ISS INSTITUTE FOR SECURITY STUDIES

FREDERICK S. PARDEE CENTER FOR INTERNATIONAL FUTURES
EXPLORE UNDERSTAND SHAPE

Dormant potential

Strategies for advancing human development in Namibia

Zachary Donnenfeld and Courtney Crookes

Since gaining independence in 1990, Namibia has sustained rapid economic growth at an average of 4.5% a year, well above the average experienced by other upper-middle-income countries in Africa (2.8%) and nearly a percentage point higher than the continental average (3.7%). However, this economic growth has not been accompanied by proportional increases in service delivery. Namibia ranks at or near the bottom of its upper-middle-income peer group on a number of dimensions of human well-being, such as undernutrition, access to improved sanitation and average number of years of education. This report explores options for improving human development outcomes in Namibia to 2040 using the International Futures (IFs) forecasting system.

Recommendations

- Invest in health extension programmes that address communicable and non-communicable diseases.
- Improve the flow of students through the education pipeline.
- Increase access to family planning.
- Agriculture must become more efficient to provide benefits to other areas of development like health and education.
- Improve the quality of governance. Given the large young population and high levels of unemployment, the government must improve service delivery and stimulate inclusive growth.

After a bloody and protracted liberation struggle – and with significant influence from the international community – Namibia declared its independence on 21 March 1990.[1] Since then the country has averaged gross domestic product (GDP) growth of 4.5% a year, largely on the back of its extractive industries and budding tourism economy. The country's economy has grown about a percentage point faster than the average African country over the last 25 years and, despite a substantial downtick in 2016 (when its estimated yearly growth was 1.6%), the International Monetary Fund (IMF) expects Namibia's growth to average roughly 4.5% from 2017 to 2021.[2]

> Sound economic growth and relatively good governance have not translated into significant advances in other areas of human development

Namibia scores highly on various measures of governance and accountability – including Transparency International's Corruption Perception Index and the World Bank's Government Effectiveness measure – compared with other upper-middle-income countries.[3] The country also performs well on various measures of gender equality.[4]

Sound economic growth and relatively good governance have not, however, translated into significant advances in other areas of human development.[5] Among the 51 World Bank upper-middle-income countries, Namibia has the lowest percentage of its population with access to improved sanitation facilities, lowest percentage of its population with access to electricity and the highest proportion of people suffering from undernutrition.[6] Furthermore, of countries in that group only Samoa has fewer years of average education in its adult population (i.e. over the age of 15) and only St. Lucia has a higher proportion of its citizens living in extreme poverty (defined as individuals surviving on less than US$1.90 per day).

Namibia is also afflicted by two problems that are, in a sense, products of its geography and history. The first is the HIV/AIDS epidemic, which has had disastrous consequences for many African countries, but is particularly acute in the southern region. At the height of the crisis (circa 2004) the death rate in southern Africa was more than three times higher than the next most affected African region (East Africa and the Horn). It is difficult to overstate the severity of the HIV/AIDS crisis in southern Africa, and the region is still recovering from its devastating impact, although Namibia did respond well to the crisis.[7]

The second factor that – while not unique to Southern Africa – is certainly more pronounced in this region than elsewhere on the globe, is inequality. Inequality in the region is a complex phenomenon rooted in the social and political legacies of colonialism, apartheid and the path dependency of a resource-intensive industrial complex that has steered development in these countries. As a result, Botswana, Namibia and South Africa all

consistently rank at the top of the Gini coefficient, a widely used measure of inequality.[8] According to the Gini coefficient, five of the 10 most unequal countries in the world are in southern Africa.[9]

Although this report will return to the issues of HIV/AIDS and inequality, its primary purpose is to identify other areas where Namibia could improve development outcomes within the context of those two overarching issues.

So, how can the government of Namibia translate strong economic growth into improved human well-being in the face of the HIV/AIDS crisis and the country's deep-rooted structural inequality? This report uses the International Futures (IFs) forecasting system, hosted and developed by the Frederick S Pardee Center for International Futures at the Josef Korbel School of International Studies at the University of Denver, to review key development trends up to 2040.[10]

This analysis is benchmarked against the Current Path forecast within IFs. The Current Path is a dynamic forecast, within and across key development systems. Although the Current Path generally demonstrates continuity with historical patterns, it generates a wide range of non-linear, dynamic and endogenous forecasts, rather than simple extrapolations of historical trends. Given that the Current Path is built from initial conditions of historical variables and is calibrated against other forecasts, it is a good starting point to conduct scenario analysis. For this project, a number of alterations were made to the Current Path forecast to provide a more realistic representation of Namibia's likely development trajectory. For a more detailed explanation of the adjustments made to the Current Path, see Appendix A.

Human development in Namibia

Namibia generally ranks favourably on many indicators compared with other African countries. But, there are other key areas of human well-being where the country underperforms relative to its level of economic development.[11] This section of the report explores Namibia's likely development trajectory (i.e. the Current Path forecast) across a number of development systems, including demographics, education, health, infrastructure, energy, agriculture and governance. It identifies specific indicators that the government of Namibia could focus on to improve human well-being and facilitate more inclusive economic growth.

The report concludes by exploring alternative scenarios and measuring those different interventions against one another. It also compares some of the interventions against targets set out in Namibia's most recent National Development Plan (NDP 5).[12]

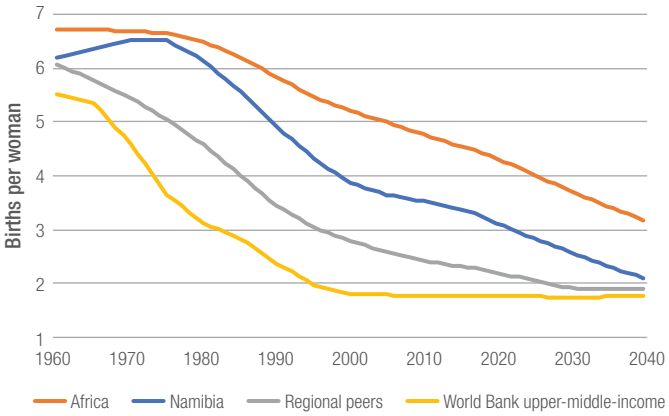
Demographics

Namibia is a geographically large, sparsely populated country (the population was about 2.5 million in 2016), but it nonetheless faces two separate, but related, challenges with respect to demographics: relatively high fertility rates and a youthful population.[13] Although fertility rates have come down considerably from a peak in the mid-1970s – and are currently below the African average – they are still significantly higher than in regional peer countries South Africa and Botswana, as well as other World Bank upper-middle-income countries.[14] At 3.3 births per woman in 2016, fertility rates in Namibia were nearly 45% higher than in these regional peers and more than 80% higher than those of other upper-middle-income countries (see Figure 1).

International Futures

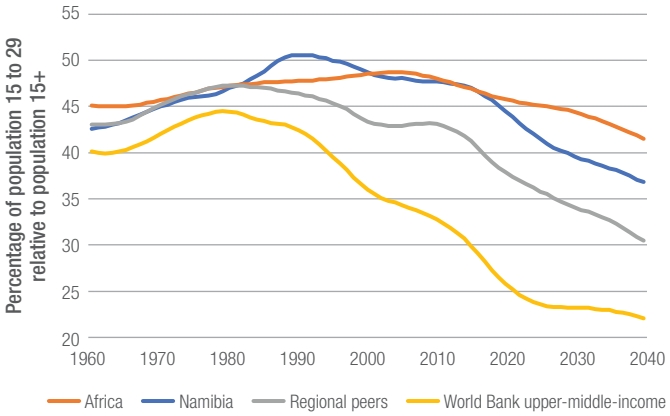
IFs is a long-term integrated modelling system that leverages historical data (over 3 600 series) to identify trends and forecast hundreds of variables for 186 countries from 2014 to 2100. There are three main avenues for analysis in IFs: historical data analysis (how systems have developed thus far), Current Path analysis (where systems seem to be heading given current policies and environmental conditions) and alternative scenario development (exploring 'if, then' statements about the future). IFs provides forward-looking, policy-relevant analysis that frames uncertainty around the future of countries (or groups of countries) and across development systems. It also helps users to think systematically about potential futures, as well as development goals and targets.

Figure 1: Total fertility rates in Namibia, Africa, regional peers and other World Bank upper-middle-income countries along the Current Path (1960–2040)



Source: IFs v. 7.28 initialised from UN Population Division (UNPD) data

Figure 2: Youth bulge in Namibia, regional peers and World Bank upper-middle-income countries on the Current Path (1960–2040)



Source: IFs v. 7.28 initialised from UNPD data

Fertility rates are expected to decline along the Current Path forecast, from 3.3 births per woman today to reach replacement rate (i.e. 2.1 births per woman) around 2040. However, Namibia will only reach replacement levels of fertility about 16 years after its regional peers and nearly 50 years after other upper-middle-income countries. High fertility rates drive more rapid population growth (other things being equal), which will complicate government efforts to accelerate service delivery going forward. A larger population means that the government must provide a variety of services (e.g. health, education, basic infrastructure) to a larger number of people. Moreover, high fertility rates in Namibia are also a contributing factor to the large and persistent youth bulge the country is currently experiencing (see Figure 2). The youth bulge refers to the percentage of the population between 15 and 29, relative to the size of the population over the age of 15.

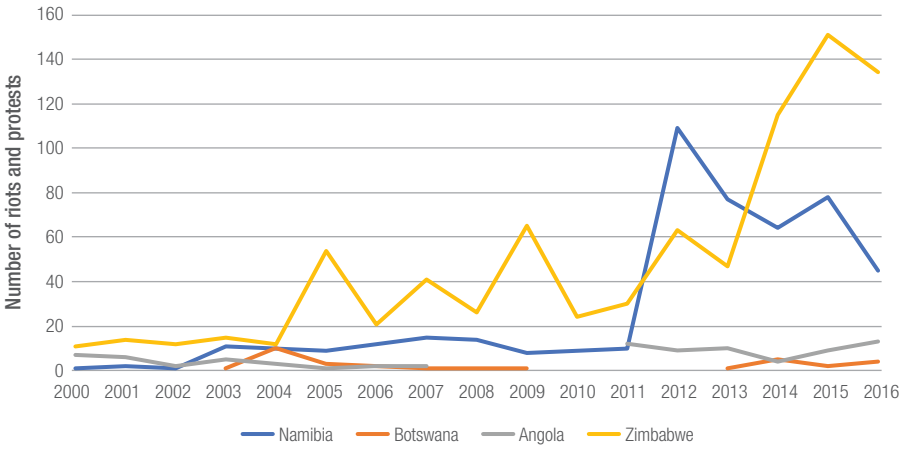
A young, rapidly growing population, presents both opportunities and challenges for Namibia. On the one hand, a large number of young, potentially productive people can be a boon to the economy – provided they have adequate access to the health and education services needed to prepare them to contribute to a dynamic 21st-century economy. On the other hand, a large number of young people (particularly males), coupled with high levels of unemployment and poor service delivery, can be a catalyst for instability.[15] Research indicates that countries with a youth bulge higher than 40% are more than twice as likely to experience conflict as other states.[16] Currently, Namibia's youth bulge is roughly the same as the African average and will not drop below 40% until after 2030 in the Current Path forecast.

