CSIR_Town_Typology.pdf	Spatial data indicators based on Quantec data containing annual time series adjusted data and reflected in the CSIR Town Typology, 2018.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		Sparsely Settled Areas-Western and Central Region	Sparsely populated region with less than 10 people per square km, with scattered towns. Calculated using the CSIR Mesoframe 2017 and Functional Town Typology, 2018.	CSIR Town typology, 2018.
		Cities and towns	Calculated using the CSIR Mesoframe 2017 and Functional Town Typology, 2018.	CSIR Town typology, 2018
		Dense Rural Settlements: Former homeland areas		
		Densely Settled Coastal Corridor		
Figure 9	**People and Places – Demographic Growth Scenarios 2050 Population (medium Scenario – Settlement Growth With No intervention)**	Estimated Population Growth	Demographic Modelling and Scenarios developed through the CSIR Green Book- project, 2018 using CSIR Town Typology, 2018. [Online] available at: www.greenbook.csir.co.za. The methodology applied in the Green Book project is listed in the story map sections see link: https://pta-gis-2-web1.csir.co.za/portal/apps/GBCascade/index.html?appid=5180459a765c4e63bfb3fa527c7302b3.	Le Roux, A., Arnold, K., Makhanya, S. & Mans, G. 2019. Green Book – South Africa's urban future. Growth projections for 2050. Pretoria: CSIR.
Figure 10	**People and Places – National Land Use: Productive Land**	Protected Areas	The South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) are GIS inventories of all protected and conservation areas in South Africa. The database includes data on privately owned protected and conservation areas. [Online] available at: https://egis.environment.gov.za/.	Department of Environmental Affairs, 2018.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		Trans-frontier Parks	a Trans-frontier Park is an area comprising two areas, which border each other across international boundaries and whose primary focus is wildlife conservation.	Department of Environmental Affairs, 2018.
		Mountains	CSIR Mesozone Land descriptions 2017 http://stepsa.org/socio_econ.html Based on Department of Environmental Affairs. Sourced from https://egis.environment.gov.za/ Department of Agriculture.	CSIR Town typology, 2018.
		Hyper Arid Zones		
		Arid Zone		
		Productive Use: Urban and Rural Settlement area		
		Productive Use: Sparsely Populated areas		
Figure 11	**People and Places – Population Vulnerability – People in poverty**	Social Vulnerability	Vulnerability of households in terms of a range of indicators, based on a multi-criteria analyses including *inter alia*, household income levels, female and child-headed households, child mortality.	Le Roux et al 2015 – See stepSA Indicators on Web site for full reference and description: http://stepsa.org/social_vulnerability.html.
		The number of people living below the minimum household income level is used as an indication of people living in poverty	Low levels of household income or household poverty is an item often used to depict where households are that are living in poverty and subsequently most in need of services and assistance. 'Household poverty' see: http://stepsa.org/household_poverty.html.	Based on StatsSA, 2011; Quantec 2014. Developed for DRDLR by CSIR – See DRDLR Project on stepSA. [Online] available at: http://stepsa.org/priority_rural_districts.html.
		Age distribution 0-14 years	Indication if the numbers of the population in the below 14 age category depicted from Mesozone data and displayed as circular	CSIR Town typology, 2018.

			graphics reflecting size.	

