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# SDG Push

## Interrogating and Advancing Development Interventions in South Africa

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## Acronyms and Abbreviations

| | |
|---|---|
| CGE | Computable General Equilibrium |
| SAM | Social Accounting Matrix |
| INFF | Integrated National Financing Framework |
| GDP | Gross Domestic Product |
| SDG | Sustainable Development Goals |
| NDP | National Development Plan |
| ERRP | Economic Reconstruction and Recovery Plan |
| NPC | National Planning Commission |
| IPAP | Industrial Policy Action Plan |
| OECD | Organization for Economic Cooperation and Development |
| MTBPS | Medium-Term Budget Policy Statement |
| MS | Microsimulation |
| CE | Cross Entropy |
| NIDS | National Income Dynamics Study |
| LES | Linear Expenditure System |

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# Executive summary

Urgent policy action to mitigate increasing pressure on natural resources, (gender) inequality and heightened risks for vulnerable populations have become an important priority for policymakers worldwide. **The South African Government has committed to address these challenges by directly targeting the country's triple development challenges of high poverty, inequality and unemployment.**

Unemployment, which reached a record high of 34.9 percent in 2021, remains stubbornly high and averaged 28.8 percent in 2022.[1] The country's inequality and poverty have also remained high in the post-apartheid era, with a Gini coefficient estimated at 0.63 and poverty headcount ratios at 40.0 percent and 55.5 percent for lower- and upper-bound poverty lines, respectively.[2]

Furthermore, since the global recession of 2008, South Africa has experienced slower economic growth, with an annual economic growth rate averaging 1.1 percent over the 2009–2021 period.[3]

South Africa is committed under both the National Development Plan (NDP), the country's blueprint for development and the United Nations Sustainable Development Goals (SDGs), to tackle these development challenges. Taking the overarching visions (NDP and the UN Vision 2030) as a point of departure, the Government's Economic Reconstruction and Recovery Plan (ERRP) is the main government policy framework strategy for addressing the triple development challenges through economic growth, investment and redistribution.[4]

However, the current economic climate confronting the economy, combined with recent and ongoing domestic (predominantly electricity shortages) and external shocks present enormous challenges to achieving progress on the NDP goals and SDGs. The Government will likely fall short of its committed developmental goals and targets if a business-as-usual (BAU) approach persists.

In this context, the Government needs to design policy packages that achieve strong economic growth while reducing unemployment, inequality and poverty, paying careful attention to the implications of such interventions on public finances. Identifying this policy package requires an evidence-based approach.

The SDG Push Framework aims to identify a plausible economic policy roadmap that will accelerate the realization of the key economic growth and development targets of the NDP and the SDGs within the country's current and envisaged fiscal constraints.

1 World Development Indicators Database. 2023.
2 World Bank. 2021. South Africa: Social Assistance Programs and Systems Review. © World Bank, Washington, DC.
3 World Development Indicators Database. 2023.
4 The ERRP emerged as the country grappled with the coronavirus pandemic and was in the third phase of the economic response to the pandemic. The first two phases focused on short-term tax measures and also on extending the safety net. ERRP provides a roadmap to recovering lost ground and pushing the economy towards a higher and more inclusive growth trajectory. It is anchored on the following eight pillars: Infrastructure development; strategic localization, reindustrialization and export promotion; energy security; support for tourism recovery; green economy interventions; mass public employment interventions; strengthening of food security; and gender equality and economic inclusion (South African Government. 2020. The South African Economic Reconstruction And Recovery Plan).

**The SDG Push framework** is designed to help countries achieve a stable footing by re-imagining and recalibrating how they determine, interrogate and advance development interventions. It builds on lessons learned through the COVID-19 pandemic and the first half of the 2030 Agenda for Sustainable Development by advancing longer-term structural transformation while balancing short-term imperatives.

The SDG Push framework has the following integrated elements:

- **Scoping**: Examining specific contexts and trends with data visualization through the SDG Push Diagnostic, establishing a rapid landscape of trends, current priorities, futures and interlinkages;
- **Acceleration Dialogues**: Leveraging sensemaking protocols to explore scoping outcomes, interrogate previous policies, and chart accelerators;
- **Modelling**: Engaging new forms of participatory and economic modelling to assess impact of potential accelerators;
- **Sustainable Finance**: Estimating financing and the feasibility of potential accelerators. It uses SDG finance tools, including the Integration National Financing Framework (INFF);
- **Acceleration Pathways**: Integrating insights developed through this approach with data visualizations and recommendations to advance policy interventions.

The SDG Push in South Africa was led by the Government through the National Planning Commission (NPC), established in May 2010, which is responsible for strategic planning for the country, including the preparation of the NDP. A recent review of the NDP showed slow progress towards achieving its goals. Faced with COVID-19 and complex and compounding global and national crises, the review painted a bleak future with increasing poverty, inequality and unemployment for the country. This, combined with energy supply issues, have hindered progress in the country.

The SDG Push Dialogue considered these priority areas and reaffirmed that ending poverty and reducing inequality and unemployment are the main development challenges, and accordingly, the most important strategic development objectives. The primary mechanism to revive growth are structural reforms, including credible policies to align private sector growth strategies to global, national and local priorities, stimulating private sector investment, as well as an employment and skills matching interventions agenda. A range of complementary actions, such as expanding social protection to reach those currently left behind, are also needed in the short to medium term. The outcome of these SDG Push processes is summarized in Table 1.

Consequently, the SDG Push's main focus has been creating jobs, reducing poverty and inequality, addressing underlying structural issues, and re-evaluating social grants. The entry points have been informed by the understanding that, in order to address structural issues, initiatives such as stimulating private sector employment to support firms to expand, and skill-matching interventions require closer exploration.

Due to insufficient and poorly matched skills, South Africa has a low skills base whereas the structure of the economy is biased towards high skills (i.e. industry (manufacturing, mining and quarrying) and mainly high-skill services (i.e. finance and insurance, real estate and business services)– with agriculture making a very small contribution to economic output.

Social grants are important instruments to fight poverty and inequality in South Africa. Because of their importance, the impact of social grants can go beyond the direct effects on beneficiaries, i.e. they can produce indirect effects on both beneficiaries and non-beneficiary households or individuals (i.e. multiplier effects).

**Table 1: Target output for SDG push (see detailed notes in Appendix A)**

| TARGET OUTPUT | PROGRESS IN SOUTH AFRICA |
|---|---|
| **Dynamic visualization of development landscape**<br><br>This integrates multiple data sources and digital innovation to establish a rapid landscape analysis – SDG trends, current state, potential futures, and interlinkages. | The challenge in South Africa is to zero in on the most critical areas that need to be addressed to maximize the impact of policy choices towards SDG investments. The SDGs linked directly to South Africa development challenges of poverty, inequality, unemployment, and low growth have been identified as priority areas to be modelled.<br><br>• Scoping report in the Appendix A.<br>• Diagnostic Results: current trends, current priorities, interlinkages |
| **Considered portfolios of interventions**<br><br>These consist of structured dialogue methods and guidance to explore persistent challenges, barriers, root causes and emerging futures to co-create potential pathways and portfolios of interventions. | The key entry points for South Africa for the SDG Push are:<br><br>• Strengthening well-being and capabilities: Addressing peoples' capabilities to make life choices, which crucially depend on health, education and a life free of poverty. The rule of law and the quality of institutions that underpin a peaceful society are also vital elements.<br>• Shifting towards sustainable and just economies: Decoupling economic growth from environmental impacts and resource use, promoting equality, and ensuring economic opportunities, especially jobs.<br>• Building sustainable food systems and healthy nutrition patterns: In transitioning towards sustainable food systems, the focus must be on enabling more equitable access to nutritional foods and maximizing the nutritional value of produce while minimizing the climate and environmental impacts of production.<br>• Achieving energy decarbonization and universal access to energy: A clean energy revolution (in South Africa, in particular) is urgently needed to win the fight against energy poverty, to promote robust development and to make it more sustainable. Clean energy can unlock sustainable economic growth, improve human health and well-being, and enable women and children to lead more productive lives.<br>• Promoting sustainable urban and peri-urban development: With most people living in cities, promoting sustainable urban and peri-urban development is more urgent than ever. The urban agglomeration presents growing and compounded health risks related to air pollution and communicable diseases, reflecting in part the lack of balance between natural and human systems, and uneven access to basic infrastructure and essential services. People in urban areas have generally been at the frontlines of the COVID-19 pandemic.<br>• Securing the global environmental commons: This focuses on the goal of living within planet-wide environmental boundaries and protecting global ecological systems. South Africa hosts tremendous biodiversity but is also experiencing devastating environmental degradation. South Africa is also extremely vulnerable to climate change, which presents an existential threat in some areas. |

The analysis has been anchored in the skills gap and in re-evaluating social grants: The aim is to remedy the labour market distortion trend and harness spillover beneficial effects of social grants, thereby increasing economic growth while reducing poverty in line with the SDG, the NDP and the ERRP targets.