> Research indicates that countries with a youth bulge higher than 40% are more than twice as likely to experience conflict

Although the country does not have a recent history of large-scale political violence, and does not have an active conflict according to the Uppsala Conflict Data Program, Namibia does have a small refugee population with separatist claims from the Zambezi (formerly Caprivi) region living in Botswana.[17] After a long period of peace and stability following independence, Namibia has also experienced a recent uptick in riots and protests. Figure 3 shows the number of reported riots and protests in selected southern African countries, as recorded by the Armed Conflict Location Event Data (ACLED) project. According to ACLED, there was a spike in reported riot and protest activity in Namibia in 2012, followed by a period of high levels of protest activity compared to the period before 2012.[18]

While Namibia's population growth is not as daunting as that of many other African countries, it is still considerable. The country's population is growing twice as rapidly as other upper-middle-income countries, and nearly 50% faster than its regional peers. One consequence of this population growth is that Namibia is forecast to see an

Figure 3: Reported riots and protests in selected southern African countries (2000–2016)



Source: ACLED All Africa data 2016

increase of more than 225 000 people living in extreme poverty by 2040 along the Current Path. The overall population is forecast to grow by nearly 50% by 2040, adding nearly 1.2 million people to a country already facing significant challenges with respect to service delivery in areas like health and education.

To consider the impact of reduced fertility rates on Namibia's future, the following intervention was created and will be introduced with the sectoral scenarios.

Intervention	Description and benchmark
Improved Family Planning	Decreases total fertility rates in Namibia from 3.3 births per woman in 2017 to 2.7 in 2022. Between 2005 and 2010, Nepal reduced fertility rates from 2.9 to 2.4.

Education

If Namibia hopes to achieve the 'high performance, competitive and productive economy' aspired to in NDP 5, then education outcomes will have to improve across the board.[19] While the average years of education in the adult population (over 15 years of age) in Namibia (about 6.6 years) is slightly higher than the average African country (about 5.7 years), it still lags well behind the average for other upper-middle-income African countries (about 8.4 years), and other upper-middle-income countries globally (8.8 years).

Along the Current Path, Namibia is forecast to close this gap slightly by 2040, but is still likely to have, on average, one fewer year of education per adult (aged 15+) than the typical upper-middle-income African country.

Furthermore, Namibia's education system performs below what would be expected based on its level of economic development, as shown in Figure 4 below. Figure 4 shows a scatterplot of average years of education relative to GDP per capita for all African countries, and shows that the average number of years of education in people over 15 in Namibia is about one-year lower than in other countries at similar levels of economic development.

THE INTERNATIONAL MONETARY FUND EXPECTS NAMIBIA'S GROWTH TO AVERAGE ROUGHLY

4.5%

FROM 2017 TO 2021

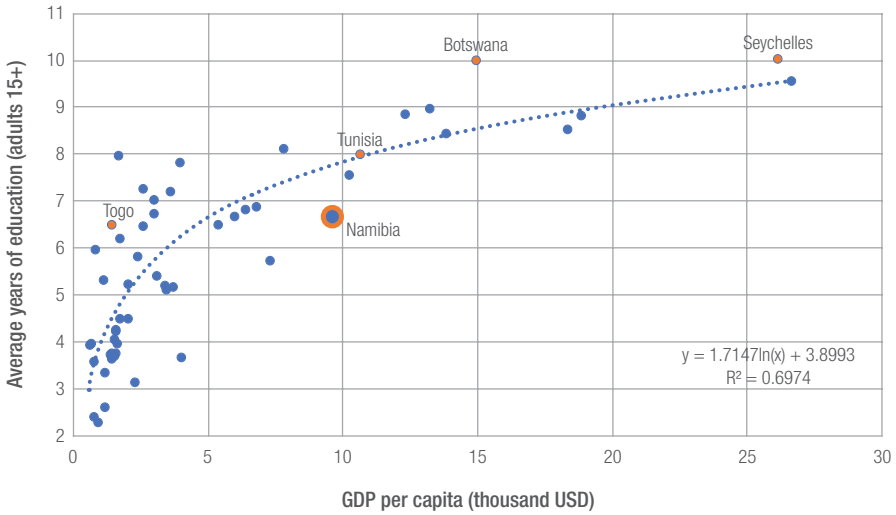
For instance, Namibia (6.6 years) and Togo (6.3 years) have similar average levels of education in the adult population (aged 15+), despite Namibia's GDP per capita being nearly 6 times as large.

Table 1: Average years of education in Africa, Namibia and upper-middle-income African countries (2016–2040)

	Africa	Namibia	Upper-middle-income Africa	World Bank upper-middle-income
2016	5.8	6.6	8.4	8.9
2020	6.0	7.1	8.7	9.2
2030	6.7	8.1	9.3	9.9
2040	7.4	9.0	10.0	10.6

Source: IFs v. 7.28 initialised from UNESCO Institute for Statistics data

Figure 4: Average years of education in the adult population over the age of 15, relative to GDP per capita for all African countries (2016)



Source: IFs v. 7.28 initialised from UNESCO Institute for Statistics data

NAMIBIA IS FORECAST TO SEE AN INCREASE OF

more than

225 000

PEOPLE LIVING IN EXTREME POVERTY BY

2040

Average years of education is a general measure of the total stock of education of the population and helps contextualise the potential productivity of the adult workforce. But, increasing overall educational attainment is a multi-generational endeavour and requires a careful analysis of which specific bottlenecks along the education pipeline are currently inhibiting progress. Table 2 shows gross enrolment and completion rates for primary (grades 1 to 7), lower secondary (grades 8 to 10), upper secondary (grades 11 and 12) and tertiary levels of education in Namibia, relative to Africa, the world and upper-middle-income African countries.[20]

Namibia has one glaring bottleneck in its education system: the poor transition from lower secondary to upper secondary school. However, because the education pipeline is slightly constrained at earlier points (i.e. primary and lower secondary), facilitating higher levels of upper secondary enrolment will require moving more children through earlier stages of the education pipeline. Put simply, to increase upper secondary enrolment

Table 2: Education flows in Namibia, Africa, the World and upper-middle-income African countries (2016)[21]

	Primary		Lower secondary		Upper secondary		Tertiary	
	Gross enrolment	Completion	Gross enrolment	Completion	Gross enrolment	Completion	Gross enrolment	Completion
Namibia	111.4	92.8	92.8	74.1	37.3	45.9	9.4	7
Africa	102.4	77.6	62.9	45.6	40.6	33.9	12.3	7.9
World	105.3	97.7	90.5	79.3	74	60.4	37.6	24
Upper-middle-income Africa	105.4	105.2	102	69.4	87.7	71.9	45.1	25.9

Source: IFs v. 7.28 initialised from UNESCO Institute for Statistics data

Namibia must invest in primary and lower secondary education as well.[22] Additionally, investing in early childhood development programmes will help equip future students with the tools they need to succeed at higher levels of the educational system.[23]

To explore the impact of improvements along the education pipeline, the following interventions were created, and when combined, form the Advancing Education scenario.

Intervention	Description and benchmark
Primary School Survival	Increases the number of enrolled primary school students who make it to the last grade of primary school from 91% in 2017 to 98% in 2022. Morocco increased primary survival rates from 78% to 92% between 2008 and 2012.
Lower Secondary Graduation	Increases the number of enrolled students in lower secondary school who graduate from 74% to 86% in 2022. A similar increase was achieved in Colombia between 2006 (75%) and 2010 (86%).
Upper Secondary Enrolment	Increases the number of lower secondary graduates who enrol in upper secondary school from 41% in 2017 to 59% in 2025. Botswana increased upper secondary graduation rates from 48% in 1999 to 65% 2007.

Health

Like much of the rest of Africa, Namibia is afflicted by a disproportionate burden of communicable disease across all age categories.[24] Where the gap between Namibia and other upper-middle-income countries (in the 30 to 44 age cohort) is widest, death rates from communicable diseases are more than 10 times higher in Namibia. Moreover, children under five are more than twice as likely to succumb to a communicable disease in Namibia than in other countries in the World Bank upper-middle-income group.

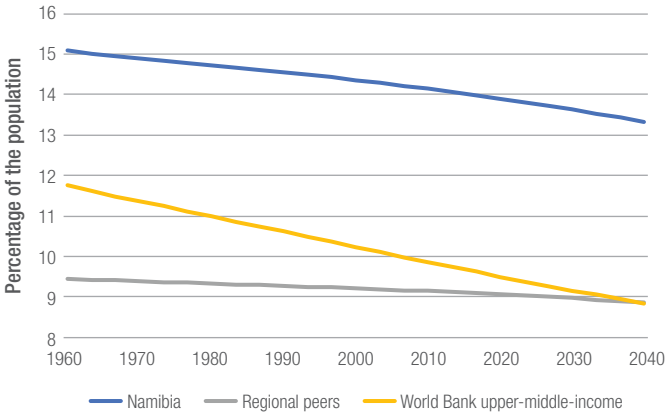
High levels of communicable disease are driven, in part, by other development priorities, like low levels of access to clean water and improved sanitation. Poor access to sanitation facilities is a core driver of communicable diseases, which, in turn, contribute to Namibia's relatively high level of childhood undernutrition.[25] Children who are afflicted by communicable diseases are prevented from retaining the nutrients in food, irrespective of the ability to access calories. Unfortunately, high levels of undernutrition can also increase an individual's susceptibility to communicable disease, creating a vicious cycle around low levels of access to basic infrastructure, high prevalence of communicable diseases, undernutrition and general underdevelopment, particularly among children.[26]

> Namibia is afflicted by a disproportionate burden of communicable disease across all age categories

At more than 12% in 2016, the rate of childhood undernutrition in Namibia is more than three times higher than the average for other upper-middle-income countries, and about 50% higher than its regional peers.[27] High levels of childhood undernutrition can also result in a high prevalence of stunting, a condition that has a significant impact on individuals and societies.

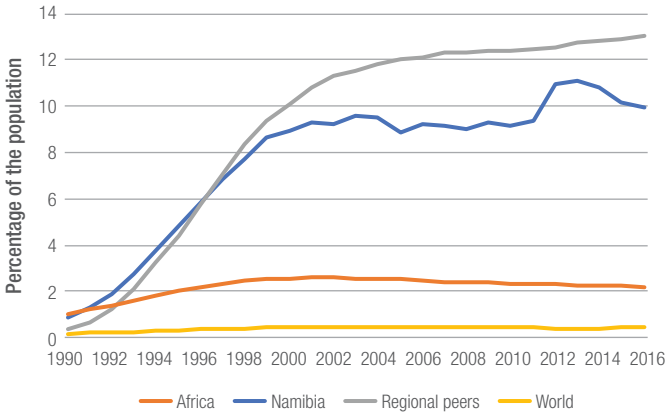
Along with physiological symptoms (including increased risk of contracting a communicable disease), stunted individuals often also suffer from impared cognitive ability, which can limit their potential to succeed in school and contribute to the workforce.[28] More than one in seven Namibians suffer from stunting, which is about 60% higher than in other upper-middle-income countries, and more than 25% higher than in regional peers. That gap is forecast to remain fairly constant over the forecast horizon, as shown in Figure 5.

