










Featured SET policy:

The National Development Plan (NDP)

In a series of articles, the NSTF is unpacking the National Development Plan (NDP). The focus is on understanding it from a science, engineering, technology (SET) perspective. The NDP is seen as a blueprint/guiding document for South Africa. The NDP aims to eliminate poverty and reduce inequality by 2030.

- The complete document – [‘National Development Plan – vision for 2030’](#)
- The executive summary [‘National Development Plan 2030, Our future – make it work, executive summary’](#).

<p>NDP chapter: Overview</p> <p>This considers the context and background of the NDP. See 1 – Understanding the context of the National Development Plan (NDP). It also sets the stage for understanding what makes a developmental state. See 2 – The National Development Plan and the developmental state. There is also a summary of the plan and key targets and actions.</p>	
<p>NDP chapter 1: Key drivers of change</p> <p>The synopsis is called 3 – Science and technology as drivers of development.</p>	
<p>NDP chapter 2: Demographic trends</p> <p>The synopsis is called 4 – Demographic trends PLUS the NDPs 5th anniversary</p>	
<p>NDP chapter 3: Economy and employment</p> <p>The synopsis is called 5 – National system of innovation and R&D critical for growing the economy</p>	
<p>NDP chapter 4: Economic infrastructure</p> <p>The synopsis is called 6 – Developing a strong network of economic infrastructure – transport, energy, water resources, and ICT</p>	<p>An economy that will create more jobs </p>
<p>NDP chapter 5: Transition to a low carbon economy</p> <p>The synopsis is called 7 – Transitioning SA to a low carbon economy that responds to climate change</p>	<p>Transition to a low-carbon economy </p>
<p>NDP chapter 6: Inclusive rural economy</p> <p>The synopsis is called 8 – An inclusive rural economy</p>	<p>An inclusive and integrated rural economy </p>
<p>NDP chapter 7: Positioning South Africa in the world</p>	<p>Reversing the spatial effects of apartheid </p>
<p>NDP chapter 8: Human settlements</p>	<p>Improving the quality of education, training and innovation </p>
<p>NDP chapter 9: Improving education, innovation and training</p>	<p>Quality healthcare for all </p>
<p>NDP chapter 10: Promoting health</p>	<p>Social protection </p>
<p>NDP chapter 11: Social protection</p>	<p>Building safer communities </p>
<p>NDP chapter 12: Building safer communities</p>	<p>Reforming the public service </p>
<p>NDP chapter 13: Building a capable state</p>	



Part 1 of the NSTF series on the NDP – Understanding the context of the National Development Plan (NDP)

In a series of articles, starting with this newsletter, the NSTF will be unpacking the National Development Plan (NDP). The particular focus will be on understanding it from a science, engineering, technology (SET) perspective. Not only does the implementation of the NDP affect every person in South Africa but it has overriding implications on how SET programmes and funding will be managed.

What is the NDP?

Blueprint for SA: The NDP is seen as a guiding document for South Africa. It was released in 2011 and is positioned as a blueprint for tackling South Africa’s challenges. In 2012, Cabinet adopted the NDP as a long-term vision and plan for the country.

NDP aims: The NDP aims to eliminate poverty and reduce inequality by 2030. According to the [NDP executive summary](#): “South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.”

How did the NDP come about?

Background to NDP’s creation: The National Planning Commission (NPC) was appointed in May 2010 to draft a vision and national development plan. The NPC Diagnostic Report, released in June 2011, set out South Africa’s achievements and shortcomings since 1994. It identified a failure to implement policies and an absence of broad partnerships as the main reasons for slow progress. It set out 9 primary challenges.

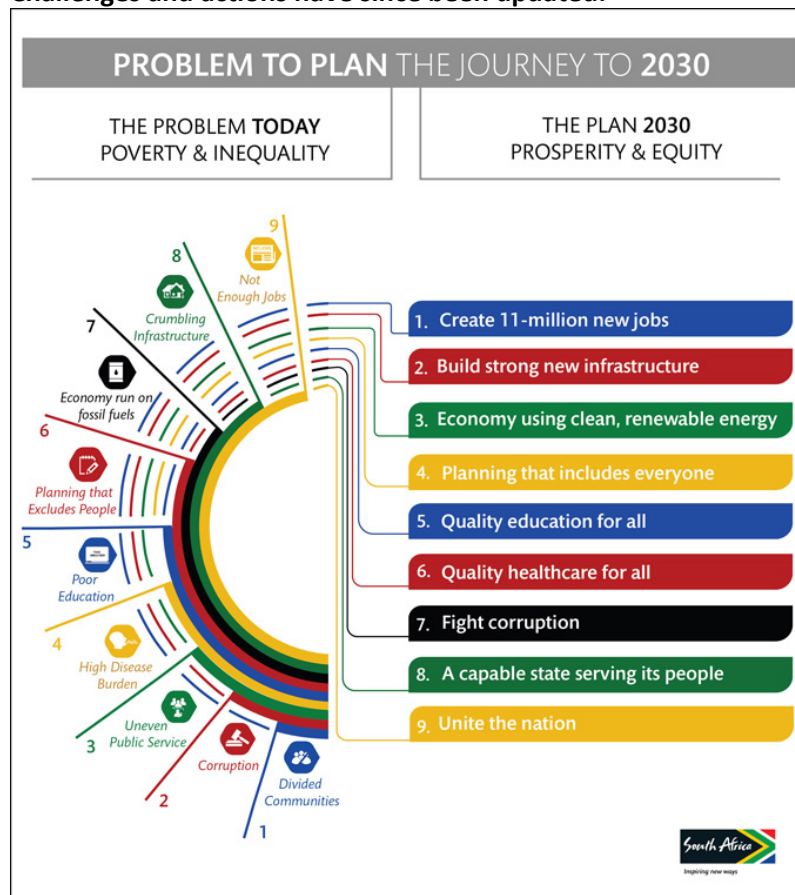
NPC Diagnostic Report challenges	Summary of NDP 2011 actions
Too few people work	An economy that will create more jobs
The quality of school education for black people is poor	Improving the quality of education, training and innovation
Infrastructure is poorly located, inadequate and under-maintained	
Spatial divides hobble inclusive development	Reversing the spatial effects of apartheid
The economy is unsustainably resource intensive	Transition to a low-carbon economy
The public health system cannot meet demand or sustain quality	Quality healthcare for all
Public services are uneven and often of poor quality	Reforming the public service
Corruption levels are high	Fighting corruption
South Africa remains a divided society	Transforming society and uniting the country
	An inclusive and integrated rural economy
	Social protection
	Building safer communities