At the heart of the economic modelling approach is a carefully designed tool for the South African economy, which combines a sequential dynamic Computable General Equilibrium (CGE) model and a Micro-Simulation (MS) model, both top-down and bottom-up.

The main innovation brought into the modelling framework is linked to its combining coherently and systematically macro-micro and micro-macro effects of policy combinations that simultaneously address economic growth, unemployment and inequality, in line with reaching the SDG targets.

The tool also simulates the likely future impacts of the scenarios identified for the 2023–2030 period, i.e. ex ante assessment, and draws lessons on the SDGs. A combination of policy options was tested (SDG Push), including skill formation acceleration,[5] services

5 The refers to the doubling the supply of tertiary education, i.e. from an annual increase of 2.2 percent under the BAU scenario to reach 4.4 percent.

sector growth acceleration,[6] industry sector growth acceleration,[7][8] and poverty-alleviating social grants.

More precisely, under the poverty-alleviating social grants intervention, two counterfactual samples are generated to build two counterfactual scenarios in addition to the baseline scenario: the unconditional social grant scenario and the conditional social grant scenario. The unconditional social grant scenario implements increases in food and non-food consumption expenditures, and decreases in labour market participation by members of target households. The conditional social grant scenario implements increases in food and non-food consumption expenditures combined with increases in labour market participation by members of target households. The conditionality in the later scenario is related to the labour market participation of members of the target households. In the two scenarios, it is assumed that additional grant expenditure is externally funded. In addition to the SDG Push scenario, a business-as-usual (BAU) scenario is created to serve as the baseline scenario against which the net effect of the SDG Push package is compared. Each scenario shows how policies could enhance economic growth and reduce unemployment, poverty and inequality. The economic and fiscal cost of the SDG Push financed internally (i.e. government financing) and externally (i.e. through the SDG Stimulus) are then derived from the modelling. In a final step, a Results Framework is developed using findings of the modelled policy scenarios under the SDG Push and BAU. The analysis assesses direct progress on SDGs 1, 2, 8, 9 and 10.

Under the BAU, the past eight-year economic growth performance of the economy (2014–2019[9]) show that were these growth rates to persist, the country would achieve economic growth of 1.7 percent in 2030 compared to 1.6 percent in 2023 (national economy), 2.3 percent (agriculture), 1.2 percent compared to 0.9 percent (industry), 1.5 percent compared to 1.2 percent (manufacturing), and 2.0 percent (services)[10]. These low growth rates are insufficient and will exacerbate unemployment, which, by 2030, will reach 40.8 percent (national economy), 20.8 percent (primary education skill category), 49.6 percent (middle education skill category), 55.6 percent (secondary education skill category), and 25.2 percent (tertiary education skill category). The low growth projected in gross domestic product (GDP) and unemployment rates have negative knock-on effects on the Gini index, with inequality increasing by 0.021 in 2030, compared to 2023 while poverty marginally declines by 1.2 percentage points (upper-bound poverty line), 1.1 (lower-bound poverty line) and 0.8 (food poverty line). Thus, were BAU to continue, South Africa would be expected to fall short on the key SDGs, particularly those relating directly to poverty, inequality, and economic and unemployment growth rates.

The SDG Push scenario focused on market supply and demand interventions (skill formation acceleration, services sector growth acceleration and industry sector growth) and showed an economic growth acceleration from 4.5 percent in 2023 to 7.0 percent by 2030, which will increase GDP by 55.6 percent. There is a substantial reduction of the unemployment rate by more than 13 percentage points from the current 41.8 percent in 2023 to 28.3 percent by 2030 under the combined scenario. The combined results show that personal and social service activities, transport, finance and insurance can

6 This growth acceleration aims to address the demand for skills generated, i.e. to absorb the additional supply of labour with tertiary education, where the employment rate of tertiary education is the same at the beginning and end of the period.
7 Industry sector growth acceleration aims to generate identical economywide average growth rate over 2023–2030 as in the Services Sector Acceleration Scenario.
8 The shock is introduced through the total factor productivity parameter. The size of the shock in service industries is determined by the level of unemployment in 2030, which should be equal to the level in 2023, i.e. full absorption of the additional skill produced. The size of the shock in the industry sector is equivalent to the size of the shock in the service industry sector in terms of average GDP growth rate between 2023 and 2030 in order to ensure consistency and comparability.
9 World Development Indicators 2023 database.
10 For agriculture and services the annual growth rates are constant over the period 2023-2030.

make the greatest contribution of all the industries tested to reducing unemployment. These sectors within services and industries can increase overall productivity and reduce unemployment while also contributing to absorbing tertiary/skills education employment, which is also very high. A programme to stimulate these sectors and subsectors would be economically viable. Despite all the efforts, inequality remains stubbornly high under this combined scenario, which from 2023 to 2030, will increase by 0.034 percentage points while poverty marginally will decline by about 3.8 percentage points (upper-bound), 3.4 percentage points (lower bound) and 2.5 (percentage points food poverty line).

However, the final two scenarios (unconditional and conditional) of increased public spending on social grants reverse the negative effects of poverty and inequality. Key findings regarding the economy are that the economic growth rate accelerates faster (by 0.5 percentage points) under the conditional social grant scenario than under the baseline scenario. Demand increases created by income transfers to poor households are met with supply increases driven by constrained labour market participation of target household members. The inflationary effects, particularly food price increases, are limited under this scenario. Yet, GDP deteriorates (by 1.0 percentage points) under the unconditional social grant scenario compared to the baseline scenario, as food demand increases and related price increases contribute to reducing consumers' purchasing power.

The net implication of this designed SDG package is that 25 million South Africans will be lifted from poverty (lower-bound poverty line and food poverty line) while income inequality drops by 8.35 percent. When financed by the Government, the economic cost is US$ 6.5 billion per year on average (total of US$52 billion in 2023–2030) or indirectly, an annual GDP growth loss of 0.8 percentage points (US$3.5 billion). However, with an SDG Stimulus, the losses in GDP are neutralized. The cost of social grants is 2.63 times higher under the unconstrained scenario than under the constrained scenario. **In both scenarios, a substantial contribution of the SDG Stimulus (approximately 80 percent on average) is needed to wipe out the negative economic growth impact.**

Finally, it emerged from the Results Framework Assessment that, in South Africa, the trajectory of the progress towards the SDGs of interest under the BAU scenario is off-track. Conversely, with skill matching and targeting for growth sectors that are more intensive in their demand of skills generated, the country get back on track with the SDGs that are directly related to higher economic growth and reduced unemployment, yet partially on track to meet the SDGs related to poverty while not meeting those related to inequality. **Social grants, particularly when conditional and financed under the SDG Stimulus, will meet the poverty and inequality SDG by 2030.** Thus, the combined SDG Push scenarios would help the country achieve the identified SDGs in line with its overarching aim to tackle the triple development challenges of unemployment, inequality, and poverty.

In sum, the economic modelling results highlight the social limitations of depending solely on addressing the supply and demand side of the national skills mismatch dilemma. While the measures propel the economy onto the desired high growth and employment path, inequality and poverty remain stubbornly high. A conditional increased social grant package under the SDG Stimulus is needed to address poverty and inequality. Thus, what South Africa requires for the SDG Push is a combination of policies rather than one policy alone in order to effectively address its persistent low growth, high unemployment and endemic poverty.