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figure 12	**Ecologies, Economies and Spaces – Climate Change and Projected Regional Implications**	Increase in temperature, decrease in rainfall, increase in rainfall, Increase in extreme rainfall events, etc.	Provided through CSIR Green Book Project 2018, which undertook Climate Change Modelling based on scenarios.	The Green Book. 2019. Green Book: Adapting South African settlements to climate change. [Online] available at: www.greenbook.csir.co.za.
Figure 13	**Ecologies, Economies and Spaces – National Ecological Infrastructure**	Protected areas	The South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) are GIS inventories of all protected and conservation areas in South Africa. The database includes data on privately-owned protected and conservation areas. [Online] available at: https://egis.environment.gov.za/.	Department of Environmental Affairs, 2018.
		Strategic water source production areas	Ground Water - Strategic water source for groundwater areas can be described as the country's most important water sources because they supply a disproportionately high amount of the country's water in relation to its size. Surface Water Areas - Strategic water source for surface water areas can be described as the country's most important water sources because they supply a disproportionately high amount of the country's water in relation to its size. Statistics calculated is based on land areas, transfers and population from Mesoframe and CSIR Town Typology 2018.	Natural Resources and Environment (NRE) Unit at CSIR and Water Research Commission (WRC), 2017. [Commissioned research project].
Figure 14	**Ecologies, Economies and Spaces – Ecological**	Water security: Spatial Inter-dependencies	Analysis based on water production areas, transfer schemes and settlement typology.	Mandala GIS. 2018. [Online] available at: https://mandalagis.com.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
	infrastructure. Interdependence and Threats		Sourced from reports and a spatial analysis of water transfers.	
		Stressed Catchments	Stressed catchments- Water stress is when the amount of water used exceeds 10% of renewable resources.	Department of Environmental Affairs, 2017.
		Water Scarce Regions	Selection of arid areas receiving low rainfall. Extracted from Mesozone data.	CSIR Town Typology, 2018.
Figure 15	**Ecologies, Economies and Spaces – Supporting Ecological Infrastructure** Food Security: Spatial Interdependencies and Critical Role of Dense Rural	High Potential Agricultural Land	Agriculture Land capability, determined by the collective effects of soil, terrain and climate features, shows the most intensive long-term use of land for rain-fed agriculture.	South Africa's Agricultural Geo-referenced Information System (AGIS), Dept. Agriculture.
		Climate Risk	Sketch mapping drawing from climate risk data sourced from the Green book project.	The Green Book. 2019. Green Book: Adapting South African settlements to climate change. [Online] available at: www.greenbook.csir.co.za.
		Ocean Economy	Simplistic representation of SA coastal extent, economic areas and linkages. For more information and detail, see: https://www.environment.gov.za/projectsprogrammes/operationphakisa/oceanseconomy.	Operation Phakisa – Ocean economy, 2017.
		Dense Rural Area	CSIR Functional Town Area 2018 indicating dense rural settlement areas. These areas are subsequently highlighted.	CSIR Town Typology, 2018.
		Land with Very high and High productive capacity Land with agricultural production	Land capability data reflecting areas of land with the highest land capability. Information sourced from AGIS.	Department of Agriculture - AGIS, 2015.

		capacity		
		Important water source areas	Drawing from Strategic water source production areas (described above).	Natural Resources and Environment (NRE) Unit at CSIR and Water Research Commission (WRC), 2017. [Commissioned research project].

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figure 16	**Ecologies, Economies and Spaces – Regional Economic Trends – Regional Economic Growth and Employment**	LM economic growth compared against national average (2001 - 2016) Employment calculated per Town	Town calculation CSIR Functional Town Area 2018 Total Employment presented for 2016.	Based on StatsSA, 2011; and Quantec, 2016. [Online] available at: https://www.quantec.co.za/.
Figure 17	**Ecologies, Economies and Spaces – National Economic Production and Employment Trends**	Spatial representation of Economic Production in SA (2016)	Mesoframe 2017. [Online] available at: http://stepsa.org/socio_econ.html Intensity mapping using interpolation of Mesozone data 4 economic sectors GVA – 2016.	StatsSA, 2011; Quantec, 2016. CSIR Town Typology, 2018 (interpolated).
		National Economic Output and Employment Trends (Increasingly Nodal)	Mesoframe 2017. [Online] available at: http://stepsa.org/socio_econ.html. Also used for the Integrated National Export Strategy (INES): 'Export 2030' (The DTI).	StatsSA, 2011; Quantec, 2016. The DTI. 2016. Integrated National Export Strategy (Export 2030).
Figure 18	**Ecologies, Economies and Spaces – People and Agglomeration Economies in Polycentric Network of Cities and Town**	People and Service Economy. Government Services	Spatial Indicators based on Mesozone 2017 and CSIR Functional Town Area, 2018. Government services – reflected by SIC categories, values interpolated see also Figure 16. People economy also indicating places of large population agglomerations.	StatsSA, 2011; Quantec, 2016.
Figure 19	**Ecologies, Economies and Spaces – Agriculture Resource Economy and Food Production**	Agriculture as significant contributor to national economies and sector employment	Spatial Indicators based on CSIR Mesozones, 2017. Indicating areas of highest agriculture GVA output (Mesozones). Also includes 20 largest LM with highest agriculture GVA.	StatsSA, 2011; Quantec, 2016. Towards Spatial Perspectives in support of the NDP: Unpublished Report prepared by the CSIR for Economic Development Department (EDD), 2015.
		Agriculture as significant contributor to	GVA percentage for Agriculture sector for total GVA- presented per Mesozone, 2016.	Towards Spatial Perspectives in support of the NDP: Unpublished Report prepared by the CSIR for