The NDP positioned the following as key ingredients for success:

- The active efforts of all South Africans
- Growth, investment and employment
- Rising standards of education and a healthy population

- An effective and capable government
- Collaboration between the private and public sectors
- Leadership from all sectors of society

Challenges and actions have since been updated:



<https://www.brandsouthafrica.com/governance/ndp/the-national-development-plan-a-vision-for-2030>) The NSTF will be going into more detail in the specific sections as part of this series.

How is the NDP being implemented?

The first cycle of implementation processes: In a media briefing in 2013, Minister in The Presidency: National Planning Commission, Trevor Manuel, spoke about the implementation processes. Here are some of the points:

- Three phases have been identified.
 - Critical steps to be taken in 2013 to unlock implementation – including preparing the 2014-19 [Medium Term Strategic Framework](#) (MTSF) as the first five-year building block
 - 2014-2019 planning cycle
 - 2019-2024 and 2024-2029 planning cycles
- The NDP is a plan for the whole country.
- The Plan will shape budget allocation over the next 17 years.
- Planning and implementation should be informed by evidence-based monitoring and evaluation.

2014-2019 MTSF: It was made clear that activities and planning of government departments need to align to the NDP. The [2014-2019 MTSF](#) was developed to assist with implementation and includes key outputs and actions. The aim is to ensure policy coherence, alignment and coordination across government's plans, including the alignment of budgeting processes.

It identifies indicators and targets from the NDP and other plans, such as:

- [The New Growth Path](#) which sets the trajectory of economic development
- [National Infrastructure Plan](#) which guides the rollout of infrastructure to improve people's lives and enable economic growth
- [Industrial Policy Action Plan](#) which focuses on promoting investment and competitiveness in leading sectors and industries

It is structured around 14 priority outcomes: education, health, safety and security, economic growth and employment, skills development, infrastructure, rural development, human settlements, local government, environment, international relations, an effective public sector, social protection, nation-building and social cohesion.

The Department for Performance Monitoring and Evaluation (DPME) is responsible for monitoring progress. For more detailed information go to '[The National Development Plan unpacked](#)'.



Operation Phakisa : Operation Phakisa is one of the mechanisms for implementing the NDP. It's a fast-results delivery programme launched in July 2014. ('Phakisa' means 'hurry up' in Sesotho.) It involves setting clear plans and targets, monitoring of progress and making results public. It was originally developed and successfully implemented by the government of Malaysia.

According to the [Operation Phakisa website](#): "Operation Phakisa is a cross-sector programme where various stakeholders engage to implement initiatives and concrete actions to address constraints to delivery in a prioritised focused area for public accountability and transparency."

It also looks to improve cooperation between government, organised business, civil society and organised labour. This includes working on detailed problem analysis, priority setting, intervention planning, and delivery. Its projects include the [Ocean Economy Lab](#), [Health Lab](#) and [Education Lab](#).

Operation Phakisa is monitored by the DPME.



The Vision 2030 Summit: The [Vision 2030 Summit](#) was held on 21 June 2017, under the endorsement of the National Planning Commission. Its aims were:

- Raise awareness and position the NDP as a South African plan and not merely a government plan.
- Unpack the NDP into an easy-to-understand, practical document; outlining how government departments, provinces, municipalities, state-owned enterprises and agencies are aligning themselves to it.
- Promote and encourage public-private partnership investment opportunities in provincial and local government.
- Discover innovations, solutions, plans and initiatives that can help fast-track the realisation of goals set by the business and investor communities.
- Reinforce private and public sector support for and commitment to the NDP.
- Take stock of where we are, where we should be, and the way forward for the nation to achieve its NDP objectives.