**Table 2: SDG Result Framework**

| SDG | INDICATOR | TARGET | BASELINE | BAU | SS1 | SS2 | SS3 | SS4 |
|---|---|---|---|---|---|---|---|---|
| 1 | Eradicate extreme poverty (1.1.1) | <5% | 42.5% (2015) | 40.1% | 40.0% | 39.1% | 39.1% | 5% |
| | Halve population below national poverty line (1.2.1) | -50% | 55.5% (2015) | -1.2% | -1.3% | -3.7% | -3.8% | -3.8 |
| | Population covered by social protection floors/systems (1.3.1) | > | - | - | > | > | > | > |
| | Government spending on essential services (1.a.2) | > | - | - | > | > | > | > |
| 2 | Prevalence of undernourishment (2.1.1)* | <5% | 25.2 | 25.0% | 25.0% | 24.6% | 24.6% | 5% |
| | Income of small-scale food producers (2.3.2)** | 100% | 0% | 20.0% | 20.9% | 41.1% | 47.7% | 52.8% |
| 4 | Completion rate, primary, lower, and upper secondary education) | 100% | - | > | > | > | > | > |
| 8 | GDP growth rate (8.1.1) | 7% | 1.7% | 1.7% | 1.9% | 6.0% | 6.0% | 7.4% |
| | GDP growth rate per employed person (8.2.1) | > | 0% | -0.1% | 0.1% | 4.3% | 4.4% | 4.4% |
| | Hourly earnings (8.5.1) | > | 0% | -0.1% | -0.3% | 0.2% | 0.2% | -0.1% |
| | Unemployment rate (8.5.2) | <5% | 42.2% | 40.8% | 40.2% | 29.0% | 28.3% | 28.3% |
| 9 | Manufacturing value added as a proportion of GDP and per capita (9.2.1) | > | 0% | -2.3 | -2.2 | -12.0 | 12.7% | 10.2% |
| 10 | Growth rates of household expenditure or income per capita among the bottom 40 percent of the population and the total population (10.1.1)*** | > | 0% | < | < | < | < | > |

Note: **BAU** – Business as usual; **SS1** – Tertiary skill formation acceleration; **SS2** – Tertiary skill formation acceleration and service sector development; **SS3** – Tertiary skill formation acceleration and industrialization; **SS4** – Tertiary skill formation acceleration, industrialization, and social grant expansion (i.e. with SDG stimulus);
*Food poverty; **Agricultural value-added growth; *** Based on changes in the Gini index.

On-track (target value reaches 90% or more)
Off-track - good progress (target value reaches between 50% and 90%)
Off-track - slow progress (target value reaches between 10% and 50%)
Off-track - no progress (target value reaches below 10%)

# Introduction

South Africa, like all other countries, has committed to work towards achieving a set of common goals that meet urgent global environmental, economic, social and political challenges by 2030, i.e. the United Nations Sustainable Development Goals (SDGs). Achieving the SDGs entails substantial changes to the structure of the economy, with the need for significant investment to address the triple development challenges of high unemployment, inequality, and poverty confronting the economy. Energy supply issues have worsened progress in the country. At the same time, the global COVID-19 pandemic, combined with the current geopolitical context, has driven up energy prices and inflation, which in turn has caused rising interest rates, hindering progress towards achieving the SDGs in the country.

The Government led the SDG Push in South Africa through the National Planning Commission (NPC), which led the preparation of the National Development Plan (NDP), the country's blueprint for development. NPC's comprehensive review of the NDP 2030 recently showed slow progress towards its goals. Faced with COVID-19 and complex and compounding global and national crises, the outlook for the country is increasing poverty, inequality and unemployment. This combined with the aforementioned energy supply issues have impeded progress in the country. **The SDG Push Dialogue considered NPC comprehensive review and government priority areas, and reaffirmed that ending poverty and reducing inequality and unemployment are the main development challenges.** Structural reforms, including credible policies to align private sector growth strategies to global, national and local priorities, stimulating private sector investment and employment, as well as a skills matching interventions agenda remain the primary mechanism to revive growth. A range of complementary actions, such as expanding social protection to reach those currently left behind, are also needed in the short to medium term.

The goal of the SDG Push was to identify economic policy roadmaps to accelerate the realization of key economic growth and development targets that the South African Government has committed to for 2030 under both the NDP and the SDGs. There are several pathways to reach the goals; the dire socio-economic environment prevailing in the country reinforces the urgency of doing so. Economic simulation models are used to support evidence-based SDG Push strategies and interventions. The economic modelling approach consists of a carefully designed tool for the South African economy, which combines a sequential dynamic Computable General Equilibrium (CGE) model and a MS model, both top-down and bottom-up. The tool is used to simulate likely future impacts of SDG Push scenarios identified for the 2023–2030 period, i.e. ex ante assessment, and highlights implications on the SDGs. A combination of policy options are then tested (the 'SDG Push'), including skill formation acceleration, services sector growth acceleration, industry sector growth acceleration, and unconditional and conditional poverty-alleviating social grants. The choice of these policy instruments and their design was informed predominantly by the Government's ERRP,[11] the SDG Push Policy Stakeholder Dialogues organized by the NPC and UNDP, as well as various other policy documents such as: Building a New Economy: Highlights of the ERRP; the NDP Pathways Implementation towards 2030 and Critical Actions 2022,[12] Economic Transformation, Inclusive Growth, and Competitiveness; A contribution towards a growth agenda for the South African economy, by the Economic Policy Division, National Treasury (Vulindhle-

11 The South African Economic Reconstruction and Recovery Plan.
12 National Development Plan 2030. Our Future – Make it work.

la),[13] Budget Review (Including MTBPS) 2022, prepared by the Economic Policy Division, National Treasury;[14] the Nine-Point Plan; Industrial Policy Action Plan (IPAPs);[15] Economic Policy Reforms 2021; and Going for Growth, OECD 2021.[16] The economic and fiscal costs of the SDG Push financed internally (i.e. government financing) and externally (i.e. the SDG Stimulus) are then derived from the modelling. In a final step, a Results Framework is developed using findings of the modelled policy scenarios under the SDG Push and the BAU. The Results Framework directly assesses progress on SDGs 1, 2, 8, 9 and 10. A novel feature in this modelling approach is that it coherently and systematically combines macro-micro and micro-macro modelling to work out the policy combinations that simultaneously address economic growth, unemployment and inequality, consistent with reaching the SDG targets. The results of the model simulations presented are indicative primarily of the size of the various direct and indirect effects, rather than a forecast of the SDG Push scenario in general.

The rest of the report is structured as follows. Section 2 presents the modelling strategy, as well as the mechanisms that drive the economic and public finance implications of the policy instruments. The section also presents the data used to implement the models, primarily consisting of a national Social Accounting Matrix (SAM) and household survey data. Section 3 presents an overview of the SDG Push Policy Package scenario and results on the economic and fiscal consequences of the scenarios under alternative financing options. In contrast, Section 4 provides an overview of the implications of the scenarios on relevant SDGs using an SDG Results Framework for South Africa. Finally, Section 5 concludes with a summary and discussion of the main policy implications. Certain important caveats that are relevant for policy choices inherent in the analysis are highlighted.

13 Republic of South Africa. b.d.a.
14 Republic of South Africa. n.d.c.
15 Republic of South Africa. n.d.d.
16 OECD (2021).

# Modelling methodology

## The microsimulation models and restrictions imposed

In line with Ferreira and Horridge (2006),[17] the MS model for the top-down macro-micro analysis and the reweighting MS technique pioneered by Meagher (1993)[18] are used to generate a counterfactual sample of households with lower poverty and inequality outcomes for the bottom-up micro-macro analysis. The approach is built upon the principle of entropy, which transforms available information into a distribution of probabilities that describe our state of knowledge (Fofana et al., 2023). The probability associated with each individual income level is expressed through weights assigned to each surveyed individual. Individuals' behavioural change is implicitly included as they move from one income level to another, but individual-level information on the transition to a different income level is not produced. However, the approach captures aggregate outcomes resulting from implicit individuals' behavioural changes.

The MS technique uses the Kullback–Leibler minimum divergence cross-entropy (CE) formula to recover a final, or posterior, probability distribution consistent with an initial or prior, probability distribution and available information on the population – or population attributes. The latter are transformed into aggregate restrictions. The objective function of the Kullbak-Leibler CE problem is stated in a deterministic form. It minimizes the distance (***K***) between the survey distribution of income

$$K = \sum_i p_i . \log \frac{p_i}{q_i}$$

across the population (or the prior distribution ***q***) and the distribution of income to end poverty (or the posterior distribution ***p***).

The above objective function is subject to a

$$Y_j = \sum_i y_{ij} \cdot p_i$$

set of aggregate socioeconomic restrictions ***Y***, with ***y*** as a parameter associated to an individual specific attribute.