Figure 5: Levels of stunting in Namibia, regional peers and other World Bank upper-middle-income countries (2016–2040)



Source: IFs v. 7.28 initialised from World Health Organization (WHO) data

Figure 6: Prevalence of HIV/AIDS (as a percentage of the total population) in Namibia, regional peers, Africa and the world (1990–2016)



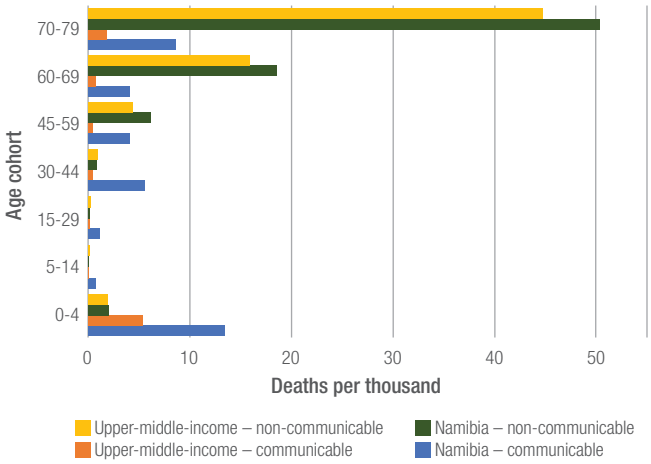
Source: UNPD

Another critical priority for the government of Namibia will be to continue the steep reduction in deaths from HIV/AIDS. According to the US Centers for Disease Prevention and Control, HIV/AIDS was the leading cause of death in Namibia in 2013. Furthermore, in that year Namibian's were almost three times as likely to die from HIV/AIDS (23% of all deaths) than from cancer, the next leading cause of mortality (accounting for 8% of all deaths).[29]

At the height of the pandemic, the death rate from HIV/AIDS in southern Africa was nearly 20 times higher than the global average. While deaths from HIV/AIDS in southern Africa have fallen significantly from a peak around 2004, prevalence of the disease in the region remains high, as shown in Figure 6. Recent breakthroughs in antiretroviral treatments (ARTs) have done much to reduce the death rate from HIV/AIDS over the last decade, but the declining death rate has the counter-intuitive effect of increasing the overall prevalence rate – by enabling people with the disease to live longer, healthier, lives, even as incidence is declining. Continued use and improvement of ARTs are likely to keep prevalence rates in the region high for the foreseeable future and forestall a significant reduction in the prevalence of HIV/AIDS in the region.

Although the high rates of communicable diseases in Namibia are a pressing concern, the country also suffers from higher death rates from non-communicable diseases after the age of 44, relative to its global peer group. Figure 7 shows death rates by communicable and non-communicable disease sub-types – according to the International Classification of Disease (ICD) categories – for Namibia and other upper-middle-income countries globally in 2016. This high prevalence of both communicable and non-communicable diseases is referred to as the double burden of disease.

Figure 7: Death rates by major ICD categories for Namibia and other upper-middle-income countries globally (2016)[30]



Source: IFs v. 7.28 initialised from WHO data

This double burden is very difficult to manage for developing countries, primarily because the strategies and policies needed to effectively address the different disease types are dramatically different.[31] Communicable diseases are characterised by three underlying factors: they are generally preventable (often at low

cost), they disproportionately affect vulnerable groups (particularly young people) and they present a high risk of infection to others.[32] Alternatively, non-communicable diseases tend to predominate at later stages in the epidemiological transition and are relatively more difficult to treat, diagnose and manage, largely because they often have multiple causes.[33]

Successfully addressing communicable and non-communicable diseases simultaneously requires employing a 'horizontal' approach to designing health systems. In contrast to 'vertical' approaches, which typically aim to eradicate a specific type of disease, horizontal systems stress a more holistic approach to health policy – one that emphasises prevention and healthy living, as well as treatment. However, a holistic approach to public health that aims to reduce undernutrition and stunting will also involve investing in improved sanitation facilities (to reduce transmission of communicable diseases), along with improving access to quality sources of nutrition (to reduce undernourishment).[34]

To consider the effect of policies to improve outcomes in the health sector, the following interventions were created that, when combined, form the Health Extension scenario.

Intervention	Description and benchmark
HIV/AIDS	Reduces AIDS death rate by 25% between 2017 and 2022. Namibia achieved a 43% reduction in AIDS death rates between 2006 and 2011.
Child and Maternal Mortality	Reduces deaths from communicable diseases in females aged 15 to 44 and children under five by 15% between 2017 and 2022. This intervention reduces the infant mortality rate from 30 deaths per 1 000 live births in 2017 to 23 in 2022. Morocco reduced infant mortality from 29 deaths per 1 000 live births in 2010 to 24 in 2015.

Agriculture

Namibia suffers from some of the lowest average agricultural yields and lowest levels of caloric availability of the worlds upper-middle-income countries. The inability to access calories is of particular concern given that Namibia ranks poorly even when compared to other African countries, as shown in Figure 8.

> Namibia suffers from some of the lowest average agricultural yields and lowest levels of caloric availability of the worlds upper-middle-income countries

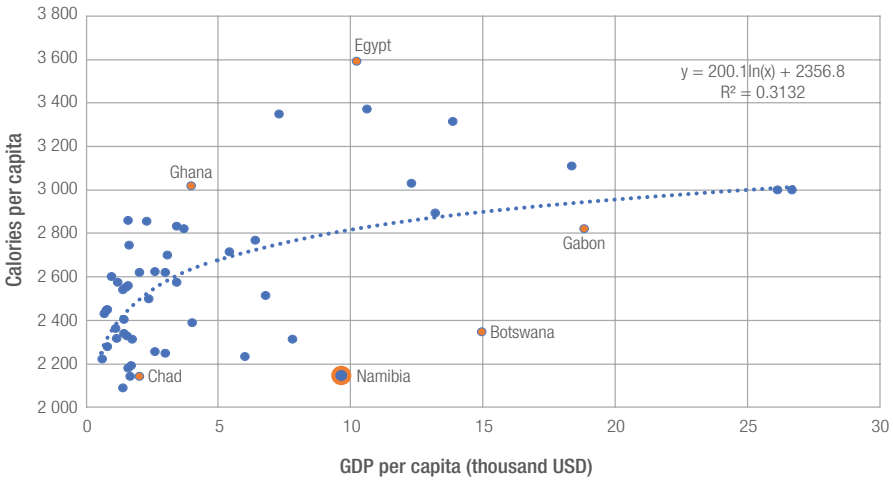
Improving access to calories will help address the high levels of childhood undernutrition seen in the country, currently the fifth highest among upper-middle-income countries and nearly triple the average rate for the group. Figure 8 shows a scatterplot of calories per capita relative to GDP per capita in African countries in 2016. While Namibia has a GDP per capita that is nearly five times higher than Chad's, people in Chad have about the same level of access to calories as people in Namibia.

AT MORE THAN

12%

IN 2016, THE RATE OF CHILDHOOD UNDERNUTRITION IN NAMIBIA IS MORE THAN THREE TIMES HIGHER THAN THE AVERAGE FOR OTHER UPPER-MIDDLE-INCOME COUNTRIES

Figure 8: Calories per capita relative to GDP per capita in African countries (2016)



Source: IFs v. 7.28 initialised from Food and Agriculture Organization (FAO) and World Bank data

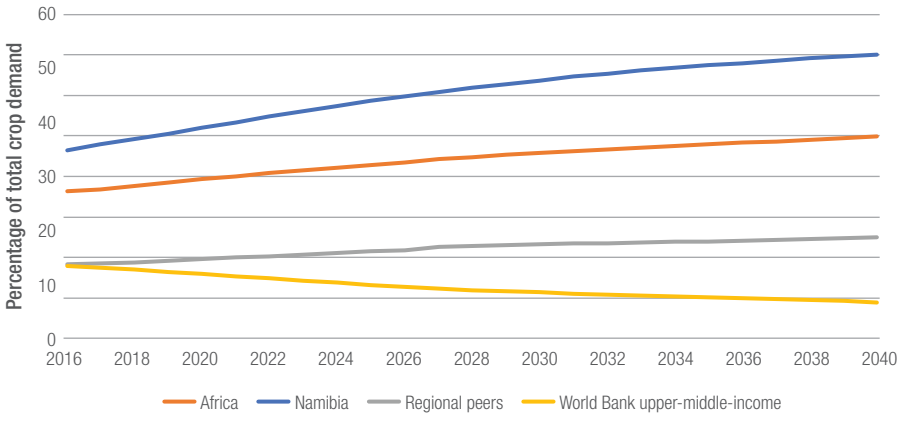
Namibia relies quite heavily on imported crops to meet its domestic food demand, and this dependence on imports is expected to increase throughout the forecast horizon, as shown in Figure 9. A prolonged dependence on imported crops could place Namibia in a state of food insecurity.[35] Namibia's reliance on imported crops is expected to nearly double between now and 2040, and the country is forecast to become significantly more dependent on imported crops than either its regional peer group or other upper-middle-income countries globally.

Namibia's heavy reliance on imported food is, in part, a function of low agricultural yields in the country.[36] Being one of the driest countries on earth, where the limited availability of arable soil significantly constrains the agricultural sector, no doubt contributes to Namibia's low agricultural productivity. As a consequence of Namibia's geography, converting marginal land to agriculturally productive land will require immense investment. Therefore, increasing agricultural yields from already cultivated land,

NAMIBIA'S RELIANCE ON IMPORTED CROPS IS EXPECTED TO NEARLY DOUBLE BETWEEN NOW AND

2040

Figure 9: Crop import dependence in Namibia, regional peer countries and other World Bank upper-middle-income countries (2016–2040)



Source: IFs v. 7.28 initialised from FAO data

while still expensive, is likely to improve food security in the country more substantially than placing additional land under cultivation. Investing in local agricultural production will improve the livelihoods of people working in the sector, while also increasing food security by reducing dependence on imported food.

A heavy reliance on imported food makes the country more vulnerable to international price shocks and the impacts of climate change, which are expected to adversely affect agricultural production in the region.[37] Increased food insecurity could be disastrous in a country with one of the lowest levels of available calories per capita and where more than 35% of the total population are already undernourished.

The following interventions were created to explore the impact of various improvements in agriculture and, when combined, form the Agricultural Resilience scenario.

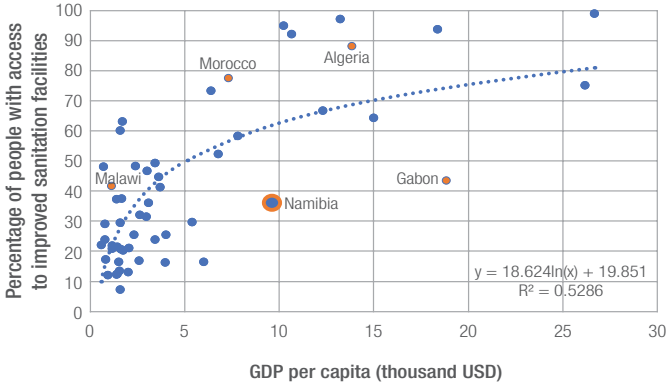
Intervention	Description and benchmark
Boosting Yields	Increases average agricultural yields from 1.25 million metric tonnes (MMT) per hectare to 1.62 MMT per hectare, between 2017 and 2022. Angola increased yields from 4 MMT to 5.7 MMT per hectare from 2005 to 2010.
Access to Calories	Increases the average calories per capita from 1 807 in 2017 to 2 155 in 2022, an increase of 348 calories per person. Between 2005 and 2010, Angola increased available calories per person by 316.
Reduced Loss	Reduces (post-harvest, pre-consumption) transformation losses by 10% between 2017 and 2022.[38]

Infrastructure

Since Namibia's independence, government spending has not sufficiently prioritised service delivery, including the provision of essential infrastructure. The government has thus far been unable to keep levels of access to basic infrastructure in line with economic growth, which has resulted in a relatively low proportion of the population with access to key services, in particular improved sanitation facilities (about 37%) and electricity (about 50%).[39]

Access to improved sanitation facilities in Namibia is remarkably low in comparison to other upper-middle-income countries globally (last of 51 countries), and even other African counties (26th of 54 countries). Figure 10 shows levels of access to improved sanitation relative to GDP per capita in all African countries in 2016. Although

Figure 10: Percentage of the population with access to improved sanitation facilities relative to GDP per capita for all African countries (2016)



Source: IFs v. 7.28 initialised from WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, and World Bank data

Namibia's GDP per capita is more than eight times greater than Malawi's, access to improved sanitation facilities is actually about 6 percentage points higher in Malawi than in Namibia.