Challenges to the NDP

COSATU says NDP not address real unemployment problems: The Human Sciences Resource Council's (HSRC) newsletter ([HSRC Review October/November 2014](#)) published an article 'Navigating the government's development path'. The authors note that the Congress of South African Trade Unions (COSATU) has said that "the NDP did not address the real problems around unemployment because it was silent on industrialisation. It said that for the government to generate decent jobs, it had to revamp the manufacturing sector, which would generate the right mix of decent jobs in the economy and complement the services sector. Instead of industrialisation, the NDP puts more emphasis on small- and medium-scale enterprises in the services sector as the main drivers of future economic growth, perpetuating the tradition of unskilled low-wage labour in the country."

HSRC research says problems in implementation, delivery and human capacity: In terms of challenges to the NDP's successful implementation, the authors say that SA has the capacity to formulate policy but the challenge is being able to translate these into "implementable programmes and projects along the different tiers of government – provinces, municipalities and local government – culminating in achieving the set goals and objectives within the designated timeframes". This includes questioning the quality and capacity of people at the three levels of government to align the NDP with their plans. There are three key areas that are problematic: "the ability to implement policy, enforce legislation and deliver services".

SACP and NUMSA's concerns: The M&G article '[Radebe sticks to his NDP guns](#)' (2 July 2017) notes that the South African Communist Party (SACP) has "criticised the NDP as a social pact that imposes no legal obligation on government or on business and labour to implement it". Implementation of the NDP was discussed at the ANC's policy conference running from 30 June to 4 July 2017. Minister in the Presidency: planning, monitoring and evaluation, Jeff Radebe, is recommending a legal framework to ensure the NDP is implemented. The article also notes that the metalworkers' union Numsa "described the plan as a liberal version of the government's former Growth, Employment and Redistribution strategy".

Part 2 of the NSTF series on the NDP – The National Development Plan (NDP) and the developmental state

Factors for creating a successful developmental state

The National Development Plan (NDP) is positioned as a working document that will be enhanced and improved through public criticism and dialogue.

Focusing on urgency: It notes that reducing poverty and inequality isn't happening quickly enough. It emphasises the target date of 2030.

Promoting active citizenry and strong leadership: To eliminate poverty and reduce inequality, "requires a new approach – one that moves from passive citizenry receiving services from the state to one that systematically includes the socially and economically excluded, where people are active champions of their own development, and where government works effectively to develop people's capabilities". The NDP also recognises that leadership is essential, across all sectors of society.

Promoting collaboration: Success also includes collaboration between private and public sectors and leadership from all sectors of society.

Proposes a virtuous cycle: Attack poverty and exclusion while nurturing economic growth, “creating a virtuous cycle of expanding opportunities, building capabilities, reducing poverty, involving communities in their own development, all leading to rising living standards”.

Success is no one living under the poverty line: Success is measured “by the degree to which the lives and opportunities of the poorest South Africans are transformed in a sustainable manner”. It is about reducing the number of people living below the poverty line to zero. At the same time, it recognises that poverty is multidimensional and not just about income.

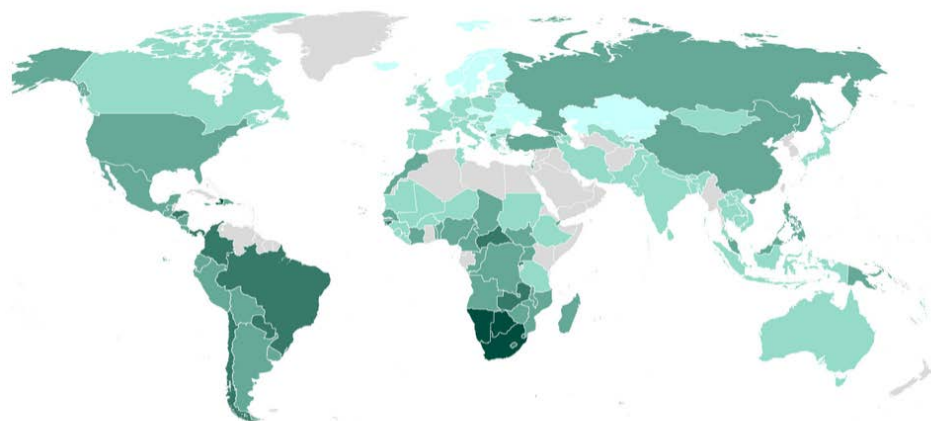
The National Planning Commission defined central challenges: These came out of the Commission’s Diagnostic Report.

Too few people work	The quality of school education for black people is poor	The public health system cannot meet demand or sustain quality
Infrastructure is poorly located, inadequate and under-maintained	Spatial divides hobble inclusive development	The economy is unsustainably resource intensive
Corruption levels are high	South Africa remains a divided society	Public services are uneven and often of poor quality

Employment and education are the highest priorities: The Commission viewed the following 2 challenges as critical and interrelated: “too few people work and the quality of education available to the majority is poor”.

2017 - South Africa is currently the most unequal country according to the World Banks GINI Index. The GINI coefficient is a measure of inequality of distribution.

Gini index for income inequality ranges from zero (absolute equality) to 100



Guardian graphic | Source: World Bank estimate. Map shows most recent Gini index estimates for 140 countries

From *'Inequality index: where are the world's most unequal countries?'*, Guardian newspaper

The developmental framework

Social reality still defined by apartheid and colonialism: “[T]he country’s development path has not sufficiently broadened opportunities for black South Africans, especially women and youth... the socioeconomic conditions that characterised the system of apartheid and colonialism largely still define our social reality.” The development paradigm needs to promote developing capabilities, creating opportunities and citizen participation.