***Y*** and ***y*** take the value 1 in the adding-up constraint. The other set of restrictions include: (i) the poverty headcount index at the lower-bound poverty line; (ii) the average amount of public transfer to the poor; (iii) the average income of the poor; (iv) the household size;[19] and (v) attributes related to the geographical location of poor individuals, such as the share of population by settlement types (i.e. urban, traditional and farms) and by provinces (i.e. Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northwest, Northern Cape, Western Cape).

A nationally representative survey of the South African population, i.e. the National Income Dynamics Study (NIDS) wave five (2017), is used to implement the MS model. NIDS is a national panel (longitudinal) survey designed to track the dimensions of the well-being of individuals living in South Africa as well as their households. The survey captures several dimensions of well-being including wealth creation in terms of income and expenditure dynamics and asset endowments, education and employment dynamics, impact of life events (positive and negative shocks), social

17 Ferreira & Horridge (2006).
18 Meagher (1993).
19 Other socio-demographic attributes of poor households can be considered, such as age, gender and level of education of the household head. However, increasing the number of restrictions can lead to serious technical challenges.

capital and intergenerational developments, and demographic dynamics. Five waves of NIDS were released between 2008 and 2018. During wave five, 39,400 individuals in 10,800 households were interviewed across South Africa.

### Restriction on ending poverty

Discussions on official poverty measures for 2015

- Poverty measurement upper-bound poverty line (55.5 percent)
- Poverty measurement lower-bound poverty line (40.5 percent)
- Poverty measurement food poverty line (25.2 percent)
- Upper-bound poverty line: 9,096
- Lower-bound poverty line: 13,656
- Food poverty line: 6,372.

Poverty lines were adjusted for inflation between 2015 and 2017 to generate new poverty measures for 2017 using the NIDS 2017 database:

- Inflation, consumer prices (annual percent): 2015–2016 = 6.6 percent, 2016–2017 = 5.2 percent
- Pov_up0 = 0.561 poverty headcount upper-bound
- pov_lp0 = 0.420 poverty headcount lower-bound
- pov_fp0 = 0.293 poverty headcount food.

Discussions on increase of poverty measures between 2015 and 2017:

- GDP per capita growth (annual percent): 2015–2016 = -0.3 percent and 2016–2017 = 0.8 percent. (This is translated into a poverty reduction at the lower-bound national poverty line from 42.0 to 5 percent.)

### Restrictions on increased income

In 2017, poor individuals received ZAR1,70 in a social grant on average, representing 30 percent of their initial income. Given that the average income of poor is 44.2 percent lower than the lower-bound poverty line of ZAR 9,096 (i.e. the poverty gap), to end poverty at the lower-bound poverty line, every poor individual receives a transfer in the amount of ZAR 4,020 on average. The current amount of social grants allocated to poor individuals is set to increase by 2.36 times to end poverty at the lower bound national poverty line. Consequently, income of poor individuals increases by 70.7 percent on average.

### Restriction on household size:

- Poor households, average size: phsize = 6.729
- Nonpoor households, average size: nhsize = 3.569.

### Restriction on population distribution by residential types:

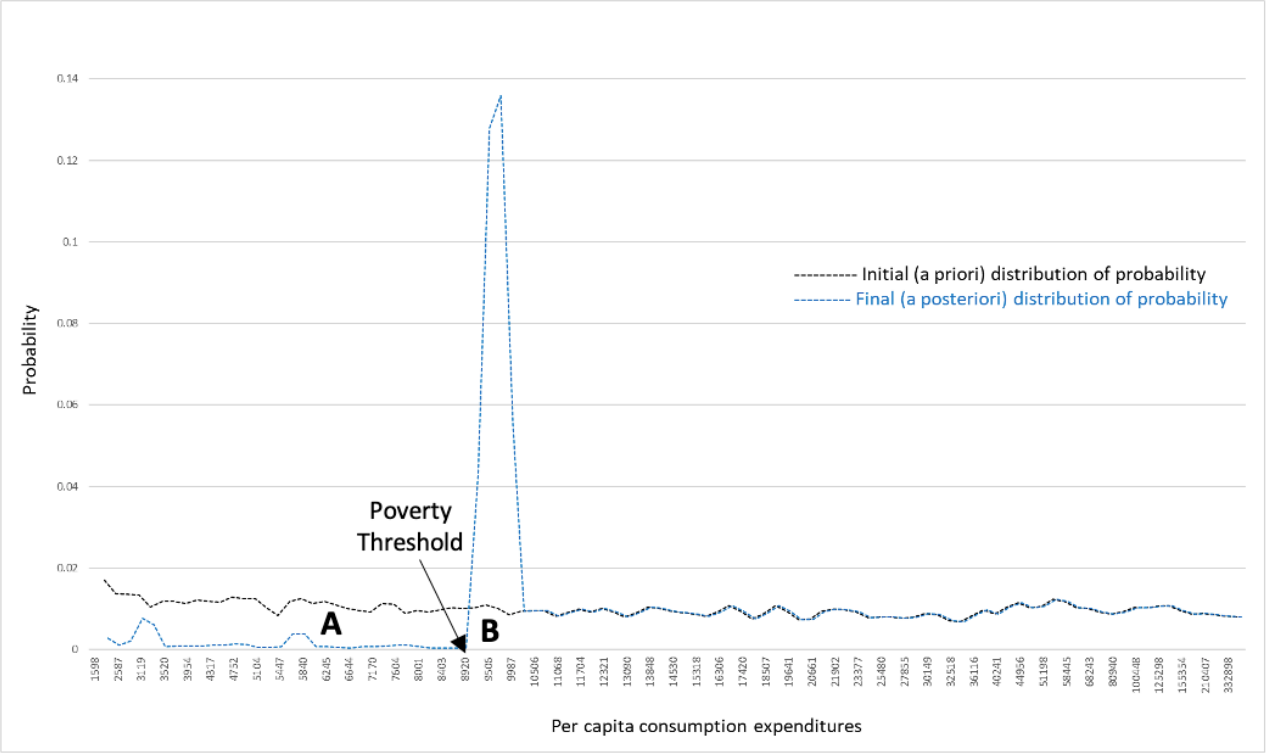
- Urban ho_urb = 0.642
- Traditional ho_trd = 0.320
- Farms ho_frm = 0.038.

### Restriction on population distribution by province:

- Eastern Cape ho_reg1 = 0.112
- Free State ho_reg2 = 0.051
- Gauteng ho_reg3 = 0.265
- KwaZulu-Natal ho_reg4 = 0.198
- Limpopo ho_reg5 = 0.096
- Mpumalanga ho_reg6 = 0.085
- North West ho_reg7 = 0.053
- Northern Cape ho_reg8 = 0.025
- Western Cape ho_reg9 = 0.115.

The restrictions are used to identify a group of non-poor individuals (B in Figure 1) that displays identical observable characteristics as those of the group of poor individuals (A in Figure 1); i.e. on average, initially poor individuals display the same characteristics as identified non-poor individuals. The restrictions generate a posteriori distribution bias towards the identified group (Figure 1). As changes in the probability distribution of poor individuals are set to equal the changes in the probability distribution of non-poor individuals through the adding-up constraint; identical characteristics over observable attributes are also imposed between the two groups through additional restrictions.

**Figure 1: Distribution of probability**




Source: Compilation from NIDS 2017.

## The macro models, closure rules and dynamics

The assessment of the economic growth implications of the poverty-alleviating SDG Push interventions uses a CGE model calibrated to the South Africa's economy (See Appendix B for the input data used). CGE models are macro-economic models that combine economic theory and empirical data to measure the effects of economic policies and external shocks. Standard features of the model are borrowed from the dynamic recursive version of the CGE model developed by Decaluwé et al. (2013). The latter is modified to include key features related to aspects using both a bottom-up micro-macro and a top-down macro-micro approach. Households are distinguished into two groups, i.e. poor and non-poor households. Thus, consumption and labour supply behaviours of poor households are partially informed by the results from the micro-model. Also, the behaviours of non-poor households are primarily affected by market prices produced by the CGE model.

An extended linear expenditure system (ELES) represents consumption and labour supply behaviours, which depict non-discretionary components related to autonomous (or exogenous) consumption of products and leisure time, and a discretionary component associated with induced (or endogenous) consumption. Unlike induced consumption, autonomous consumption does not fluctuate with disposable income, but is related to non-income factors, including social policies.