Moreover, the trend of diverging economic growth and service delivery is forecast to continue on the Current Path. While Namibia's GDP per capita is forecast to rise from 11th highest in Africa to 9th highest by 2040, levels of access to improved sanitation facilities are expected to decline relative to other African countries, from 26th at the time of writing to 30th in 2040, along the Current Path.

> Access to improved sanitation facilities in Namibia is remarkably low in comparison to other upper-middle-income countries

Low levels of access to improved sanitation in Namibia undoubtedly contribute to the country's relatively high communicable disease burden and high levels of childhood undernutrition (see the health section above). With roughly two-thirds of the population lacking access to improved sanitation, and about 72% practising open defecation, the need for change is evident.[40] The most recent NDP has acknowledged as much and aims to increase access to improved sanitation by about 20 percentage points between 2017 and 2022.[41]

The NDP 5 strategy is based on increasing awareness of the importance of imporoved sanitation and encouraging local communities to build their own sanitation facilities,

while improving stakeholder coordination throughout the process.[42] This type of policy, known as community-led total sanitation, has been successful elsewhere – notably in Ethiopia – and with adequate funding and support from the government and international partners, the NDP 5 target may be within reach.[43] That said, a 20 percentage point increase would be on the high end of what has been achieved by other developing countries.[44] Furthermore, prior experience with setting sanitation access targets may lead more sober observers to believe that target is overly aspirational.

The Namibian Sanitation Strategy for the period 2010/11 to 2014/15 expressed similar ambitions.[45] That strategy cited a need for 52 500 urban units and 97 500 rural units at the beginning of that planning period, but most of these were not built because of failure to implement the strategy.[46]

Similar questions about planning and implementation surround the future of the country's electricity grid, which lacks a clear plan and remains heavily dependent on imports. Namibia currently imports a significant portion of its energy needs – between 40% and 80% depending on the time of year.[47]

Nationally, access to electricity is about 50%, but that figure is skewed toward urban areas. In rural areas roughly 75% of households lack access to electricity; in urban areas that figure is 24%. Among other upper-middle-income countries globally, no country has a larger proportion of its population without access to electricity than Namibia.

Lack of electricity is a potential barrier to poverty alleviation in Namibia and expanding access to electricity could mitigate the inequality experienced in the country, particularly in rural communities. NDP 5 aims to increase access to electricity in rural areas under the assumption that this will trigger economic activities in these areas.[48]

A potential barrier to increasing electricity access is that the large distances between towns in Namibia drive up the per capita cost of installation and (other things being equal) increase transmission losses. However, those same factors (i.e. low population density, large land area) could be used to argue in favour of a decentralised system using renewable technology like wind, biomass and solar.[49]

The following interventions were created to explore the impact of various improvements in infrastructure and, when combined, form the Infrastructure Push scenario.

NATIONALLY, ACCESS TO ELECTRICITY IS ABOUT

50%

BUT THAT FIGURE IS SKEWED TOWARD URBAN AREAS

Intervention	Description and benchmark
Improved Sanitation	Increases access to improved sanitation facilities from 37% in 2017 to 48% in 2022. Between 2003 and 2008, Laos increased access from 37% to 53%.
Rural Electrification	Increases rural electricity access from 24% in 2017 to 37% in 2022. Between 2010 and 2015, Laos increased rural electricity access from 52% to 65%.
Clean Water	Increases the percentage of the population with access to clean water from 91% in 2017 to 93% in 2022. Gabon achieved a similar increase between 2010 and 2014, increasing access from 91% to 93%.

Energy and electricity production

Because Namibia is so reliant on imported electricity and has an abundance of natural gas, the country's energy and electricity futures are intimately linked. The Kudu gas field (which lies off the country's southern coast) contains about 37 billion cubic meters of proved natural gas reserves and is a long-anticipated project.[50] Namibia's proved gas reserves are just outside the top-ten for African countries, and represent a potential financial windfall for the country.[51] Despite being pursued by a string of multinationals since its discovery in 1974, the Kudu field has not been developed owing to a combination of very difficult drilling conditions, failure to conclude a power-offtake agreement, and absence of transparency around ownership and management of the field.[52]

Namibia imported over 40% of its electricity in 2015. The NDP 5 has targeted increased production as a potential way to reduce dependence on imports.[53] In 2015 Namibia's total generation capacity was about 420 MW, while peak demand was estimated at 656 MW.[54] In other words, domestic capacity is insufficient to meet domestic demand and therefore requires supplementation through imports.

> Solar and wind farms are widely recognised as potential sources of electricity production for Namibia

For domestic generation, the country depends on the ageing and increasingly costly coal-fired Van Eck Power Station, along with two emergency diesel generators, Paratus and Anixas.[55] Because these facilities rely on imported fossil fuels, they are subject to international price shocks and could represent a threat to grid stability in the future.

In March 2017 the national energy utility, NamPower, signed a five-year power purchase agreement with South Africa's Eskom for the equivalent of 200 MW to ensure the lights stay on while the country continues searching for other energy and electricity options.[56]

To meet the estimated peak energy demand of 755 MW in 2022 foreseen in NDP 5, Namibia needs to increase its generation capacity by around 50% from its 2015 level over the next five years. This target will be met by promoting independent power producers and through a series of stop-gap measures, like the recent power purchase agreement with Eskom. Namibia is also considering one large-scale hydropower investment (the Baynes facility on the border with Angola), but it is unclear when that project will be taken forward. Increasing the number of independent power producers is meant to move the market structure away from a single buyer model (i.e. NamPower) towards a multiple-buyer, multiple-producer model where increased competition will result in more affordable electricity.[57]

Solar and wind farms are widely recognised as potential sources of electricity production for Namibia and many are currently under construction.[58] Ultimately, the Renewable Energy Feed-in Tariff (REFIT) could generate

NAMIBIA NEEDS TO INCREASE ITS GENERATION CAPACITY BY MORE THAN

50%

FROM ITS 2015 LEVEL OVER THE NEXT FIVE YEARS

the equivalent of approximately 70 MW of power per year by 2018.[59] Renewable sources could provide off-grid electrification to rural areas while simultaneously reducing pressure on the national grid. Although renewable energy is just one element in Namibia's energy solution, it could well play a bigger part, particularly if demand side interventions, like solar water heaters or renewable irrigation technologies, were incentivised.[60]

Unfortunately, large power projects in Namibia are clouded by uncertainty, in part due to their long realisation periods and frequent delays. The country has regularly discussed other large energy projects, for example Kudu and the Xaris power facility, but these seem unlikely to be implemented and have been surrounded by controversy. The Xaris plant, in particular, is under scrutiny for its high costs and political ties.[61]

Hydropower has also proven to be an important historical source of energy production for Namibia. The Ruacana Power Station, on the border with Angola, has been producing power since 1978. Although production from Ruacana is stable during the wet season, it does not have a sufficient reservoir to ensure year-round production. Namibia is nearing an agreement with Angola over the construction of a second hydro facility, the Baynes Power Station, which it aims to complete around 2020, and to be fully operational by 2023.[62]

If Baynes eventually comes online, it will add the equivalent of 340 MW to Namibia's baseload capacity and would signify an important step towards grid security.[63] Baynes will be constructed with a reservoir to ensure continued electricity generation during the dry season. The project will also connect the power grids of Angola and Namibia, thereby linking Angola to the Southern Africa Power Pool, representing an important move towards greater regional integration.[64]

Given its resource endowment and vast land area, moving away from traditional fossil fuels toward a decentralised energy grid based on hydro and other renewables may be a more efficient future route for Namibia than its current, largely ad hoc, approach.

MOST RECENT FIGURES FROM THE NAMIBIAN STATISTICS AGENCY INDICATE THAT UNEMPLOYMENT IN 2016 WAS ROUGHLY

34%

UP FROM

28%

IN 2014

Governance and inequality

Namibia generally scores high on various measures of governance compared to its African peers and other upper-middle-income countries. For instance, the country was ranked 18th out of 51 upper-middle-income countries on the World Bank's Government Effectiveness measure in 2014 (the most recent year for which data is available). However, this relatively positive ranking masks a deeper trend in governance in Namibia: its position has been declining over time against other upper-middle-income countries.

While Namibia ranked 18th on the World Bank's Government Effectiveness measure in 2014, in 1996, the country was considered the fifth most effective government among the World Bank's upper-middle-income country group. Along with a drop of thirteen places in the Government Effectiveness measure, Namibia has also declined twelve spots (from 12th to 24th) on the World Bank's Regulatory Quality index, and by five places (from third

to eighth) on Transparency International's Corruption Perception Index.

A brief glance at the latest international rankings might suggest that governance is strong in Namibia, but a more thorough analysis of the trends over the last ten to 15 years argues for a more cautious interpretation of those rankings. When viewed alongside the very low levels of service delivery in Namibia, the relative decline in international governance rankings is less surprising.

> Namibia generally scores high on various measures of governance compared to its African peers

Moreover, there is growing concern surrounding investment in certain public-works projects. For instance, in a country where only 37% of the population have access to improved sanitation facilities and only 50% of the country have access to electricity, spending N$2.4 billion on a new parliament building could be seen as a questionable investment.[65] Besides the parliament building, the government of Namibia is currently constructing new ministries of education, defence and home affairs, a new roads authority head office and a new office of the prime minister.[66] According to ACLED, in June 2016, about a thousand members of the Affirmative Repositioning movement organised a protest around the construction of the new parliament building, which has since been removed from the legislative agenda.[67]

In 2016 Namibia also saw a number of strikes and protests over issues such as poor service delivery and high student fees, as well union activity demanding better working conditions and higher wages.[68] The notion of unpopular public spending driving social unrest around the ability of government to deliver on the needs of the people, is likely to be exacerbated by Namibia's growing population, as the government will have to deliver services to a larger number of people. Moreover, according to IFs, Namibia is forecast to have roughly 75% of its population living in urban areas by 2040.

Although a higher number of urban dwellers *could* simplify efforts at service delivery, if that urbanization occurs without proper planning then Namibia may be stuck trying to deliver services to people living in large, complicated, informal settlements – which may ultimately increase the costs. Furthermore, research indicates that 'conditions of unplanned and underdeveloped urban spaces within African states' combined with 'economic stagnation, little job creation and poor governance' can increase the risk of political instability.[69] Finally, these underlying conditions of high levels of poverty, inequality and a large youth bulge, exist alongside Namibia's substantial unemployment levels.