The Commission defined development as “the process of raising continuously the capabilities of all citizens, particularly those who were previously disadvantaged”. Improving national capabilities looks at:







- human capital (through education, health, skills and work experience)
- physical infrastructure (schools, clinics, ports and power lines)
- technologies
- management skills
- social institutions that provide for better lives


Development has been unbalanced: It notes that previously government focused on the easier actions (such as paying grants and providing water and electricity) and not on difficult things (such as improving education, promoting employment and building houses close to jobs). This is a distorted development effort and South Africa needs a more balanced approach.

Focus on women and youth: The NDP has cross-cutting themes around the impact of gender and improving life chances for youth. “The key determinant of success is whether a country can harness the advantage of having a large number of young people who are able and willing to work.”

Need to take into account external drivers of change: At that point in time, the Commission noted examples such as fast-growing developing economies like China and India, globalisation, Africa’s development as a larger context for SA growth and development (including skills and trade), climate change, and technological change. The Reconstruction and Development Programme (RDP) failed, in part, because external drivers of change were not taken into account.

Technological change is seen as relating to science, as well as information and communication technology (ICT).

Summary of NDP 2011 actions	
	An economy that will create more jobs
	Improving the quality of education, training and innovation
	Reversing the spatial effects of apartheid
	Transition to a low-carbon economy
	Quality healthcare for all
	Reforming the public service

	Fighting corruption
	Transforming society and uniting the country
	An inclusive and integrated rural economy
	Social protection
	Building safer communities

Part 3 of the NSTF series on the NDP – Science and technology as drivers of development

Chapter 1 – Key drivers of change

The world is an interconnected global system. Increased interconnectedness has allowed threats to spread more rapidly (such as the 1998 financial crisis). But it has also brought globalisation with its benefits and opportunities. It's not always clear how the global system will respond to a specific scenario or risk.

Some of the factors that impact the global system:

- Technology increases the world's interconnectedness, impacting growth, trade, cross border investment etc.
- There is economic integration and increased global trade yet many emerging economies are trapped in a cycle of poverty.
- There is diminished distance through, for example, air transport.
- There is increased urbanisation.
- There is increased inequality with globalisation (an increasing gap between the rich and the poor)

Countries and the world as complex systems

The interconnected global system presents complex systemic challenges. The NDP notes that “neither governments nor the relevant international institutions are set up to monitor or assess the risk of systemic contagion, or to deal with systemic failure”.

The global impact of the financial crisis of 2008 showed governments' failure to regulate and prevent systemic collapse. This is one example of a complex system whose workings are not fully understood. The DP provides other existing complex system challenges, such as climate change, population pressures, urbanisation, and rising consumption and waste. There are also potential systemic crises, such as cyber attacks on financial markets, electricity supplies, transport etc.

Economic globalisation has outpaced political globalisation. The NDP notes that, in most countries, the public sector is locked into an outdated national model that isn't able to tackle global challenges. Treaties and conventions take too long to negotiate, are often not ratified, and when they are, are rarely enforced. Big governmental conferences are long on declarations and short on implementation. Both governments and companies will need to adapt continuously as they address the risks and opportunities of the evolving global environment.

Reviewing economic policies

The NDP calls for efficient market policies that embrace principles of social justice, empowerment, and a balance between rights and responsibilities. At the same time, taking country-specific factors and global context into account.

Emerging markets have been increasing their contributions to global growth (while developed markets decrease their contribution). This is driven by better education and economic management, and greater openness to international trade. There are also demographic shifts (such as declining birth rates) and urbanisation (urban migration).

The expected global economic rebalancing depends on emerging market countries maintaining 2011 growth trends. This is not a given and will depend largely on policy. It also means wider and deeper investment in education and skills training.

Opportunities in Africa

- Minerals underpin the economic strength of many African countries. However, most African countries have not used their commodity wealth to reduce poverty.
- Africa has the world's youngest population but there is a need for education, skills, and programmes around job creation and entrepreneurship.
- Urbanisation reduces the number of people involved in small-scale agriculture and facilitates economic diversification. Employment and urbanisation significantly increase consumer spending. This has particular implications for consumer-facing industries, agriculture, resources and infrastructure.
- With the explosion of cellphone use and the related demand for the internet, there is a need for better connectivity and a need to harness technological opportunity.
- Africa has massive infrastructure deficit. At the same time, poor infrastructure and tough market conditions have forced innovative business models eg Mpesa (type of mobile money).
- Access to electricity is limited and electricity is a prerequisite for development. Renewable energy sources as increasingly important, with Sub-Saharan Africa well positioned to develop solar and hydro energy and to produce bio-fuels.
- Africa has great agricultural potential – more than one quarter of the world's arable land is in Africa. But poor regulation can have a negative impact, as does the lack of enabling conditions (eg transport and other infrastructure, stable business and economic conditions, trained business and scientific talent). Then, of course, there is the impact of climate change.
- Africa must do more to hold onto skilled workers. Future growth largely depends on how educated and skilled Africans view personal opportunities, and how domestic and foreign investors view return on investment. This is strongly influenced by government policies – more transparent regulatory and legal systems, greater openness in trade, higher investment in infrastructure etc.