A unitary household ***h*** utility is modelled by an extended Stone-Geary utility function defined over ***i*** market products () and ***l*** leisure time (l). ***C*** and ***θ*** represent the total and subsistence levels of consumption of market products, respectively. ***l*** and ***γ*** are the total and minimum levels of leisure time by household members. Leisure time is a normal good. For simplicity sake, here the subscribes ***h***, ***i*** and ***l*** are ignored. ***α*** and ***β*** are the marginal budget shares that determine the allocation of household supernumerary income between market products and individual leisure times, with ***α+β=1***.

$$(C - \bar{\theta})^{\alpha} \cdot (\ell - \bar{\gamma})^{\beta}$$

The household faces budget and time constraints:

$$Y = R + w \cdot L = p \cdot C$$

$$\bar{T} = L + \ell + \bar{\gamma}$$

Y is the gross income net of saving, ***p*** commodity market price, ***w*** the wage rate, and ***L*** the time supplies to market. The full income $Y^F$ constraint below is obtained from the above equations:

$$Y^F = R + w \cdot \bar{T}L = p \cdot C + w \cdot (\ell + \bar{\gamma})$$

The following demand and supply function are derived from utility maximization under the full income constraint:

$$C = \bar{\theta} + \frac{\alpha \cdot (Y - p \cdot \bar{\theta})}{p \cdot (1 - \beta)}$$

$$L = \bar{H} - \frac{\beta \cdot (Y - p \cdot \bar{\theta})}{p \cdot (1 - \beta)}$$

The maximum time available for work and leisure $\bar{H}$ (Ballard and al., 1985) is computed as follows:

$$\bar{H} = \bar{T} - \bar{\gamma}$$

Both poor and non-poor households display a non-discretionary component related to autonomous consumption of product ($\bar{\theta}$) and leisure ($\bar{H}$) and a discretionary component that fluctuates with income and prices below. First, changes in consumption and labour supply of poor households resulting from the SDG Push interventions are transmitted from the micro model to the macro model through the non-discretionary consumptions of products and leisure. Second, both poor and non-poor households are affected by the feedback effects of initial shocks through their exposure to markets (e.g. income and price effects). The non-discretionary component of the demand for products and leisure time from household members are calibrated using the Frish parameter.

The Frisch parameter measures the income elasticity of the marginal utility of income, which declines as income increases, and is expressed as follows:

$$Frisch = -\frac{Y}{Y - p \cdot \bar{\theta}}$$

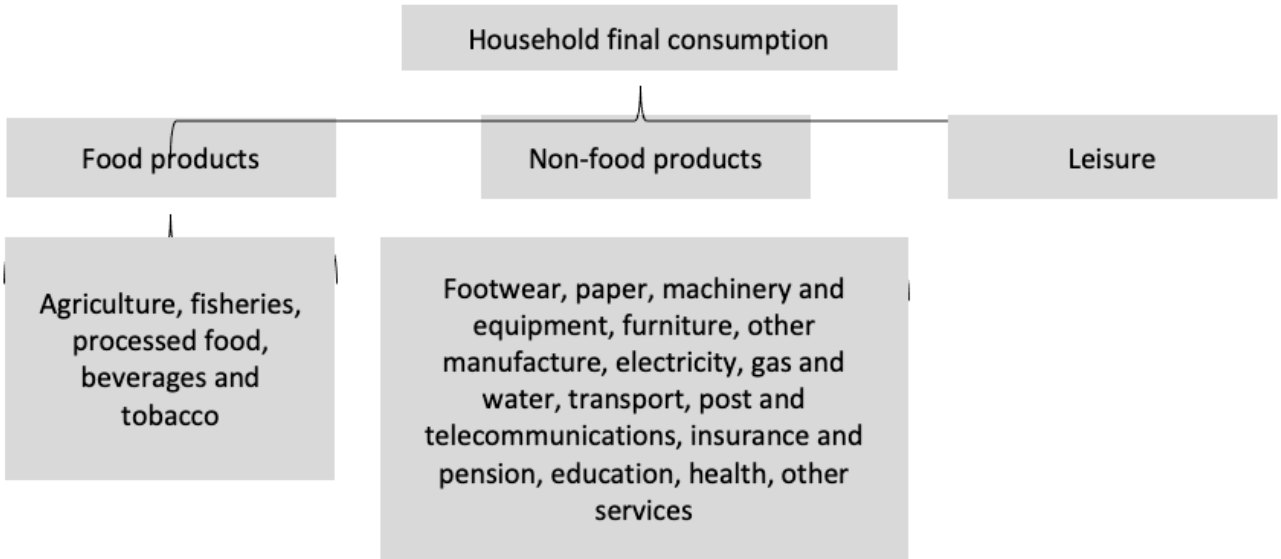
The denominator is the supernumerary income, i.e. the remaining income after the consumer has to satisfy all subsistence requirements. The supernumerary income affects the discretionary consumption of products and leisure, and fractions $\alpha$ and $\beta$ are spent on products and leisure. The smaller the supernumerary income, the larger the Frisch parameter in absolute value, and the smaller the discretionary component which is the total consumption and leisure. Thus, a larger value of the Frisch parameter is given to poor household to put more weight on the non-discretionary component of the consumption of product and leisure. In contrast, a smaller value of the Frisch parameter is given to non-poor households to give greater weight to the discretionary component.

Household final consumption is represented by a multi-level nested Cobb-Douglas function that combines market commodities and leisure. At a lower level, agricultural products, fishery products, processed food products, and beverage and tobacco are aggregated in a bundle of food products. Other products (i.e. footwear, machinery and equipment, education, health) are aggregated into a bundle of non-food products. At the higher level, food and non-food bundles and leisure are aggreged into a final consumption using an LES function.

The macro closure rules consist of equations that include a set of constraints that must be satisfied by the system and imposed to individual actors. These constraints cover markets aggregates (e.g. commodities and factors) and macroeconomic aggregates (e.g. balances for government, the current account of the rest of the world, and savings-and-investment). Flexible relative prices equilibrate demands and supplies of domestically marketed output. Several labour market segments are defined and assumed to be running in an imperfect competition setting. Government savings (i.e. the difference between current government revenue and current government expenditure) is a flexible residual whereas all tax rates are fixed. The real exchange rate is flexible, while foreign savings (i.e. the current account deficit or the difference between foreign currency spending and receipts) is fixed. Investment is savings-driven in that it is determined by the sum of private (i.e. households and firms), public (i.e. government), and foreign (i.e. rest of world) savings.

The CGE models are recursive dynamic, i.e. they involve several time periods. However, consumers and producers take a one-period utility-maximization and profit-maximization decisions respectively, i.e. a 'myopic' decision making. The consequences of their decisions in one period are translated into the next period mainly through savings and capital accumulation. The standard capital accumulation formula is used, i.e. savings increase the existing capital stock net of depreciation. The allocation of new investment by sector is influenced by the cost and return on capital specific to the sector (Jung and Thorbecke, 2001). Other production factors, i.e. agricultural land and various categories of labour are set to grow at a fixed rate from one period to another. The non-discretionary component of private and public final consumption also grows at an exogenous rate (Appendix B). A calibration of the consumption parameters is provided in Appendix C.

**Figure 2: Structure of household consumption**



# The Effect of SDG Push Scenarios on poverty, inequality, unemployment and growth

## The Baseline Scenario and challenges to achieving the Sustainable Development Goals by 2030

The starting point in constructing the reference path against which the SDG Push Policy Package scenarios are compared is the input data contained in Appendix B. The next step is building the BAU output information by inserting these input data and tracking the outputs. The output being tracked is only the output of a subset of the model output, i.e. only a part is relevant for a project, namely, the part that is direct relevant to GDP, unemployment, poverty and inequality.

For the BAU, the first parameter being tracked is GDP growth. Table 1 shows a calibrated long-term growth rate or the steady state growth rate. The table also shows that were historical economic growth performance shown in Appendix B (2014–2019[20]) of 1.7 percent to be maintained, the national economy grows by 1.7 percent in 2030 compared to 1.6 percent for 2023–2029. Thus, these economy-wide growth rates are well calibrated because albeit low, still they show a growing economy consistent with growth in the input data.

In order to replicate the overall GDP growth in Table 3 at a disaggregated level, an intermediate output sectoral output table is generated. Table 4 provides information on the sectoral GDP between agriculture, industry, manufacturing change in order to match the calibrated GDP growth. Again, the model is behaving well: in 2030 compared to 2023, the sectors show positive projected economic growth rates as follows: 2.3 percent (agriculture), 1.2 percent and 0.9 percent (industry), 1.5 percent and 1.2 percent (manufacturing), and 2 percent (services).