The most recent figures from the Namibian Statistics Agency indicate that unemployment in 2016 was roughly 34%, up from 28% in 2014, due in part to the end of the construction boom, budget cuts in the face of slow 2016 growth and a significant drought in the region.[70] Those factors notwithstanding, if the government is unable to expand access to basic infrastructure, improve the quality of human capital by investing in health and education, and address rising unemployment, then cities could act as centres of social mobilisation.[71] In fact, the Affirmative Repositioning movement was formed as a response to a housing crisis in Windhoek.

Along with spending on new government offices, the country has invested significant resources and time into developing a gas field, which, in the absence of a large power purchaser, is unlikely to come online.[72] A booming natural gas industry in Namibia would likely help human development, but the sunk costs of investing in Kudu's development over the last 25 years have likely drawn money from other development priorities. It is plausible that the time and money spent developing Kudu would have produced larger benefits to Namibian's, had it been spent on other areas of human well-being.[73]

The governing party, the South West Africa People's Organization (SWAPO) has made some progress on important development indicators since independence. Since then, the level of poverty in Namibia has dropped considerably (from more than 50% in 1993 to about 20% today); access to clean water has increased by nearly 20 percentage points; economic growth has been robust; and the government responded adeptly to the HIV/AIDS crisis. However, lack of progress across governance indicators in recent decades combined with low levels of access to other basic services and a recent uptick in the reported levels of riots and protests are factors that SWAPO would be well advised to pay close attention to.

If the government of Namibia hopes to address the deep inequality in the country, a programme where the government transfers money to lesser skilled

households is one available option and this intervention was created to model the trade-offs involved with this policy choice.[74]

Intervention	Description
Household Transfers	Increases household transfers from the central government to unskilled workers by 10% from 2017 to 2022.

Scenario analysis

The sections above have outlined a number of specific challenges to advancing human development that Namibia will face over the next 23 years. This section introduces some interventions aimed at those leverage points and explores which targets produce the greatest returns to human well-being. The section first considers a set of interventions targeted at specific indicators where Namibia seems to be underperforming (e.g. access to improved sanitation or low agricultural yields), before combining the component interventions into broader sectoral scenarios. Finally, we present the effects of combining all of the discussed interventions into a comprehensive scenario that simulates an integrated policy push across development systems.

Individual interventions

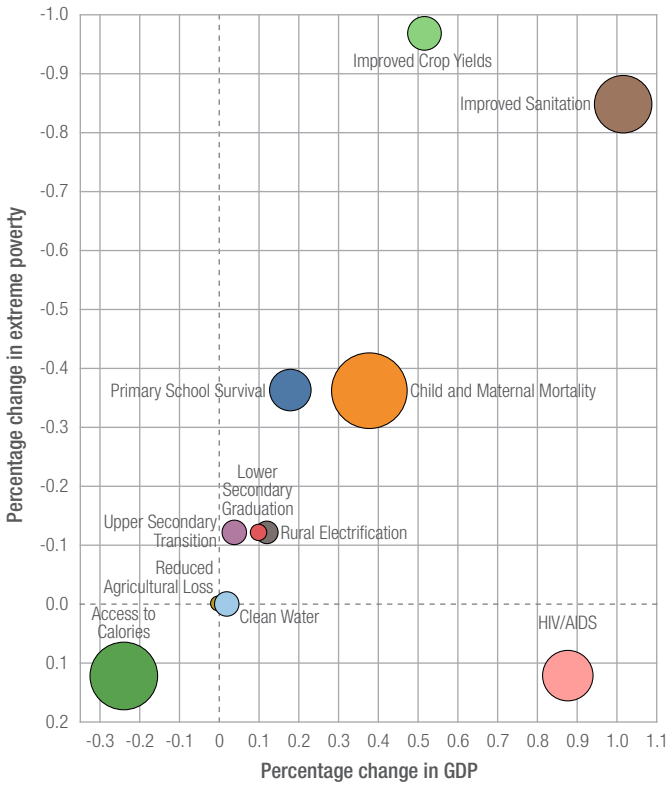
This section explores the effects of alternative investments in agriculture, education, health and infrastructure, which simulate successful 5-year policy interventions. After exploring the individual interventions, those composite pieces are combined into broader sectoral scenarios, to provide a sense of the potential returns from investing across a development system, like health or education. Those sectoral scenarios will be introduced along with the Improved Family Planning and Household Transfers scenarios, which represent the interventions from the demographics and governance and inequality sections, respectively.[75]

Figure 11 demonstrates the effects of the respective interventions (relative to the Current Path in 2040) across three outcome indicators: infant mortality, extreme poverty and GDP. The horizontal axis represents the percentage change in Namibia's GDP, the vertical axis represents the percentage change in extreme poverty and the bubble size indicates the percentage change in infant mortality. The values along all 3 dimensions (vertical, horizontal and bubble size) represent the percentage change relative to that indicator's value on the Current Path in the year 2040.

The Improved Sanitation and HIV/AIDS interventions create the most significant improvements in Namibia's GDP (more than 1% and 0.8% increases, respectively), followed by the Improved Crop Yields and Child and Maternal Mortality interventions. Economic growth is a necessary but insufficient condition for improving development outcomes though, and it must be accompanied by other investments in human development if Namibia hopes to improve the well-being of all its citizens.

For example, the Child and Maternal Mortality intervention has a sizeable effect on GDP, but also has a very powerful impact on the infant mortality rate (nearly an 11% decrease). Reductions in infant mortality are also substantial in the Access to Calories and Improved Sanitation interventions, which result in declines of 4% and 3%, respectively, compared to the Current

Figure 11: Impact of individual interventions on select development indicators relative to the Current Path in 2040



Source: IFs version 7.28
Note: All values are expressed as a percentage change from the Current Path forecast in 2040

Path. The Improved Crop Yield intervention leads to the largest reduction in extreme poverty (about 1%) followed by the Improved Sanitation and Primary School Survival interventions.

One can also see that the Clean Water and Reduced Agricultural Loss interventions do little to improve any of the selected outcome indicators. This is largely because Namibia already performs quite well along these dimensions. The Rural Electrification scenario also does little to improve the selected indicators. However, this scenario models an expansion of the traditional electricity grid, which may not be the optimal solution for Namibia, given its large land area and low population density. These factors suggest that distributed electricity generation from renewable energy, like wind, biomass and solar, are likely to be a more sustainable and potentially more cost-effective solution for a country like Namibia.[76]

> One can also see that the Clean Water and Reduced Agricultural Loss interventions do little to improve any of the selected outcome indicators

Some other takeaways are that the education interventions do little to reduce infant mortality, while the HIV/AIDS intervention actually increases the number of people living in extreme poverty relative to the Current Path. Because communicable diseases disproportionately affect some of the most vulnerable in society, successful interventions in the health sector tend to increase the population size relative to the Current Path and therefore generally increase the number of people living in extreme poverty.[77]

Finally, the analysis thus far has only considered 3 outcomes indicators; poverty, GDP and infant mortality. However, there are many other evaluative metrics available to measure the impact of specific interventions. For example, the education interventions may not have the most significant economic impacts in the near-term, but those interventions do improve other aspects of development. Moreover, some interventions, like education, take a very long time to produce mesurable results and the effects may not be fully captured by looking out to 2040.

The following section will deepen the analysis and begin to explore some of the other potential evaluative metrics available to the government of Namibia.

Comprehensive approach to development

It is important to understand which specific interventions (e.g. Lower Secondary Education or Primary School Survival) cause what kind of improvement in a given indicator. But, it is also useful to get a sense of the potential returns from an integrated policy approach designed to improve development outcomes within a particular system. This section will consider the effects of broad sectoral investments, along with an Integrated Development Push scenario. This scenario will be complemented by a household transfers programme, with the aim of better understanding some of the trade-offs involved in attempting to address inequality.

THE LEVEL OF POVERTY IN NAMIBIA HAS DROPPED CONSIDERABLY

FROM MORE THAN

50%

IN 1993 TO ABOUT

20%

TODAY

Table 3 shows the impact of a set of combined sectoral scenarios that represent coordinated efforts to improve outcomes across a particular system, using a broader basket of development indicators. By introducing a wider set of evaluative metrics, Table 3 helps to illustrate some of the trade-offs of investing across a particular development system.[78]

Of the sectoral scenarios, the Improved Family Planning scenario results in, by far, the most significant impact on extreme poverty, reducing the number of people living in that condition by more than 5% (or more than 40 000 people) relative to the Current Path in 2040. Although the Improved Family Planning scenario drives the largest reduction in poverty, it actually decreases overall economic output relative to the Current Path. This happens because (other things being equal) a smaller population will result in smaller economic output because fewer people are available to produce and consume goods and services.

Investing in a Health Extension scenario in Namibia drives the most significant reduction in infant mortality, reducing the number of deaths per 1 000 live births by nearly 13% relative to the Current Path in 2040. This scenario (along with the Infrastructure Push) also creates the most significant increase in overall GDP (more than a 1.2% bump) relative to the Current Path in 2040. However, because successful health interventions tend to positively affect the poorest and most vulnerable in society, they often tend to have a marginal impact on overall levels of poverty, which is also borne out in these results – as seen in the HIV/AIDS intervention.

The Infrastructure Push scenario results in an impressive increase in GDP (roughly 1.2%), while also driving a significant reduction in undernourishment, reducing the number of undernourished children by more than 14% relative to the Current Path. Investing in infrastructure also has a significant impact on extreme poverty (roughly a 1% reduction) and leads to a notable reduction in infant mortality (more than 3%), when compared to the Current Path in 2040.

The Advancing Education scenario drives the most significant improvement in Namibia's score on the Human Development Index (about 0.5%) and results in fairly significant reductions in extreme poverty (around 0.7%) and increases to GDP (about 0.5%) relative to the Current Path in 2040.

The Agricultural Resilience scenario creates the most significant reduction in childhood undernutrition (nearly 20%), and the second largest reduction in infant mortality (about 4%) relative to the Current Path in 2040. However, investing in agriculture has limited effects on improving the average years of education and does not improve the country's HDI score relative to the Current Path.

Table 3 demonstrates that there are particular benefits and trade-offs to any spending decision. However, there are also additional benefits that can be gained from employing policies comprehensively across development systems. Figure 12 shows some of the benefits of an Integrated Development Push, along with the combined scenarios from Table 3.