Environmental challenges and drivers

The NDP is clear on the effect of climate change and the link between environmental threats and poverty. Human activity is warming the planet faster than the slow natural cycles of warming and cooling. Carbon and other greenhouse gas emissions have contributed significantly to this. The NDP sees the threat to the environment and the challenge of poverty alleviation as closely intertwined.

A low carbon future is positioned as the only realistic option. This presents potential for innovation around energy systems. The political challenge is to develop policies and regulatory initiatives for improved resource management, for substantial clean technology industries, and to assist with the transition.

The chief ecological challenge is climate change but other challenges are closely linked. These include water scarcity, pollution, food production and safety, and depleted fishing stocks. We exist in an integrated ecosystem where the interaction between components is not well understood.

Science and technology as drivers of development

“Developments in science and technology are fundamentally altering the way people live, connect, communicate, and transact, with profound effects on economic development. Science and technology are key to development, because technological and scientific revolutions underpin economic advances, improvements in health systems, education and infrastructure.” (NDP)

Science and technology are seen as key to improving the lives of poor people in developing countries. According to the NDP, these are the differentiators for developing economies to emerge as economic powerhouses (when insights are applied creatively). Technology is defined as ranging from telecommunications to biotechnology and nanotechnology. Science innovations that are mentioned include: proton cancer therapy, genetic engineering, nuclear batteries, and photovoltaics that make electricity from sunlight.

Technology is seen as a way to increase productivity and to unlock access to affordable health and education. ICT and internet access provide access to many things, such as knowledge and markets. It changes relationships between citizens and those in authority. At the same time, ICT and internet access depend on electricity and other power sources – no power, no access.

There is a need to manage the challenges around technological revolutions. For example, there is a risk of worsening inequality through early and extensive technology access by the rich.

To promote technological advances, developing countries need to invest in quality education for the youth, continuous skills training for workers and managers, and ensuring that knowledge is shared as widely as possible across society. There is a need to build knowledge capabilities and pathways (stocks and flows). “Knowledge is the systemically integrated information that allows a citizen, a worker, a manager, or a finance minister to act purposefully and intelligently in a complex and demanding world.” (NDP)

To encourage research and development (R&D), there is a need for investment, incentives, and resource allocation of resources. Successful countries have grown their ability to innovate and learn by doing through investing public funding to help finance R&D in critical areas. Examples include the integrated value chains, just-in-time manufacturing, and total quality management in Japan, and the space programme, defence, and aerospace in the USA.

Part 4 of the NSTF series on the NDP – Demographic trends

PLUS the NDP's 5th anniversary

Chapter 2 – Demographic trends

The National Development Plan (NDP) makes it clear that to achieve its objectives (reducing poverty and inequality), it's necessary to understand South Africa's population – past, present and future. Understanding demographic trends helps to meet needs and to expand capabilities. The information is used for a number of activities, such as informing policy interventions, programmes, and government spending on providing services and infrastructure.

The NDP considers various sets of demographic information, such as:

- Population age makeup
- Fertility rates and population growth
- The impact of disease eg HIV/AIDS
- Mortality (death) – from injury, infectious diseases (eg TB), lifestyle diseases (eg diabetes) etc
- Migration (population movement)

All of these impact on the rate of economic development, both positively and negatively.

The NDP says that policies should be viewed through a 'youth lens' ie it's about the rise of a largely youthful work-age population.

South Africa was supposed to have arrived at "the 'sweet spot' of demographic transition". This is where there is a proportionately high number of working-age people and proportionally low number of young and old. "This means that the dependency ratio – the percentage of those over 64 and under 15 relative to the working-age population" is at a level where there are enough working people to support those who don't work. The NDP does note further that unemployment and HIV/AIDS has produced many more dependents than the norm.

The country's blueprint posits that a well-managed working-age population can build a stronger economy, eliminate poverty and reduce inequality. "The challenge is putting this working-age population to work." In 2017, this challenge has not been overcome. See [SA unemployment rate rises to 14-year high](#).

"A 'youth' bulge has the potential to destabilise countries, especially where there is rampant unemployment." The NDP notes that if the unemployment trend is unresolved, it "poses the single greatest risk to social stability... this could translate into social disorder, widespread political unrest and increased crime".

NDP says we need economic policies that work positively with the demographics. "The degree to which the demographic dividend can be banked, and the risks avoided, depends on the policy choices and how effectively they are implemented."

The following areas are commonly identified as unlocking the demographic dividend potential:

- Better health, including food security
- Better healthcare
- Better education
- Meet demands for higher skill levels

- Easy labour market entry
- Labour mobility

Specific emphasis is given to providing sound education and skills training.