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		local economies and employment		Economic Development Department (EDD),2015.
		Agriculture land significance for national food production	Graphic illustration of land with high agriculture potential (land capability) and high value production (crop fields data).	Department of Agriculture, 2018 and CSIR Town Typology, 2018 – reflecting GVA sector values.
Figure 20	**Movement, Connections and Flows – Connectivity**	Built Environment Infrastructure Focus areas	Built-Areas of most dense built-up development AND biggest backlogs nationally identified to indicate areas of most significant focus for continued service delivery, maintenance investment and related enterprise opportunity in construction, green energy sectors. Based on SACN Functional Town Area Typology, 2016 and updated with CSIR Town Area Typology 2018.	Towards Spatial Perspectives in support of the NDP: Unpublished Report prepared by the CSIR for EDD.
		National Connectivity	Drawn from key road and rail routes reflected by National Department of Transport – in the 2015 NATMAP.	National Transport Master Plan, 2015.
		Freight flow	Spatial reflecting three main freight volumes; mining, manufacturing and agriculture commodities.	Logistics Barometer 2016, University of Stellenbosch. 2014-Freight Flows.
Figure 21	**Movement, Connections and Flows – Inter-regional Trade Connections**	Global, interregional, national and rural development networks,	Identification of regional and rural economic development network anchors and gateways, based on indicators developed in accordance with OECD and EU criteria for identification of regional cross-boundary economic flows, international studies and SADC and	Towards Spatial Perspectives in support of the NDP: Unpublished Report prepared by the CSIR for Economic Development Department (EDD), 2015.

		gateways and anchors for service, industry, export/import, business, administration, tourism, etc. Attractors, centres, access points (eg cities, towns, SEZs Ports) and connectors (eg	African case study analyses.	SOCR 2016. Integrated National Export Strategy (INES): 'Export 2030'. The dti.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		ranging from corridors to road, rail, air, sea connections).		
Figure 22	**Movement, Connections and Flows – Energy** **Energy Infrastructure and Potential**	National Energy Potential and Network Corridors	Renewable Energy Development Zone combined with wind and solar projects sourced from as CSIR projects.	Towards Spatial Perspectives in support of the NDP: Unpublished Report prepared by the CSIR for Economic Development Department (EDD), 2015.
		Energy Infrastructure and Potential	Reflects current energy infrastructure, as well as potential areas for green energy. Utilising SA wind atlas and geospatial analysis on potential for solar energy. Solar radiation is a general term for the electromagnetic radiation emitted by the sun. We can capture and convert solar radiation into useful forms of energy, such as heat and electricity, using a variety of technologies. Amount of energy per m^2 per day for January to December.	ESKOM, 2017. The World Bank, 2017. Solar resource data: Solargis.
Figure 23	**Movement, Connections and Flows – ICT Information Communication Technology**	ICT Fibre connection distance	Connection to nearest main fibre infrastructure connection point – values calculated by small area. Thematically illustrated.	MERAKA CSIR, 2018.
Figure 24	**Institutions and Service Delivery – Basic Service Delivery**	Access to Water, Electricity and Sanitation 1996-2011 in relation to no of households.	Mesozone information percentage service accessible comparing 1996 to 2011.	StatsSA 2011. National Treasury 2018.
	National Scale Overview of Progress and Challenges with Basic Service Delivery	Service Delivery maintenance stress 2016.	LM values of prolonged water and electricity outages for 2016.	Government Performance in South Africa 2016.
Figure 25	**Municipal Financial Viability**	Comparison of municipal budget per household for municipalities of over 50 000 and	Reflect municipalities with population above 50 000 and densities higher than 500 persons/km^2. Reflect budget per household.	IUDF Presentation, 2018.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		densities greater than 500 p/km^2		
		Financial Distress Score	Local municipal distress score.	National Treasury, Municipal Financially Distressed Municipalities 2016-2017.
Figure 26	**Institutions and services – Municipal Capability**	An indication of current Governance support focus areas	Intermediary Cities Programme municipalities with support type received and municipalities that have been identified for support.	National Treasury, Municipal Support Focus Areas per Local Municipality, 2016-2017.
Figure 27	**Institutions and services – Municipal Capability**	Municipal Capability-Capable Cities Index	Parnell, S., Moodley, N., and Palmer, I., 2017. Defining the four components of capability.	National Treasury, Municipal Support Focus Areas per Local Municipality, 2016-2017.