Table 3: Impact of combined sectoral interventions on development indicators relative to the Current Path in 2040 (%)

Scenario	Poverty	Infant Mortality	HDI	GDP per capita (PPP)	GDP (MER)	Child Under-nutrition	Average Ed. Years	Life Expectancy
Agricultural Resilience	-0.5	-3.9	0.0	0.4	0.3	-19.0	0.1	-0.3
Advancing Education	-0.7	-0.7	0.5	0.4	0.4	0.0	1.0	0.0
Health Extension	-0.2	-12.8	0.4	0.8	1.2	0.0	0.0	0.6
Infrastructure Push	-1.0	-3.3	0.1	1.0	1.2	-14.3	0.0	0.1
Improved Family Planning	-5.1	-0.7	0.4	1.9	-1.1	-9.5	0.4	0.1
Household Transfers	-2.1	0.2	0.0	0.0	0.0	4.8	0.0	0.0

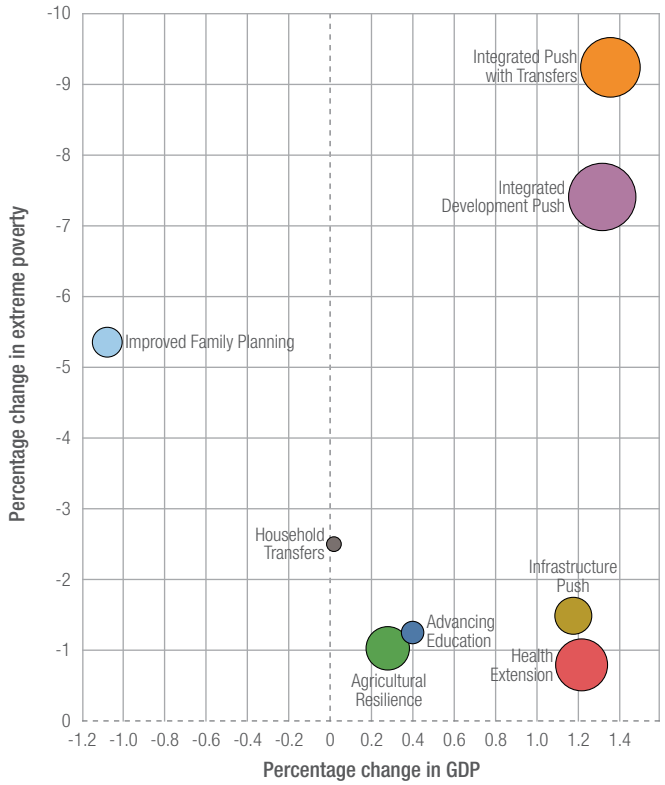
Source: IFs v. 7.28

Notes: All values are expressed as a percentage change from the Current Path forecast in 2040; HDI – Human Development Index; PPP – purchasing power parity; MER – market exchange rate.

The Integrated Development Push scenario highlights the enhanced effects of employing a coordinated approach to development across different systems. The Integrated Development Push results in a more than 15% decrease in infant mortality, about a 1.3% increase in total GDP and a more than 7% reduction in extreme poverty. Although the Integrated Development Push delivers significant returns to human development, it does little to address Namibia's underlying structural inequality.

Combining the Integrated Development Push with a transfer program to unskilled households though, nearly triples the effect of the Integrated Development Push scenario on the Gini coefficient when compared to the Current Path in 2040. Moreover, the Integrated Push with Transfers scenario actually reduces inequality in Namibia slightly during the course of the 5-year intervention. Although the impact is relatively temporary, the Household Transfers scenario demonstrates that it is possible for governments to affect the basic dynamics of inequality through policy.

Figure 12: Impact of sectoral scenarios and integrated scenarios on select development indicators relative to the Current Path in 2040



Source: IFs v. 7.28
Note: All values are expressed as a percentage change from the Current Path forecast in the year 2040.

However, that reduction of inequality comes at a cost. Because a large household transfers program would likely take funds from other development priorities like health and education, there are trade-offs involved in trying to reduce inequality through that mechanism. Moreover, adding the Household Transfers intervention to the Integrated Development Push actually causes a less significant reduction in infant mortality. In other words, the Integrated Development Push reduces infant mortality by a larger amount relative to the Current Path than the Integrated Push with Transfers scenario.[79]

As this research has shown, there is no silver bullet for development. That said, using quantitative models to explore the impact of different policy choices should help decision makers get a better sense of the benefits and trade-offs of respective spending choices.

Conclusion

This report has identified several key areas of human well-being where Namibia underperforms relative to its level of economic development. In order to improve human development outcomes between now and 2040, the government of Namibia and its development partners should seek to:

- Invest in health extension programmes. Namibia has a high burden of communicable disease, but, death rates from non-communicable diseases are also high and forecast to climb rapidly. The country will have to manage its communicable disease burden (in particular HIV/AIDS) while preparing for the health problems of the future that will inevitably require different strategies and policies.
- Improve the flow of students through the education pipeline. Although the most severe bottleneck in Namibia's education system is currently in upper-secondary enrolment, there are also constraints at earlier points in the pipeline. To improve the overall level of education, Namibia will have to focus on all phases of the pipeline, including early childhood education.
- Continue to reduce fertility rates. Namibia should improve access to family planning programmes to reduce the size of its youth bulge and the associated pressures on service delivery.
- Improve the efficiency of the agricultural sector. Although Namibia is not a large agricultural producer, subsistence agriculture still plays an important role in

rural communities. Enhancing agricultural capacity, so the country can produce and consume more calories, will have knock-on effects in other areas of development, like health and education.

- Improve the quality of governance and reduce inequality. The government of Namibia is seen as being relatively effective, but the fact is that the country performs poorly on a number of development metrics and the quality of governance has not improved in recent years. In the face of a large young population, high levels of unemployment and low levels of access to many basic services, the government must do more to facilitate service delivery and stimulate inclusive growth.

Although Namibia has a small population, the country has significant potential for improved levels of human development. Richly endowed with natural resources and with the capacity for good governance, Namibia possesses most of the assets it needs to advance human well-being. The country has a fairly stable economic outlook and is well positioned to be an early mover in environmentally sustainable technology – like distributed generation electricity from renewable sources – should it decide to move in that direction.[80] However, the policies that have enabled Namibia to achieve progress on many development indicators since independence (e.g. poverty reduction, provision of clean water and economic growth), may not be the same policies that will propel the country on the path to more inclusive development.

In order to make that jump, Namibia must focus on dimensions of human development where the country has not advanced as quickly as its peers (e.g. average years of completed education, access to improved sanitation, and stunting). Absolute levels of access to many basic services are extremely low and much of the country's infrastructure is inadequate. The relative stagnation in these important spheres of human well-being has materialised as increased social protest activity, which is probably correlated with the country's relative decline on various measures of governance in recent years. Furthermore, Namibia will face several issues that will substantially hamper efforts to improve people's lives: the legacies of colonialism and apartheid, the HIV/AIDS epidemic and the effects of climate change.

The interventions outlined in this report are aspirational, but they also aim to be realistic. If the government of Namibia is able to leverage development outcomes along some of the dimensions outlined in this report, human well-being in the country could be elevated beyond what is anticipated along its current development trajectory. This report has identified a number of specific priorities for the government of Namibia, but it also illustrates that a comprehensive, well-implemented set of policies could set put the country on a path to a more sustainable and resilient future.

Appendix A: Current Path adjustments

Variable	Adjustment/reasoning
Energy production (hydro)	The forecasted increase in hydroelectric production was meant to reflect the construction of the Baynes hydro facility, which comes online in this forecast in 2023. The parameters used for this adjustment were enpm(hydro), and prodtf.
Energy production (renewables)	The forecasted increase in renewable energy production was meant to reflect continued increase in distributed generation renewables, like wind and solar, in Namibia. The parameter used was enpm(renew).
Government spending	This adjustment was made to reflect the latest sovereign debt estimates from the World Bank and IMF. Namibia's debt forecast was adjusted to a more accurate initialisation of 38.75% of GDP. The parameter that was used in this adjustment was Solvency – Government debt as a percentage of GDP. This adjustment also used two variables, SeriesGovtCalcRevTot%GDP (34%) and SeriesGovtCalcExpendTot%GDP (39.8%).
Electricity production	This adjustment was made to direct increased energy production to the electricity sector. The parameter used was enelecshrendemm.
GDP growth rates	This adjustment to GDP growth rates was made to reflect recent IMF data for 2016 to 2021. The parameter used was mfpadd.
Electricity access	These adjustments were made to bring levels of access in line with the latest estimates from the World Bank World Development Indicators dataset, and data was changed to reflect a value of 83% for urban electricity access and roughly 50% for the country as a whole.

Notes

The authors would like to thank Klaus Schade, Max Weylandt, Steve Hedden, Jakkie Cilliers, Alex Porter, Graham Hopwood, Rowland Brown, Daniel Bagwitz, Harald Schütt, Susanne Scholz, Anu Klaassens and Amelia Broodryk for their valuable feedback and support throughout this process.

1 H Melber, *Understanding Namibia: The trials of independence*, C Hurst & Co., 2014.

2 IMF, Article IV consultation – Namibia, December 2016, www.imf.org/external/pubs/ft/scr/2016/cr16373.pdf.

3 Namibia ranks eighth out of 51 upper-middle-income countries globally on Transparency International's index (see www.transparency.org/country/NAM) and 18th out of 51 countries on the World Bank's measure, see World Governance Indicators Project Country Data Report – Namibia, documents.worldbank.org/curated/en/281151467992822997/Country-data-report-for-Namibia-1996-2014

4 This includes the UN Development Programme's Gender Inequality Index (GII), and a measure of gender parity in education calculated by IFs. In 2013 Namibia's score on the GII is 0.45, which is slightly better than Botswana (0.49) and South Africa (0.46). See hdr.undp.org/en/content/gender-inequality-index. IFs uses the older Gender Equality Measure rather than the more recent GII because it has more temporal coverage and provides a better basis for forecasting. The gender parity in education measure is calculated by dividing the number of average years of education in the female population over the age of 15 by the average years of education in the male population over the age of 15 from data obtained from the UNESCO Institute for Statistics.

5 According to the UNDP, 'Human development is the expansion of people's freedoms to live long, healthy and creative lives; to advance other goals they have reason to value; and to engage actively in shaping development equitably and sustainably on a shared planet.' See UNDP 2010 Human Development Report, 2, http://hdr.undp.org/sites/default/files/reports/270/hdr_2010_en_complete_reprint.pdf.

6 Namibia ranks near the bottom of the World Bank country group in terms of GDP per capita (44th out of 51 countries), so one would expect it to rank near the bottom in many indicators. That said, it often performs well below the country group. For a complete list of World Bank upper-middle-income countries, and the income thresholds, see datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups. According to the World Health Organization and UNICEF Joint Monitoring Project, improved sanitation facilities are describes as those that 'hygenically separate human waste and excreta from human contact'. Types of facilities include flush toilets, piped sewer systems, septic tanks, flush/pour flush to pit latrine, ventilated improved pit latrine, pit latrine with slab, composting toilet. This definition excludes shared facilities.

7 AIDS deaths peaked at about 1% of the population in Botswana, and nearly 0.7% of the population in South Africa; in Namibia the death rate peaked at around 0.5%.

8 The Gini coefficient is a measure of inequality where 0 represents total equality and 1 represents total inequality (i.e. the total assets of a country are controlled by a single individual). Although the Gini coefficient or index has been widely criticised as being an overly simplistic measure of real inequality, it can be useful for identifying broad trends.

9 In addition to Botswana, Namibia and South Africa, Lesotho and Zambia generally rank as highly unequal on the Gini index (top 10). Swaziland and Zimbabwe also feature among the top 25 most unequal nations.

10 IFs is an open-source tool available for free at pardee.du.edu/understand-interconnected-world. It is a model used for thinking critically about development futures. See http://pardee.du.edu/understand-interconnected-world. It was originally created by Professor Barry B Hughes.