Current feedback on the NDP (September 2017)

The 12 September 2017 was the 5th anniversary of the NDP. This created further attention on South Africa's guiding plan. Following are some of the reports around this event:

- [Despite NDP ambitions, South Africa weighed down by corruption, State capture](#) (15 September 2017 – polity.org.za): "It has been five years since the adoption of the National Development Plan (NDP), with a second commission having been appointed to drive its implementation, aimed at guiding South Africa's economic and developmental future. However, the two goals most core to the NDP's ambitions – reducing inequality and eradicating poverty – have worsened since 2012."
- [NDP priorities must be aligned to budget](#) (13 September 2017 – sanews.gov.za): "The President said government was taking other concrete steps to implement the NDP. 'Through the implementation of Operation Phakisa, our Big Fast Results programme, we have developed very specific interventions in the oceans economy, health, education, mining and agriculture sectors.'"
- [NDP: Let's make it work](#) (13 September 2017 – sanews.gov.za): "The Department of Planning, Monitoring and Evaluation (DPME) has initiated the National Youth Development Ambassador Programme to mobilise young South Africans to be active role players in economic growth."
- [The Department of Planning, Monitoring and Evaluation \(DPME\) to Launch NDP School Competition](#) (22 September 2017 – African Newspaper): "The essay competition will be targeted at grade 12 learners with the essay topic; Define your ideal SA of 2030."
- [SA: Jeff Radebe: Address by Minister in the Presidency for PME, on the occasion of the NDP Annual Lecture; Z.K. Matthews Hall, Unisa, Pretoria](#) (15th September 2017 – polity.org.za): This goes into detail about what is being done currently, as well as progress to date.
- [National Development Plan: Five years on, are celebrations really in order?](#) (13 Sep 2017 – Daily Maverick): "Certain targets of the NDP currently seem hopelessly remote. By 2030, for instance, unemployment is supposed to be reduced to 6%. That would amount to an incredible turnaround in the 12 years available to achieve this, against the backdrop of sluggish economic growth. Was the NDP always wildly unrealistic – or has government simply failed to implement it in a meaningful way?"

Part 5 of the NSTF series on the NDP – National system of innovation and R&D critical for growing the economy

Chapter 3 – Economy and employment

"Rising employment, productivity and incomes are the surest long-term solution to reducing inequality." This includes actively broadening opportunity for people. The NDP says that this will be achieved by expanding the economy to absorb labour, expanding employment and entrepreneurial opportunities, and growing a more inclusive economy. The goal is to treble the size of the economy by 2030. At the same time, South Africa needs to be an integral part of regional growth ie SADC and across the continent.

Growing the economy involves interconnected systems

The aim is to reduce the unemployment rate to 6% by 2030. South Africa also needs to create about 11 million more jobs. Chapter 3 looks at how to accelerate economic growth and make the economy more labour absorbing. It is noted that the actions are largely consistent with the New Growth Path – “conditions for faster growth and employment through government investment, microeconomic reforms that lower the costs of business (and for households), competitive and equitable wage structures and the effective unblocking of constraints to investment”.

But this is a system where nodes impact on each other. It isn't only about creating jobs. To raise employment, South Africa needs better educational outcomes, a healthier population, lowered cost of living for the poor, better located and maintained infrastructure, a sound social safety net, a capable state, and much lower levels of corruption. Wherever there are challenges and constraints, these need to be addressed.

More research needed on SMMEs

The projection is that 90% of jobs “will be created in small and expanding firms”. According to the research behind the NDP, “Net new employment is not typically created on a significant scale in existing businesses.” There is a need to build research capacity “to address the paucity of data currently available on small, medium and micro enterprises and scale up public communication on available opportunities”. Skills gaps need to be addressed, including improving the system of identifying critical skills.

More development needed in rural areas

The aim is for economic participation in rural areas to grow to 40% due to “reformed land tenure, support to farmers, expanded social services, higher agricultural output, mining social investment and tourism”.

R&D needs to be aligned to competitive advantage and growth strategy

National systems of innovation and continuous learning need to permeate society and business. As is a substantial research and development (R&D) sector, with support into commercialisation. South Africa needs to both fund R&D and guide the type of research and development that the private and public sectors conduct. Research priorities should align with South Africa's competitive advantage and growth strategy. “A well-functioning research capacity is critical to sustaining growth and improving productivity.”

“South Africa's competitiveness will rely on national systems of innovation permeating the culture of business and society. Innovation and learning must become part of our culture. This will require interventions from the schooling system, through to shop-floor behaviour to R&D spending and commercialisation. Public policy should focus on R&D in existing areas of competitive advantage, where global markets are set to grow.”

The NDP outlines the first phase as from 2012 to 2017. The commitment includes “intensify R&D spending, emphasising opportunities linked to existing industries”.

The second phase is 2018-2023. It notes that this is when SA should be diversifying its economy base and laying the basis for more intensive improvements in productivity. “Innovation across state, business and social sectors should start to become pervasive. Centres of learning should be aligned to industrial clusters with potential for domestic and global linkages. Innovation should also focus on public service improvements and on goods and services aimed at low-income sectors.”

As the country approaches 2030, “the emphasis should be on consolidating the gains of the second phase, with greater emphasis on innovation, improved productivity, more intensive pursuit of a knowledge economy and better exploitation of comparative and competitive advantages in an integrated continent”.

Part 6 of the NSTF series on the NDP – Developing a strong network of economic infrastructure – transport, energy, water resources, and ICT

Chapter 4 – Economic infrastructure

The NDP notes that to “achieve sustainable and inclusive growth by 2030, South Africa needs to invest in a strong network of economic infrastructure”. This covers transport, energy, water resources, and information and communication technology (ICT). There needs to be large investments on urgent priorities, with greater use of public-private funding. (The latter should bring more rigorous assessment, accountability, and reporting.)