		Components of Municipal Capability		
Figure 28	**Institutions and services – Social Services People and Service Economy**	Government Services People and Service economy	Spatial Indicators based on CSIR Mesozones, 2017. Reflecting government and service sectors (GVA values interpolated) combined with towns and roads network. Also reflected on smaller map is the generalised service extent of larger regional centres.	StatsSA, 2011; Quantec 2016. CSIR calculations, 2018.
		Social Services Demand	Approximate new facility demand calculated based on additional population growth from 2016-2050 based on Greenbook projections and applying social facility provision standards.	Greenbook 2019 CSIR Guidelines for the Provision of Social Facilities In South African Settlements First edition 2012, reprinted 2015.
Figure 29	**The National Spatial Development Vision Statement**		NSDF Graphic.	NSDF Technical Team.
Figure 30	**NDP Levers and Objectives - Framework**		NDP Graphic.	National Planning Commission. 2011. National Development Plan: Vision for 2030. Pretoria. NPC.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figure 31	**National Spatial Development Levers**		NSDF Graphic various illustrating concepts.	NSDF Technical Team, 2018.
Figure 32	**Linking National Spatial Development Concepts to the NDP and SPLUMA**		NDP Lever Capable State SPLUMA Principle Good Administration addresses in implementation framework.	National Planning Commission. 2011. National Development Plan: Vision for 2030. Pretoria. NPC. SPLUMA 2013.
Figure 33	**Schematic Presentation of a Regional-Rural Development Model**	Urban and Rural Region National Urban Core Regional Development Anchors Small Service Centre Small Town Rural Settlement	Defined by NSDF based on CSIR Functional Town Area Typology.	NSDF Technical Team, 2018.
Figure 34	**A National Spatial Social Service Provisioning Models ('Social Services Wheel')**	Social Services Wheel	Adapted for NSDF town types and based on CSIR Guidelines for the Provision of Social Facilities in South African Settlements First edition 2012, reprinted 2015.	[Online] available at: http://stepsa.org/service_wheel_typology.html.
Figure 35	**Illustration of Town Service Reach**	Regional Centre and Service Town Reach	Approximate service area of town categories based on access distance of typical services. Regional Centres have a bigger reach with more and larger services. Service reach up to 100 km in sparse areas but not less than 30 km. Service Towns have a typical reach of 20-30 km.	CSIR illustration.
Figure 36	**National Development Pattern Transformed**	NSDF Consolidated Settlement Scenario and population growth per settlement types.	Developed by the NSDF team and based on The Medium Green Book Projections adapted based on the NSDF Spatial Vision.	NSDF Vision and technical team, 2018.
Figure 37	**Putting It All Together**	Graphic illustration of Spatial Vision.	NSDF Graphic.	NSDF Technical Team.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figure 38	**Ideal National Spatial Development Pattern to NSDF sub-frames**	Graphic illustration of link between. Ideal NSD Pattern to sub-frames	NSDF Graphic.	NSDF Technical Team.
Figure 39	**National Spatial Development Framework**		See Implementation framework for detail descriptions of regions.	NSFD Technical Team, 2018.
Figure 40	**Inter-Regional Connectivity Sub-Frame**		Main cross regional road and rail corridors reflected by NATMAP (National Department of Transport) and Cross	NATMAP, 2015.

			Border Road Agency.	
Figure 41	**National System of Nodes and Corridors Sub-Frame**	Urban Regions National Urban Nodes Regional Development Anchors	CSIR Functional Town Area, 2018.	CSIR Functional Town Area, 2018
Figure 42	**National and Regional Settlement and Service Network**	Application of Rural Regional Service model to South Africa based on the Service Wheel	Analysis based on Settlement hierarchy of NSDF types. Feeder lines connecting smaller towns to larger centres.	NSDF Technical Team, 2018.
Figure 43	**National Resource Economy Regions Sub-Frame**	National Agri-Enterprises and Small Scale Farming Region	Productive areas existing and potential, including densely settled areas. Areas in more suitable future climate areas. Focus on small scale farming and related enterprises.	NSDF Technical Team, 2018.
		National Central Agricultural Heartland	Protect high-value agricultural land.	NSDF Technical Team, 2018.
		National Arid-Agri-Innovation Region	Primarily extensive agricultural activities, with pockets and stretches of intensive irrigation-farming, (2) mining clusters, (3) renewable energy farms/plants, and (4) small, compact settlements in an arid region.	NSDF Technical Team, 2018.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		National Ocean & Aqua Culture Production	SA Off-Shore Coastal Zone.	NSDF Technical Team, 2018.
		National Eco-Resource Production and Livelihoods	Includes national strategic water source areas. Areas of agricultural potential but not developed.	NSDF Technical Team, 2018. SANBI, 2018. Department of Agriculture, 2018.
		High-Value Agricultural Production	Areas of high value production (crop fields data).	Department of Agriculture, 2018 and CSIR Town Typology, 2018 – reflecting GVA sector values.
		Productive Agriculture Regions	Graphic illustration of land with high agriculture potential (land capability) based on interpolation of above.	NSDF Technical Team, 2018.
		Nationally Protected Areas	The South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) are GIS inventories of all protected and conservation areas in South Africa. The database includes data on privately-owned protected and conservation areas.	Department of Environmental Affairs, 2018. [Online] available at: https://egis.environment.gov.za/.
Figure 44	**National Movement and Connectivity Infrastructure System Sub-Frame**		Key road and rail routes as reflected in NATMAP Development corridors are routes along densely settled areas. Reflecting ports of entry/exit and economic zones.	NATMAP, 2015 DTI, 2014.
Figure 45	**National Ecological Infrastructure Network Sub-Frame**	National Protected Areas	The South African Protected Areas Database (SAPAD) and the South African Conservation Areas Database (SACAD) are GIS inventories of all protected and conservation areas in South Africa. The database includes data on privately-owned protected and conservation areas.	Department of Environmental Affairs, 2018. [Online] available at: https://egis.environment.gov.za/.
		Marine Protected Areas	Part of national protected areas.	Department of Environmental Affairs, 2018.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
		National Ecological and Biodiversity Management Areas (CBAs and ESAs)	CBAs: Areas that are required to meet biodiversity Targets. ESAs: Areas that are not essential for meeting biodiversity targets, but that plays an important role in supporting the functioning of CBAs and/or for delivering ecosystem services.	SANBI, 2018. [Online] available at: https://www.sanbi.org/.
		Strategic Water	Strategic Surface and Ground Water - Strategic ground	Natural Resources and Environment