11 This 'expected' value is based on a bivariate regression with GDP per capita as the (logged) independent variable and the outcome indicator as the dependent variable. This technique and terminology will be used several times throughout the report.

12 Some indicators used in this report, like average years of education, are not something regularly targeted by national governments but nonetheless provide a useful gauge of the overall level of human capital in a population and can be useful in identifying general areas of underperformance. Republic of Namibia, National Development Plan 5: Working together towards prosperity, www.gov.na/documents/10181/14226/NDP+5/5a0620ab-4f8f-4606-a449-ea0c810898cc?version=1.0.

13 World Bank, World Development Indicators – Population, Namibia, data.worldbank.org/indicator/SP.POP.TOTL?locations=NA.

14 Throughout the report, 'regional peers' refers to Botswana and South Africa. As well as the fact they have similar geographies and histories, these countries also have similar levels of economic development based on GDP per capita.

15 D Lagraffe, The youth bulge in Egypt: An intersection of demographics, security, and the Arab Spring, *Journal of Strategic Security*, 5:2, 2012, 65–80; TF Azeng and T Yogo, Youth unemployment and political instability in selected developing countries, African Development Bank, Working Paper No. 171, 2013.

16 RP Cincotta et al, *The security demographic: Population and civil war after the Cold War*, Washington DC: Population Action International, 2003.

17 See Uppsala Conflict Data Program, www.ucdp.uu.se/. For information on the Caprivi, see Khonani Ontebetse, Botswana, Namibia, UNCHR in refugees repatriation row, *Sunday Standard*, 11 January 2016, www.sundaystandard.info/botswana-namibia-unchr-refugees-repatriation-row; see also Namibian refugees

petition SADC over the Caprivi dispute, *The Botswana Gazette*, 22 November 2016, www.thegazette.news/?p=17280.

18 The spike was due to a number of sustained protest movements throughout the year, including action brought by the Namibia Financial Institutions Union, teachers, students, bus drivers and youth groups. South Africa was excluded from the figure because of the significantly higher levels of riots and protests in that country, due in part to its much larger population and its long history of public displays of civic engagement.

19 Republic of Namibia, National Planning Commission, National Development Plan 5: Working Together Towards Prosperity, 2017. http://www.gov.na/documents/10181/14226/NDP+5/5a0620ab-4f8f-4606-a449-ea0c810898cc?version=1.0

20 In Namibia lower secondary is generally referred to as junior secondary; upper secondary is typically called senior secondary

21 Note: Gross enrolment is the total number of students (of any age) who have enrolled in a particular level of education, expressed as a proportion of the age-appropriate population – and can therefore be greater than 100%.

22 J Dickson, B Hughes and M Irfan, *Potential patterns of human progress, Volume 2: Advancing global education*, Boulder: Paradigm Publishers, 2010, pardee.du.edu/pphp-2-advancing-global-education. Although we do not operationalise early childhood development in the model, there is evidence to support the benefits of early learning and childhood development, and these should be considered as viable options.

23 National Scientific Council on the Developing Child, The science of early childhood development: Closing the gap between what we know and what we do, 2007, www.developingchild.harvard.edu.

24 K Narayan and Z Donnenfeld, Envisioning a healthy future: Africa's shifting burden of disease, Institute for Security Studies, 2016, www.issafrica.org/research/papers/envisioning-a-healthy-future-africas-shifting-burden-of-disease.

25 The FAO defines undernourishment as 'A state, lasting for at least one year, of inability to acquire enough food, defined as a level of food intake insufficient to meet dietary energy requirements' and undernutrition as 'the outcome of undernourishment, and/or poor absorption and/or poor biological use of nutrients consumed as a result of repeated infectious disease. It includes being underweight for one's age (stunted), dangerously thin for one's age (wasted) and deficient in vitamins and minerals.' The FAO defines malnutrition as 'an abnormal physiological condition caused by inadequate, unbalanced or excessive consumption of macronutrients and/or micronutrients. Malnutrition includes undernutrition and overnutrition as well as micronutrient deficiencies'. See www.fao.org/hunger/glossary/en/.

26 S Hedden, Turning vision into reality, Institute for Security Studies, 2015, https://issafrica.s3.amazonaws.com/site/uploads/Paper288.pdf.

27 See the FAO definition of undernourishment above. For the purposes of this report, hunger was defined as being synonymous with chronic undernourishment, www.fao.org/hunger/glossary/en/.

28 WHO, Global nutrition targets 2025: Stunting policy brief, 2015, 1, www.who.int/nutrition/topics/globaltargets_stunting_policybrief.pdf.

29 Centers for Disease Prevention and Control, Namibia factsheet 2013, www.cdc.gov/globalhealth/countries/namibia/pdf/namibia.pdf.

30 The major disease categories are classified according to the WHO's *Global Burden of Disease* report. See C Murray and A Lopez, *The Global Burden of Disease,* WHO, World Bank, Harvard School of Public Health, 1997; see also Global, regional, and national age–sex specific all-cause and cause-specific mortality for 240 causes of death, 1990–2013: A systematic analysis for the Global Burden of Disease Study 2013, *The Lancet*, 38:9936, 117–171.

31 K Narayan and Z Donnenfeld, Envisioning a healthy future: Africa's shifting burden of disease, Institute for Security Studies, 2016, www.issafrica.org/research/papers/envisioning-a-healthy-future-africas-shifting-burden-of-disease.

32 WHO, International statistical classification of diseases and related health problems, 10th revision, 2016, www.who.int/classifications/icd/en/; B Hughes et al, *Patterns of potential human progress, Volume 3 (Health)*, Oxford University Press, 2011, www.pardee.du.edu/patterns-potential-human-progress.

33 Ibid.

34 S Hedden et al, Ending hunger in Africa: The elimination of hunger and food insecurity on the African continent by 2025: Conditions for success, New Partnership for Africa's Development, 2016, www.nepad.org/resource/ending-hunger-africa-elimination-hunger-and-food-insecurity-african-2025-conditions-success.

35 The FAO defines food insecurity as 'a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution or inadequate use of food at the household level. Food insecurity, poor conditions of health and sanitation and inappropriate care and feeding practices are the major causes of poor nutritional status. Food insecurity may be chronic, seasonal or transitory.' See www.fao.org/hunger/glossary/en/.

36 In Namibia the central farming practices are grain and subsistence in the north and north-east where soils are fertile, and livestock in the east and central regions. The lowest levels of agricultural production are in the south

and south-western regions where it is very arid.

37 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Adaptation of agriculture to climate change, 2015, www.giz.de/en/worldwide/34175.html; International Food Policy Research Institute, Climate change and agriculture in southern Africa, 2013, www.ifpri.org/publication/southern-african-agriculture-and-climate-change-comprehensive-analysis.

38 Transformation losses can occur at three stages during the food supply chain: 1) crops lost before harvest; 2) food lost between harvest and sale and consumption; and 3) post-purchase food waste. This intervention targets only the second stage.

39 The data for sanitation facilities comes from the WHO and UN International Children's Emergency Fund (UNICEF) Joint Monitoring Project JMP; the electricity data comes from the World Bank.

40 See NDP 5.

41 Ibid. The NDP 5 aims to increase rural access from 28% to 40% by 2022 and urban access from 55% to 75%. Because rural households tend to have a higher average household size, the smaller percentage point target for rural households may represent a larger number of people. The NDP 5 does not have a national target for sanitation access.

42 Ibid.

43 UNICEF, Ethiopia: Outcome evaluation of community-led total sanitation and hygiene, 2016, www.unicef.org/evaldatabase/index_94227.html; R Chambers, Going to scale with community-led total sanitation: Reflections on experience, issues and ways forward, University of Sussex, Institute of Development Studies, Practice Paper 1, March 2009.

44 Laos increased access to improved sanitation by a little more than 21 points between 2004 and 2011 beginning from a similar base (40%). However this type of rapid expansion has been the exception rather than the rule.

45 Namibia National Sanitation Strategy 2010/11–2014/15, September 2009, www.the-eis.com/data/literature/Namibia%20National%20Sanitation%20Strategy.pdf. This planning was based around the assumption of a per unit cost of N$20 000 and N$6 000 for urban and rural areas, against IFs average per unit cost of about US$800 (constant 2016) or roughly N$10 500.

46 Ibid; see also Ombudsman Namibia, *2013 Baseline study report on human rights in Namibia*, www.ombudsman.org.na/sdm_downloads/2013-baseline-study-report-on-human-rights-in-namibia/.

47 Electricity imports cost Namibia N$2.6 billion yearly, *The Patriot*, 24 February 2017, http://thepatriot.com.na/index.php/2017/02/24/electricity-imports-cost-namibia-n2-6-billion-yearly/. Namibia imports the equivalent of 200 MW from Eskom (South Africa), 39 MW from ZESCO (Zambia) and 80 MW from ZPC (Zimbabwe). See Minister of Mines and Energy, budget speech 2017/2018, 26, www.mme.gov.na/files/publications/ec2_MME_Budget%20Speech_April%202017-18-Booklet.pdf.

48 NDP 5 http://www.gov.na/documents/10181/14226/NDP+5/5a0620ab-4f8f-4606-a449-ea0c810898cc?version=1.0 (page 4)

49 Netherlands Environmental Assessment Agency, Toward universal electricity access in sub-Saharan Africa: A quantitative analysis of technology and investment requirements, 2017, www.pbl.nl/sites/default/files/cms/publicaties/pbl-2017-towards-universal-electricity-access-in-sub-saharan-africa-1952.pdf; U Deichmann et al, The economics of renewable energy expansion in rural sub-Saharan Africa, *Energy Policy*, 39:1, 215–227.

50 More recent (unconfirmed) estimates suggest that the Kudu field may contain up to 85 billion cubic meters. See Offshore Technology, Kudu Gas Field, Orange Sub-Basin, Namibia, www.offshore-technology.com/projects/kudugasfieldnamibia/; Joseph Kapika and Anton Eberhard, *Power-sector reform and regulation in Africa*, Chapter 5: Namibia: Seeking independent power producers, HSRC Press, 2013. Based on field interviews conducted for this report, the authors believe that it is unrealistic that either the Kudu or Walvis Bay power plants will be operational by 2022 and therefore they have not been included in the Current Path forecast.

51 According to the United States Energy Information Agency, Namibia has 2.2 trillion cubic feet of proved gas reserves, the 11th largest sovereign reserves in Africa, www.eia.gov/beta/international/country.cfm?iso=NAM; Offshore Technology, Kudu Gas Field, Orange Sub-Basin, Namibia, www.offshore-technology.com/projects/kudugasfieldnamibia/.

52 According to the US National Renewable Energy Laboratory, a power off-taker 'buys power from a project developer at a negotiated rate for a specified term without taking ownership of the system'. See www.nrel.gov/docs/gen/fy16/65567.pdf. In the case of Namibia, the country is too small to consume all of the natural gas produced by the Kudu field, and other countries in the region are unwilling to commit to long-term purchases for various reasons. See Offshore Technology, Kudu Gas Field, Orange Sub-Basin, Namibia, www.offshore-technology.com/projects/kudugasfieldnamibia/.

53 Currently, Namibia meets part of its electricity demand from old or expensive diesel power plants, which are kept in operation largely to prevent the country from entering a blackout. See Trading Economics, https://tradingeconomics.com/namibia/energy-imports-net-percent-of-energy-use-wb-data.html. The source countries for electricity imports are South Africa, Zimbabwe, Mozambique and Zambia.