Energy sector

The NDP sees, by 2030, an integrated energy sector with adequate investment in infrastructure. This needs to provide expanded, quality energy services at competitive rates or with subsidies for needy households. It’s about having the security that economic activity, transport, and welfare are not disrupted. It also means that more than 90% of the population has access to electricity. The integrated energy sector should support economic growth through job creation and export.

In terms of energy mix and integrated energy planning, “coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources – especially wind, solar and imported hydroelectricity – will play a much larger role”. The NDP describes a more diverse energy market that holds investor opportunities for providing innovative and sustainable energy solutions within credible regulatory frameworks.

There is a continuous focus on environmental sustainability “through efforts to reduce pollution and mitigate the effects of climate change”. This means balancing supply security, affordability, economic growth, and climate change mitigation.

South Africa to develop integrated programmes to tackle energy poverty by building on research on household energy use. Solutions may exist in nuclear power but the NDP says this “needs a thorough investigation on the implications of nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel fabrication possibilities”.

Water resources and services

By 2030, the aim is to have effective and evolving water management and services. This must reflect an understanding of available water resources and effective water planning, cutting across economic sectors and spheres of government. It encompasses a reliable water supply to meet needs, including efficient agricultural water use. Natural water sources are to be protected.

South Africans will have affordable, reliable access to sufficient safe water and hygienic sanitation. The NDP says that service provision will vary depending on the needs of the local area and community.

Transport

Investments in the transport sector should bridge geographic distances affordably, reliably and safely so that South Africans can access previously-inaccessible economic opportunities, social spaces, and services. The transport sector also needs to support economic development by allowing for the transport of goods while minimising environmental harm. Transport needs to be seen as a system that improves efficiency and accessibility and, at the same time, reducing environmental, social, and economic costs.

ICT infrastructure

ICT, by 2030, will underpin the development of an information society and knowledge economy that is more inclusive and prosperous. ICT is a critical enabler of economic activity in an increasingly networked world. For a country to be globally competitive, it must have an effective ICT system. ICT infrastructure needs to be accessible to all, meeting the needs of citizens, business, and the public sector at a reasonable cost and quality.

There will be an ICT ecosystem of digital networks, services, applications, content, and devices.

This will:

- Connect public administration and the active citizen
- Promote economic growth, development and competitiveness
- Drive the creation of decent work
- Underpin nation building and strengthen social cohesion
- Support local, national and regional integration

This is based on human capacity development in digital skills (e-skills). These skills are needed to use the technology effectively and drive demand for services.

Part 7 of the NSTF series on the NDP – Transitioning SA to a low carbon economy that responds to climate change

Chapter 5 – Transition to a low carbon economy

This chapter starts with South Africa’s commitment to “reduce its emissions below a baseline of 34 percent by 2020 and 42 percent by 2025”. The NDP sees 2030 as a time when “South Africa has reduced its dependency on carbon, natural resources and energy”. We need to recognise that humans’ wellbeing relies on the wellbeing of the planet. However, this must be balanced with increasing employment and reducing inequality.

The NDP Commission undertook extensive stakeholder consultations to inform this chapter – because of a need for consensus on challenges and trade-offs. Some consensus had been reached while other points require ongoing discussion.

Government approach and policies

The “primary approach to adapting to climate change is to strengthen the nation’s resilience”. Resilience includes socioeconomic objectives such as decreasing poverty and inequality, increasing education levels, improving health care, creating employment, promoting skills development, and

having a strong economy with high energy, water, food and natural resource security and strong innovation.

Government adaptation policies include:

- Significant investment in new adaptive technologies and techniques in water, biodiversity, fisheries, forestry, and agriculture sectors
- Early warning systems for adverse weather, pest and disease occurrence
- Disaster relief preparedness
- Investment in natural ecosystems

The NDP sees South Africa’s carbon emissions as peaking around 2025 and then stabilising. This must be done without hindering the socioeconomic objectives. The regulatory environment will support stabilisation through, for example:

- Expanded renewable energy programme
- Advanced liquid and bio-fuels sector
- Promotion of green building and construction practices
- R&D resources being allocated to low-carbon technologies (not only for mitigation but for global opportunities)

Moving from the historical focus on minerals and energy

Transition is challenging because historically policies have focused on minerals and energy. South Africa has “abundant coal, minimal hydroelectricity and little production of natural gas”. We also have some of the world’s richest mineral deposits – with mining and processing needing substantial energy. Beyond this, there is also a shortage of skills and capacity. There is a “fundamental structural challenge in moving towards a lower carbon economy”. The main “challenge is de-linking economic activity from environmental degradation and carbon-intensive energy, while remaining competitive” and keeping to the socioeconomic objectives.

The NDP notes that “more detailed analysis is needed to determine the optimal mix of mitigation actions”. The poor and vulnerable must be protected from transitional costs, while considering the economic implications overall. Financing is seen to come from realigning existing budgets, domestic sources (eg carbon pricing), and international aid.