The unemployment rate (national and by skill category) can be generated because already information on the demand side and how that demand is evolving is now available through Tables 1 and 2. Hence, all changes that can be observed in the unemployment rate is a result of the supply side. As a preamble to discus-

**Table 3: GDP growth rates, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| GDP, annual growth | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.7% |

Source: World Development Indicator (2023) and CGE Model Simulation (2023).

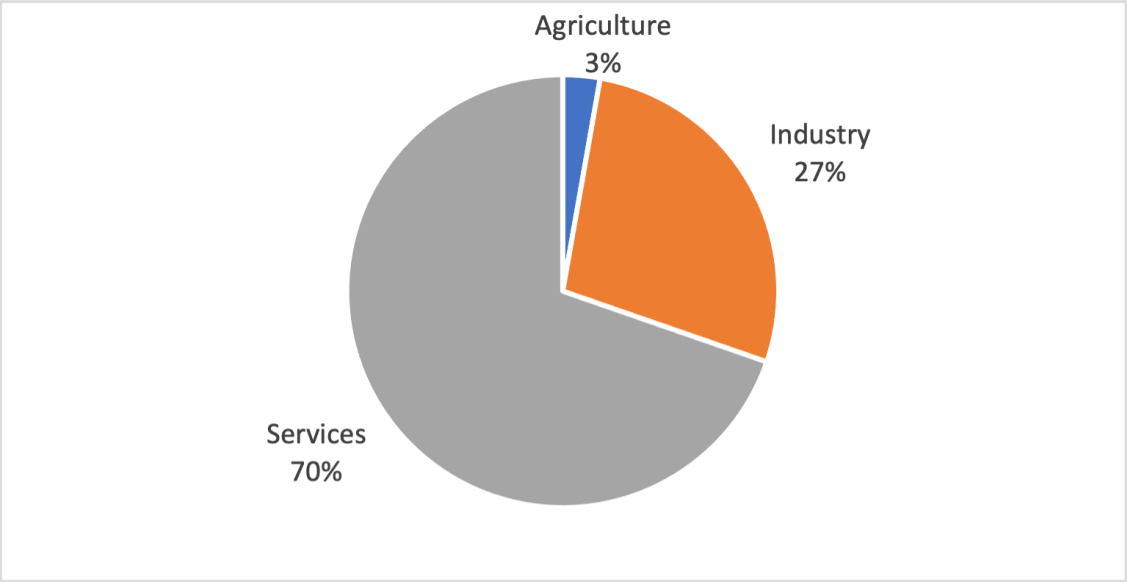
**Table 4: Sector growth rates, projections 2023–2030**

| SECTOR | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 2.3% | 2.3% | 2.3% | 2.3% | 2.3% | 2.2% | 2.2% | 2.3% |
| Industry | 0.9% | 0.9% | 1.0% | 1.0% | 1.0% | 1.2% | 1.2% | 1.2% |
| Manufacturing | 1.2% | 1.2% | 1.2% | 1.3% | 1.3% | 1.4% | 1.4% | 1.5% |
| Services | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |

Source: World Bank. 2023. World Development Indicators; and CGE Model Simulation (2023).

20 World Development Indicators 2023 database.

**Figure 3: Structure of the national economy**




sions on unemployment, Figure 3 shows that South Africa is generally biased towards medium to high skills in industry (manufacturing, mining and quarrying) contributes 27 percent, while services (mainly, high skilled finance and insurance, real estate and business services) constitutes 70 percent, with agriculture making a very small contribution to economic output, of 3 percent.

According to Table 5, consistent with the calibrated low GDP growth rates, unemployment reduces from 42.4 percent in 2023 to 40.8 by 2030, a small decline of 1.7 percentage points.

**Table 5: Unemployment growth rates, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Unemployment Rate | 42.4% | 41.9% | 41.6% | 41.3% | 41.0% | 40.9% | 40.8% | 40.8% |

Source: World Development Indicator (2023) and CGE Model Simulation (2023).

When disaggregating the unemployment rate by skill category, as shown in Table 6, the 2030 compared to the 2022 results are: 20.8 percent and 42.7 percent, respectively for the primary education skill category; 49.6 percent and 52.7 percent, respectively, for the middle education skill category; 55.6 percent and 46 percent, respectively for the secondary education skill category; and 25.2 percent and 22.2 percent, respectively for the tertiary ed-

ucation skill category). Indeed, these results demonstrate that were BAU to be maintained, South Africa's unemployment problem will be mainly middle, secondary and tertiary skilled people, while relatively less so for those with primary skills.

These low growths in economic growth combined with high unemployment rates projected to have negative knock on effects on poverty and inequality, as shown in Table 5. The Gini index of inequality increases by 0.021 percentage points during the 2023–2030 period, while poverty marginally declines by 1.2 percentage points (upper-bound poverty line), 1.1 percentage points (lower-bound poverty line) and 0.8 percentage points (food poverty line) over the same period.

**Table 6: Unemployment rate by skill category, projections 2023–2030**

| | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|
| Primary | 42.7% | 40.2% | 37.5% | 34.9% | 32.1% | 29.4% | 26.5% | 23.7% | 20.8% |
| Middle | 52.7% | 52.3% | 51.9% | 51.5% | 51.1% | 50.8% | 50.4% | 50.0% | 49.6% |
| Secondary | 46.0% | 47.3% | 48.5% | 49.8% | 51.0% | 52.2% | 53.3% | 54.5% | 55.6% |
| Tertiary | 22.2% | 22.6% | 22.9% | 23.3% | 23.7% | 24.1% | 24.5% | 24.9% | 25.2% |

Source: World Development Indicator (2023) and CGE Model Simulation (2023).

These low growths in economic growth combined with high unemployment rates projected to have negative knock on effects on poverty and inequality, as shown in Table 7. The Gini index of inequality increases by 0.021 percentage points during the 2023–2030 period, while poverty marginally declines by 1.2 percentage points (upper-bound poverty line), 1.1 percentage points (lower-bound poverty line) and 0.8 percentage points (food poverty line) over the same period.

**Table 7: Change in poverty and inequality, 2023–2030**

| | UPPER-BOUND POVERTY LINE (PP) | LOWER-BOUND POVERTY LINE (PP) | FOOD POVERTY LINE (PP) | GINI INDEX |
|---|---|---|---|---|
| Variation | -1.2 | -1.1 | -0.8 | 0.021 |

Note: pp=percentage point.
Source: Micro-Simulation Model (2023).

The remaining Tables 8 through 12 use the CGE model BAU analysis to explain the reasons underlying the unemployment outcomes: the country's main unemployment problem is concentrated among middle, secondary and tertiary skilled people, while relatively less so among those with primary skills.

Starting with Table 8 showing changes in labour supply, we see that there are differential effects for the different skill categories. In particular, labour supply for people with primary skills is projected to decline over the 2023–2030 period by 3.3 percent. In contrast, labour supply of the rest of the skill categories is on the increase. For middle skill categories, the increase is 0.7 percent, while it is 4.3 percent for the secondary education skill category and 2.2 percent for the tertiary education skill category for 2023–2030.

**Table 8: Change in labour supply, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% |
| Middle | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% |
| Secondary | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% |
| Tertiary | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% |

Source: CGE Model Simulation (2023).

Table 9 shows changes in labour demand that again show differential effects for the different skill categories, all of which are showing an increasing trend. Demand for people with primary skills is projected to increase marginally to 0.3 percent in 2030, compared to 1 percent in 2023. In contrast, labour demand for the other higher skill categories rises by more than primary. For middle skill categories, the increase is 1.5 percent, while it is 1.8 percent for the secondary education skill category and 1.7 percent for the tertiary education skill category for 2023–2030.

**Table 9: Change in labour demand, Projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 1.0% | 0.9% | 0.8% | 0.8% | 0.7% | 0.6% | 0.4% | 0.3% |
| Middle | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% |
| Secondary | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% |
| Tertiary | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% |

Source: CGE Model Simulation (2023).

Table 10 shows changes in labour productivity. Productivity drops marginally to 1.6 percent in 2030 from 1.7 percent in 2023. This marginal decline partly contributes to observed unemployment across all skills categories.