54 The 423 MW figure includes Ruacana (347 MW with new refurbishments), Paratus and Anixas (46.5 MW) and Van Eck (30 MW, rather than 120 MW). See Van Eck running at low capacity, *Windhoek Observer*, 20 May 2017,

www.observer.com.na/index.php/national/item/8087-van-eck-running-at-low-capacity.

55 The Van Eck power station ostensibly has a capacity of 120 MW, but has been producing roughly 30 MW for the last several years, which, in combination with the emergency diesel generators, yields a total capacity of about 76 MW from those three stations. See NamPower, Namibia power supply outlook and demand side management, 16 March 2017.

56 NamPower renews agreement with Eskom, *The Namibian*, 30 March 2017, www.namibian.com.na/162827/archive-read/NamPower-renews-agreement-with-Eskom http://africabusinesscommunities.com/news/namibia-nampower-renews-agreement-with-eskom/.

57 Anton Eberhard, Competition and regulation in the electricity supply industry in South Africa, www.gsb.uct.ac.za/files/Electricity_competion_in_SA-Eberhardt.pdf.

58 Minister of mines and energy, Budget speech 2017/2018 (page 25); Wind power: Innosun confirms first PPA for Namibia farm, *ESI Africa*, 2015, www.esi-africa.com/news/wind-power-innosun-secures-first-ppa-for-namibia-farm/; Innosun: The pioneer of renewable energy in Namibia, *The Engineer*, 2016, theengineer.com.na/innosun-the-pioneer-of-renewable-energy-in-namibia/; D Ola, Italy's Enertronica acquires 6MW solar plant in Namibia, Enertronica Group, PV Tech, 2016, www.pv-tech.org/news/italys-enertronica-acquires-6mw-solar-plant-in-namibia.

59 Because renewables are unable to produce electricity constantly (e.g. at night or when the wind is not blowing), it is not quite accurate to describe their generation capacity in megawatts. However, it can be useful to get a sense of the potential capacity when the facility is operating under ideal conditions. The average capacity of these independent power projects is about 6 MW. See Minister of mines and energy, Budget speech 2017/2018 (page 25).

60 Netherlands Environmental Assessment Agency, Toward universal electricity access in sub-Saharan Africa: A quantitative analysis of technology and investment requirements, 2017, www.pbl.nl/sites/default/files/cms/publicaties/pbl-2017-towards-universal-electricity-access-in-sub-saharan-africa-1952.pdf.

61 S Immanuel, Xaris secretly pushed through backdoor, *The Namibian*, 8 June 2017, www.namibian.com.na/55361/read/Xaris-secretly-pushed-through-backdoor.

62 See P Hashoongo, Baynes Hydropower commences in 2017, *Prime Focus Magazine*, www.primefocusmag.com/articles/969/baynes-hydropower-project-commences-in-2017/. The Construction Intelligence Center, however, has the project construction starting in Q1 2019, www.construction-ic.com/HomePage/Projects?ReturnUrl=%2FProjects%2FOverview%2F132019%3Futm_source%3Dworldconstructionnetwork%26utm_medium%3DReferral%26utm_campaign%3DNampower%252FMoEA%2B%25E2%2580%2593%2BBaynes%2BHydroelectric%2BPower%2BPlant%2B600%2BMW%2B%25E2%2580%2593%2BNamibia&utm_source=worldconstructionnetwork&utm_medium=Referral&utm_campaign=Nampower%2FMoEA%20%E2%80%93%20Baynes%20Hydroelectric%20Power%20Plant%20600%20MW%20%E2%80%93%20Namibia.

63 Although no agreement has been formally signed, the two countries have been in negotiations for several years and sources that the authors spoke to in Namibia indicated that they believed the project was likely to go forward, so it has been included in our revised Current Path forecast.

64 Regional power deficit will be over by 2021 – Kandjoze, *New Era*, 17 October 2016, www.newera.com.na/2016/10/17/regional-power-deficit-will-be-over-by-2021-kandjoze/.

65 S Immanuel, MPs want clinic at parliament, houses, *The Namibian*, 24 April 2017, www.namibian.com.na/163884/archive-read/MPs-want-clinic-at-parliament-houses.

66 K Sieff, North Korea's surprising, lucrative relationship with Africa, *The Washington Post*, 10 July 2017, www.washingtonpost.com/world/africa/north-koreas-surprising-lucrative-relationship-with-africa/2017/07/10/c4e6f65d-30fe-4bd2-b178-d90daaac3007_story.html?utm_term=.aa13ac608ccb; S Immanuel, N$180m for President's security fix, *The Namibian*, 8 October 2014, www.namibian.com.na/index.php?id=128883&page=archive-read; Leads 2 Business (L2B), Project details Eenhana offices, Namibia, www.l2b.co.za/Project/Eenhana-Offices-Namibia/15904; Namibia Construction, New Road Authority office, www.namibia-construction.com/projects/roads-authority-head-office/.

67 ACLED, All Africa data, version 7, www.acleddata.com/data/acled-version-7-1997-2016/.

68 Ibid.

69 C Raleigh, Urban violence patterns across African states, *International Studies Review*, 17:1, March 2015.

70 Reuters, Namibia's unemployment rate increases to 34% in 2016, www.reuters.com/article/namibia-unemployment-idUSL8N1IQ3IS.

71 C Raleigh, Urban violence patterns across African states, *International Studies Review*, 17:1, March 2015.

72 Joseph Kapika and Anton Eberhard, *Power-sector reform and regulation in Africa*, Chapter 5: Namibia: Seeking independent power producers, HSRC Press, 2013. Based on field interviews conducted for this report, the authors believe that it is unrealistic that either the Kudu or Walvis Bay power plants will be operational by 2022. Minister of mines and energy, Budget speech 2017/2018 (page 25); Innosun: The pioneer of renewable energy in Namibia, *The Engineer*, 2016, theengineer.com.na/innosun-the-pioneer-of-renewable-energy-in-namibia/; D Ola, Italy's Enertronica acquires 6MW solar plant in Namibia, Enertronica Group, PV Tech,

2016, www.pv-tech.org/news/italys-enertronica-acquires-6mw-solar-plant-in-namibia.

73 The issuance of licences to power producers who ultimately fail to produce any power could point to a failure in the vetting process, where licences are awarded without due regard to the ability of the contractor to fulfill their obligation.

74 A household transfers policy would (much like South Africa's social grants policy) be aimed at redistributing wealth throughout society and alleviating deep seated poverty. A policy directed at 'less skilled' households should be more progressive than a blanket policy that transferred money to all citizens.

75 The specific adjustments in each intervention, along with an example of a historical precedent where available, are included in each section. Where available, historical benchmarks will be used for comparison but for some variables (e.g. household transfers), there is no comparable historical data to draw from.

76 Netherlands Environmental Assessment Agency, Toward universal electricity access in sub-Saharan Africa: A quantitative analysis of technology and investment requirements, 2017, www.pbl.nl/sites/default/files/cms/publicaties/pbl-2017-towards-universal-electricity-access-in-sub-saharan-africa-1952.pdf; U Deichmann et al, The economics of renewable energy expansion in rural sub-Saharan Africa, *Energy Policy*, 39:1, 215–227.

77 World Bank, UNICEF, UNDP, WHO, *The global report for research on infectious diseases of poverty*, 2012, http://www.who.int/tdr/publications/global_report/en/.

78 For example, the Advancing Education scenario is a compilation of the Primary School Survival, Lower Secondary Graduation and Upper Secondary Enrolment interventions.

79 This happens even though the Household Transfers intervention decreases infant mortality relative to the Current Path in 2040, as shown in Figure 12.

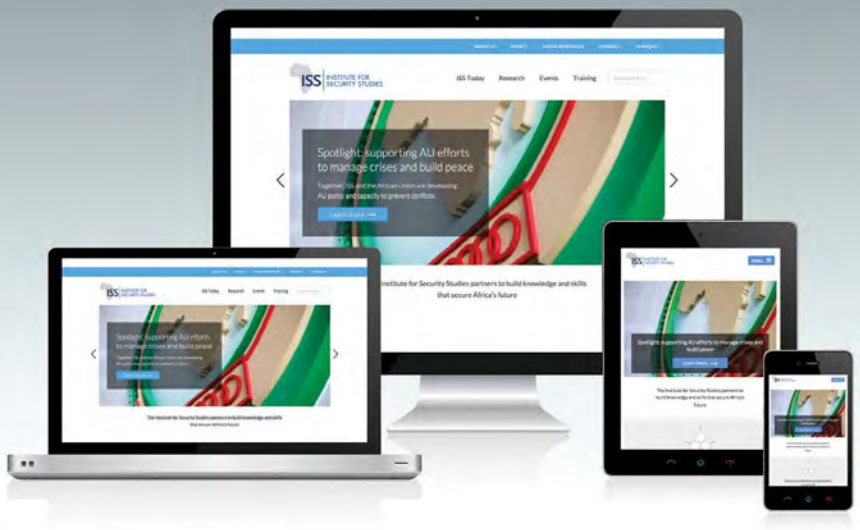
80 Netherlands Environmental Assessment Agency, Toward universal electricity access in sub-Saharan Africa: A quantitative analysis of technology and investment requirements, 2017, www.pbl.nl/sites/default/files/cms/publicaties/pbl-2017-towards-universal-electricity-access-in-sub-saharan-africa-1952.pdf.

ISS INSTITUTE FOR SECURITY STUDIES

The Institute for Security Studies partners to build knowledge and skills that secure Africa's future

Visit our website for the latest analysis, insight and news

www.issafrica.org



Step 1 Go to www.issafrica.org

Step 2 Go to bottom right of the ISS home page and provide your subscription details

About ISS Southern Africa Reports

Southern Africa Reports provide the results of in-depth research on the latest human security challenges in the region. Some reports analyse broad conflict trends and threats to peace and security in specific Southern African countries. Others focus on challenges in the region such as electoral reform, corruption or intra-state conflict. The countries covered by the Southern Africa Reports are: Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.

About the authors

Zachary Donnenfeld joined the ISS in 2015 as a researcher with the African Futures and Innovation team in Pretoria. Previously, he worked at the Frederick S. Pardee Center for International Futures, and the Environment, Food and Conflict Laboratory at the Josef Korbel School of International Studies at the University of Denver.

Courtney Crookes joined the ISS as a consultant in 2016. Courtney is completing her Master's in water resource management at the University of Pretoria. She also holds a degree in Hydrology and a post-graduate diploma in Business Management from the University of KwaZulu-Natal.

About the ISS

The Institute for Security Studies (ISS) partners to build knowledge and skills that secure Africa's future. Our goal is to enhance human security as a means to achieve sustainable peace and prosperity. The ISS uses its networks and influence to provide timely and credible analysis, practical training and technical assistance to governments and civil society. This promotes better policy and practice, because senior officials can make informed decisions about how to deal with Africa's human security challenges. www.issafrica.org

Acknowledgements

This report was made possible with the support of the Hanns Seidel Foundation. The ISS is also grateful for support from the other members of the ISS Partnership Forum: the governments of Australia, Canada, Denmark, Finland, Ireland, Japan, Netherlands, Norway, Sweden and the USA.

ISSN 1026-0404

9 771026 040004