Planning needs to follow rigorous and transparent processes with meaningful stakeholder engagement and evidence-based decision making. While the responsibility for the transition is collective with full participation of all stakeholders, the state should facilitate and guide the process acting “in the interests of the nation”. The government must build capacity, improve governance, and restructure institutions. Institutional coordination is essential, in particular, aligning and coordinating government departments and their policies.

Local, regional and global planning

Transition and planning is local, regional and global. South Africa must commit to a domestically-established mitigation target – taking into account the country’s specific needs and development process. Cooperative regional development planning is also necessary as is global solidarity and international assistance. Monitoring and reporting should be done against national, regional and international goals.

Proposing a carbon tax

A carbon budget approach is proposed. “A carbon budget sets the amount of carbon that can be emitted in a given amount of time.” This would entail regular monitoring and reviewing of carbon

budget targets, with flexibility in certain energy- and carbon-intensive sectors. The suggestion is to “apportion carbon space to the sectors and initiatives that add the greatest value”.

The “international best practice has... established that adequately pricing GHG [greenhouse gas] emissions is one of the most effective ways to encourage polluters to change their behaviour.” The NDP supports a carbon tax approach. However, specific planning needs to be addressed around the uncompetitive and monopolistic electricity generation sector to see real effects. Further focus should be on sectors where the price may be insufficient to change behaviour.

“The transition to a low-carbon, resilient economy and society requires careful phasing of strategic planning, evidence gathering, and investment.”

See the NSTF Discussion Forum on [‘Evidence for Climate Change’ \(17 November 2017\)](#) relating to this topic.

Part 8 of the NSTF series on the NDP – Inclusive rural economy

The National Development Plan (NDP) says that since 1994, “the main challenge for rural development has been the need to combat marginalisation of the poor”. Marginalisation is caused, in part, by reduced access to resources – land, water, education, skills, infrastructure, and government services. There has been improvement since 1994, mainly due to social grants and greater rights. There has also been land redistribution and restitution. However, rural areas have greater poverty and inequality (than urban areas). Many households are trapped in a vicious cycle of poverty.

The aim is that by 2030, rural communities will have greater opportunities to participate in the economic, social and political spheres. This includes access to high-quality basic services allowing for health, nourishment, and an increase in skills. The NDP sees rural economies supported by agriculture and, where possible, mining, tourism, agro-processing, and fisheries. It sees better integration of the rural areas through successful land reform, job creation, and poverty alleviation.

The chapter focuses on developing rural economic opportunities. A differentiated rural development strategy is proposed. (See below.)

Agricultural development underpinned by successful land reform, creating employment (with the associated programmes and government support), and environmental safeguards. The NDP sees the creation of 1 million jobs in this sector. Suggested measures include:

- Irrigated agriculture and dry-land production to be expanded
- Converting under-used land for commercial production
- Supporting agricultural sectors and regions with the highest growth potential
- Developing strategies for new entrants to access product value chains, as well as access to domestic and foreign markets
- Security of tenure for black farmers – this also promotes investment
- Financial support for land reform beneficiaries
- Expanding commercial agriculture, driven by higher levels of productivity and foreign and domestic market demand. The NDP saw the greatest potential for expansion in small-

scale labour-intensive agriculture (such as macadamias, pecan nuts, rooibos tea, olives, figs, cherries, and berries).

- Need for government spending, especially on infrastructure and general farmer support services for small-scale farmers
- Improving the efficiency of irrigation
- Preferential procurement mechanisms for new entrants
- Improving and extending skills development training, including entrepreneurship training
- **Of particular importance to the SET community – increase and refocus investment in R&D for the agricultural sector**

“Growth in agricultural production in South Africa has always been fuelled by technology, and the returns on investment in agricultural research and development have always been high, partly because South Africa has specialised in adapting technology from all over the world for its circumstances. This should again become the focus of agricultural research of all scales of farming in research councils, universities and the private sector. The consequences of industrialised agriculture and the country’s unique ecosystems also demand that serious attention is paid to advances in ecological approaches to sustainable agriculture. This includes greater attention to alternative energy, soil quality, minimum tillage, and other forms of conservation farming.”

Quality basic services, particularly education, healthcare, and public transport. These need to exist first and then people can focus on looking for economic opportunities. Other basics include food security (the ability to access food not food availability) and ensuring rights (such as those of farm workers). Suggested measures include:

- Job creation and agricultural productivity is needed to address food security at household and individual level in rural areas
- Lessening the impact of retail food price increases on the poor
- Access to social grants
- Access to nutritional services for the most vulnerable, such as the elderly and chronically ill
- Effective nutrition education to assist with overcoming adult obesity – which leads to chronic diseases like diabetes
- Food fortification

Where there is economic potential, industries such as tourism, agro-processing, and fisheries should be developed. There should also be development of small business (SMMEs). Suggested measures include:

- Creating strategies to include small, new and black farmers in the agro-processing value chains.
- Agro-processing strategies to give poor producers greater collective market power (such as developing partnerships with larger commercial players)
- Because fishing resources are optimally harvested or over-exploited, conducting more research to find value.

Chapter 6 of the NDP includes a section on making land reform work. This is particularly relevant with the current land expropriation debate. The NDP sees land reform as necessary to “unlock the potential for a dynamic, growing and employment-creating agricultural sector”. It proposes principles and a model for this.