**Table 10: Change in labour productivity, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Variation | 1.0% | 0.9% | 0.8% | 0.8% | 0.7% | 0.6% | 0.4% | 0.3% |

Source: CGE Model Simulation (2023).

Table 11 shows changes in respective wage rates for the skill categories. While wage rates increase for primary-skilled people (1.3 percent and 0.6 percent) and middle-skilled people (0.1 percent) in 2030 compared to 2023, the wage rates of the rest of the relatively higher-skilled people are projected to decline. These results can be mainly traced back to the relative scarcities shown in labour supply displayed earlier in Table 8.

**Table 11: Changes in wage rates, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 0.6% | 0.7% | 0.7% | 0.8% | 0.9% | 1.0% | 1.1% | 1.3% |
| Middle | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% |
| Secondary | -0.3% | -0.3% | -0.3% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% |
| Tertiary | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.1% |
| All | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% |

Source: CGE Model Simulation (2023).

Finally, Table 12 shows changes in return to capital. This return shows an increase in 2030 of 0.1 percent, compared to a decline of 0.3 percent in 2023.

**Table 12: Changes in return to capital, projections, 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Variation | -0.3% | -0.2% | -0.2% | 0.0% | 0.0% | 0.1% | 0.1% | 0.1% |

Source: CGE Model Simulation (2023).

Summing up the BAU scenario, the results show a well-calibrated model. If economic growth rates of 2014–2019 were maintained, the country can expect to achieve low economic growths for 2023–2030. These low growth rates translate into rising unemployment particularly for relatively higher skill categories with negative knock-on effects on poverty and inequality outcomes. Thus, were BAU to continue, South Africa is expected to fall short on the key SDGs, particularly those relating directly to poverty, inequality, economic and unemployment growth rates.

# The Skill Formation Acceleration and Tertiary Education Scenario – Progress but challenges to reach the Sustainable Development Goals relating to poverty and inequality

## Scenario 2

Doubling the supply of tertiary education, i.e. from an annual increase of 2.2 percent under the BaU scenario to 4.4 percent.

The discussion began by tracing the results from the labour markets (labour supply and demand, wage rates, productivity) since this market was the entry point for these scenarios. Table 13 shows that SDG Push scenario focused solely on market supply through skill formation and labour supply changes for 2023–2030. The table shows differential effects for the different skill categories, which can be explained by assumptions made in the modelling of labour dynamics combined with the acceleration in skill formation embedded in the scenario design. Labour supply for people with primary skills is projected to continue declining over the 2023–2030 period by 3.3 percent, as in the BAU. In contrast, labour supply of the rest of the skill categories is on the increase as in the BAU, but this time displaying some variation between 2030 and 2023 for secondary skill categories and respective growth rates from those in the BAU. When comparing 2030 to 2023, for middle skill categories, the increase is 0.7 percent, while it is 3.2 percent and 3.3 percent for secondary education skill category and 4.4 percent for the tertiary education skill category.

**Table 13: Change in labour supply, projections for 2023–2030**

**BASELINE**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | -3.3% | 3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% |
| Middle | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% |
| Secondary | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% | 4.3% |
| Tertiary | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% |

**SKILL FORMATION ACCELERATION, TERTIARY EDUCATION**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | -3.3% | 3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% | -3.3% |
| Middle | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% | 0.7% |
| Secondary | 3.3% | 3.3% | 3.3% | 3.3% | 3.3% | 3.3% | 3.2% | 3.2% |
| Tertiary | 4.4% | 4.4% | 4.4% | 4.4% | 4.4% | 4.4% | 4.4% | 4.4% |

Source: CGE Model Simulation (2023).

Table 14 shows changes in respective wage rates for the skill categories. While wage rates for primary skills in 2030 compared to 2023 are expected to increase due to increasing scarcity of labour, the rest of the relatively higher skilled people wage rates are projected to decline, respectively by (0.2 percent Secondary and 0. 1 percent tertiary), leading to an economy-wide decline of 0.1 percent for whole economy when comparing 2030 to 2023. The economy-wide wage rate drops from 0.2 percent to 0.4 percent when comparing 2030 to 2023. Once again, these results are informed by relative scarcities implied by labour supply changes displayed in the preceding table (Table 13).

**Table 14: Changes in wage rates, projections for 2023–2030**

**BASELINE**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 0.6% | 0.7% | 0.7% | 0.8% | 0.9% | 1.0% | 1.1% | 1.3% |
| Middle | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% |
| Secondary | -0.3% | -0.3% | -0.3% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% |
| Tertiary | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.2% | -0.1% |
| ALL | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% | -0.1% |

**SKILL FORMATION ACCELERATION, TERTIARY EDUCATION**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 0.6% | 0.7% | 0.7% | 0.8% | 0.9% | 1.0% | 1.2% | 1.3% |
| Middle | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% | 0.1% |
| Secondary | -0.2% | -0.2% | -0.2% | -0.2% | -0.1% | -0.1% | -0.1% | -0.1% |
| Tertiary | -0.7% | -0.6% | -0.6% | -0.6% | -0.5% | -0.5% | -0.5% | -0.4% |
| ALL | -0.4% | -0.4% | -0.4% | -0.3% | -0.3% | -0.3% | -0.2% | -0.2% |

Source: CGE Model Simulation (2023).

Table 15, which displays changes in labour demand, shows differential effects for the different skill categories, all of which show an increasing trend compared to the BAU, with the exception of the secondary category. Demand for people with primary skills is projected to decrease marginally to 0.4 percent in 2030, compared to 1 percent in 2023. In contrast, when comparing 2030 to 2023, labour demand for the other higher skill categories rises more than for primary skill categories. For middle skill categories, the increase is 1.7 in 2030 and 1.5 percent in 2022, while it is 1.8 percent and 1.7 percent for the secondary education skill category, and finally, 2.1 percent and 2.2 percent for the tertiary education skill category.

**Table 15: Change in labour demand, projections for 2023–2030**

**BASELINE**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 1.0% | 0.9% | 0.8% | 0.8% | 0.7% | 0.6% | 0.4% | 0.3% |
| Middle | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% | 1.5% |
| Secondary | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% |
| Tertiary | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% | 1.7% |

**SKILL FORMATION ACCELERATION, TERTIARY EDUCATION**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Primary | 1.0% | 0.9% | 0.9% | 0.8% | 0.7% | 0.6% | 0.5% | 0.4% |
| Middle | 1.5% | 1.5% | 1.5% | 1.6% | 1.6% | 1.6% | 1.6% | 1.7% |
| Secondary | 1.7% | 1.7% | 1.7% | 1.8% | 1.8% | 1.8% | 1.8% | 1.8% |
| Tertiary | 2.2% | 2.2% | 2.2% | 2.2% | 2.1% | 2.1% | 2.1% | 2.1% |

Source: CGE Model Simulation (2023).

In Table 16 results on labour productivity are shown. The results show that productivity marginally falls to 1.9 percent in 2030 from 2 percent in 2023.

**Table 16: Change in labour productivity, projections for 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | 1.7% | 1.7% | 1.6% | 1.7% | 1.6% | 1.6% | 1.6% | 1.6% |
| Skill Formation Acceleration, Tertiary Education | 2.0% | 2.0% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% | 1.9% |

Source: CGE Model Simulation (2023).

Table 17 shows changes in return to capital. This return shows growth of return to capital declining to 0.2 percent in 2030 from 0.4 percent in 2023.

**Table 17: Changes in the return to capital, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | -0.3% | -0.2% | -0.2% | 0.0% | 0.0% | 0.1% | 0.1% | 0.1% |
| SFA, Tertiary Education | 0.4% | 0.3% | 0.3% | 0.3% | 0.2% | 0.3% | 0.2% | 0.2% |

Source: CGE Model Simulation (2023).

As alluded earlier at the beginning of this sub-section, the culmination of results discussed so far are displayed in Tables 18 and 19. In 2030 compared to 2023, GDP rises to 1.9 percent from 1.7 percent. Sectoral growth is also positive, with economic growth rates of 2.4 percent (agriculture), 1.5 percent and 1 percent (industry), 1.7 percent and 1.4 percent (manufacturing), and 2.2 percent (services).

**Table 18: GDP growth rate, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | -0.3% | -0.2% | -0.2% | 0.0% | 0.0% | 0.1% | 0.1% | 0.1% |
| SFA, Tertiary Education | 0.4% | 0.3% | 0.3% | 0.3% | 0.2% | 0.3% | 0.2% | 0.2% |

Source: CGE Model Simulation (2023).