		Source Areas	and surface water areas can be described as the country's most important water sources because they supply a disproportionately high amount of the country's water in relation to their size. Statistics calculated are based on land areas, transfers and population pressure using population data from the Mesoframe and CSIR Town Typology 2018.	(NRE) Unit at CSIR and Water Research Commission (WRC), 2017. [Commissioned research project].
		Inter-Basin Water Transfer line	Transfers captured through spatial analysis and enquiry.	Mandala GIS, 2018.
		Rivers and Dams	Geospatial data sourced from Dept Water Affairs.	DWA, 2013.
Figure 46	**Strategic Spatial and Implementation Action Areas**		See discussion of the importance and role of each Implementation areas in the following section for more details.	Interpretation of all available information indicated above.
Figure 47	**Ideal National Spatial Development Pattern to Strategic Action Areas**	Linkage between Ideal SD Pattern to NSAA	NSDF Graphic.	NSDF Technical Team.
Figures 48 to 51	**National Spatial Transformation and Economic Transition Corridors**	Coastal Transformation Corridor Eastern Escarpment Corridor Northwestern Transformation Corridor	Areas of large population concentration often are sprawling rural settlements forming a belt of development along key national routes but also areas having a major role to play with respect to future water and food security.	NSDF Vision.

Figure Number	Figure Title	Specific Terms or Components of Figures	Where Obtained From/How Calculated?	Reference/Source For More Evidence/Further Reading
Figures 52 to 53	**Central Innovation Belt**	Central Innovation Belt	Areas currently largely dependent on a single economic sector (mostly Mining) that requires diversification and Innovation to grow and maintain their prominence in future.	NSDF evaluation.
Figures 54 to 59	**National Resource Risk Areas Overview**	Upper Vaal River Catchment Olifants River Catchment Waterberg River Catchment uMngeni River Catchment Berg & Breede River Catchment	National Resource risk areas include areas where water production, Human Settlement, Agriculture and/or Mining and dense population areas are in competition and intersect and where the catchments are stresses often due to pollution.	NSDF evaluation.
Figures 60 to 63	**National Urban Spatial Transformation and Economic Transition Regions Overview**	Gauteng Urban Region Greater Cape Town Urban Region eThekwini Urban Region	Urban Regions have large populations and economy and are expected to continue to grow. They must play a critical role of providing homes and employment for a large % of the population now and in future.	NSDF analysis based on CSIR Functional Settlement Typology 2018.
Figures 64 to 65	**Arid-Innovation Region Overview**	Large arid area of the country (48%) that is very sparsely populated but interspersed with mostly small towns and settlements	This area is expected to experience major impacts of climate change with respect to higher temperatures and lower rainfall. Innovation will be critical for the survival of people and economy of this region.	NSDF evaluation.
Figure 66	**NSDF Implementation – Level of Focus over Time**		NSDF Graphic.	NSDF Technical Team.
Figure 67	**The Relationship between the National Spatial Action Areas and the other Core Components of the NSDF**		NSDF Graphic.	NSDF Technical Team.