**Table 19: Sector growth rate, projections 2023–2030**

**BASELINE**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 2.3% | 2.3% | 2.3% | 2.3% | 2.3% | 2.2% | 2.2% | 2.3% |
| Industry | 0.9% | 0.9% | 1.0% | 1.0% | 1.0% | 1.2% | 1.2% | 1.2% |
| Manufacturing | 1.2% | 1.2% | 1.2% | 1.3% | 1.3% | 1.4% | 1.4% | 1.5% |
| Services | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% | 2.0% |

Source: CGE Model Simulation (2023).

**SKILL FORMATION ACCELERATION, TERTIARY EDUCATION**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Agriculture | 2.4% | 2.3% | 2.3% | 2.3% | 2.4% | 2.3% | 2.4% | 2.4% |
| Industry | 1.0% | 1.1% | 1.1% | 1.2% | 1.2% | 1.4% | 1.4% | 1.5% |
| Manufacturing | 1.4% | 1.4% | 1.4% | 1.5% | 1.5% | 1.6% | 1.6% | 1.7% |
| Services | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% | 2.2% |

Source: CGE Model Simulation (2023).

The unemployment rates (national and by skill category)are shown in Tables 20 and 21. According to Table 20, unemployment remains very high, at 40.2 percent, albeit lower than the staggering 42.4 percent for 2023. Table 21 shows unemployment rates disaggregated by skill category. For primary education skill category the unemployment rate reduced from 42.7 percent in 2022 to 20.5 percent in 2030. On the other hand, for secondary education skill category, the unemployment rate increased from 46.0 percent in 2022 to 52.0 percent in 2030. The situation is also similar for tertitary education skill category where unemployment rises from 22.2 percent in 2022 to 34.6 percent in 2030.

The implication of these results is that relying solely on supply-side measures of skill formation acceleration becomes self-defeating, because the skills produced are wasted through massive unemployment in those skills.

**Table 20: Unemployment rate, projections 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | 42.4% | 41.9% | 41.6% | 41.3% | 41.0% | 40.9% | 40.8% | 40.8% |
| SFA, Tertiary Education | 42.4% | 41.9% | 41.4% | 41.0% | 40.7% | 40.5% | 40.3% | 40.2% |

Source: CGE Model Simulation (2023).

**Table 21: Change in unemployment rate, by skill category 2022–2030**

**BASELINE**

| | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|
| Primary | 42.7% | 40.2% | 37.5% | 34.9% | 32.1% | 29.4% | 26.5% | 23.7% | 20.8% |
| Middle | 52.7% | 52.3% | 51.9% | 51.5% | 51.1% | 50.8% | 50.4% | 50.0% | 49.6% |
| Secondary | 46.0% | 47.3% | 48.5% | 49.8% | 51.0% | 52.2% | 53.3% | 54.5% | 55.6% |
| Tertiary | 22.2% | 22.6% | 22.9% | 23.3% | 23.7% | 24.1% | 24.5% | 24.9% | 25.2% |

Source: CGE Model Simulation (2023).

**SKILL FORMATION ACCELERATION, TERTIARY EDUCATION**

| | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|---|
| Primary | 42.7% | 40.2% | 37.5% | 34.9% | 32.1% | 29.3% | 26.4% | 23.5% | 20.5% |
| Middle | 52.7% | 52.3% | 51.9% | 51.5% | 51.1% | 50.7% | 50.2% | 49.7% | 49.3% |
| Secondary | 46.0% | 46.8% | 47.6% | 48.4% | 49.2% | 49.9% | 50.6% | 51.3% | 52.0% |
| Tertiary | 22.2% | 23.8% | 25.4% | 27.0% | 28.6% | 30.1% | 31.6% | 33.1% | 34.6% |

Source: CGE Model Simulation (2023).

These relatively low economic growth rates combined with rising unemployment rates projected to have negative knock displayed above, contribute to generally benign effects on poverty and negative inequality outcomes. As shown in Table 22, the Gini index of inequality increases by 0.021 percentage points for 2023 to 2030, while poverty marginally declines by 1.3 percentage points (Upper-Bound Poverty Line), 1.2 percentage points (lower-bound poverty line) and 0.8 percentage points (food poverty line) over the same period.

**Table 22: Change in poverty and inequality 2023–2030**

| | UPPER-BOUND POVERTY LINE (PP) | LOWER-BOUND POVERTY LINE (PP) | FOOD POVERTY LINE (PP) | GINI INDEX |
|---|---|---|---|---|
| Baseline | -1.2 | -1.1 | -0.8 | 0.021 |
| SFA, Tertiary Education | -1.3 | -1.2 | -0.8 | 0.021 |

Note: pp=percentage point.
Source: Micro-Simulation Model (2023).

# The Skill Formation Acceleration Combined with Demand-Side Interventions – Progress made but social challenges remain in achieving the SDGs

## Scenario 3

- Doubling of the supply of tertiary education, i.e. from an annual increase of 2.2 percent under the BAU scenario to reach 4.4 percent;
- Economic growth acceleration for services;
- Industry sector growth acceleration to generate an identical economy-wide average growth rate over the 2023–2030 period to that for services; and
- Identification of sectors to target using demand stimulus by simulating an economy-wide growth rate increase by 1 percentage point.

This more comprehensive SDG Push scenario now focuses on market supply and demand stimulation of the services and industry sector. The corresponding results are shown in Tables 23 through to Table 26. Overall, the results show extremely promising results for achieving economic and employment SDGs compared to those reported in the preceding scenario, However, despite the good promise on the economic front, the poverty and inequality outcomes remain woefully shy of those envisaged by the corresponding SDG (see Section 4 for more details). Table 23 shows economic growth acceleration from 4 percent in 2023 to 7.4 percent under the combined scenario. According to Table 24, a substantial reduction of the unemployment rate by more than 13.4 percentage points, from the 41.8 percent in 2023 to 28.3 percent by 2030, is observed. Finally, Table 26 seeks to identify economic sectors and sub-sectors to target

when operationalizing the SDG Push Strategy using demand stimulus as demand-side measures. This table is generated by simulating an economy-wide growth rate increase by 1 percentage point led by a total factor productivity increase of the selected industries. The rationale for South Africa is that quality employment is a substantial problem for relatively higher-skilled labour (relative to those with primary-level education skills (Table 24). Demand-side interventions are generally scarce, with the exception of a motor vehicle subsidy and the more recent youth employment subsidies. Few employment programmes, particularly demand-side ones such as comprehensive wage subsidies, are rare. To design these programmes, it is necessary to identify which sectors are ideal for fostering higher skilled employment that is now in abundance (Table 24). Given all these points, it is particularly instructive to use a general equilibrium approach that identifies which sectors are suitable for a skilled labour wage subsidy programme that will create jobs for skilled labour. Indeed, the Government has developed skilled labour since the advent of democracy in 1994. The combined results show that personal and social service activities, transport, finance and insurance can make the greatest contribution out of all the industries tested to reducing unemployment while increasing economic growth.[21] These sectors within services and industries can contribute to increasing overall productivity and reducing unemployment while also contributing to absorbing high number of highly educated skilled labour. Putting together a programme to stimulate these sectors would be economically viable. In spite of all the efforts, inequality remains stubbornly high under this combined scenario, increasing by 0.034 percentage points from 2023 to 2030, while poverty marginally declines by about 3.8 percentage points (upper-bound), 3.4 percentage points (lower-bound) and 2.5 percentage points (food poverty line). The detailed sectoral and unemployment rates can be found in Appendix D.

**Table 23: Economic growth (GDP growth rate), 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.6% | 1.7% |
| SFA, Tertiary | 1.7% | 1.7% | 1.7% | 1.8% | 1.8% | 1.9% | 1.9% | 1.9% |
| SFA, Tertiary and *EGA, Services | 4.5% | 4.9% | 5.2% | 5.6% | 5.9% | 6.2% | 6.5% | 6.7% |
| SFA, Tertiary and EGA, Industry | 4.0% | 4.5% | 4.9% | 5.4% | 5.9% | 6.4% | 6.9% | 7.4% |

Source: CGE Model Simulation (2023).

**Table 24: Unemployment rate, 2023–2030**

| | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 |
|---|---|---|---|---|---|---|---|---|
| Baseline | 42.4% | 41.9% | 41.6% | 41.3% | 41.0% | 40.9% | 40.8% | 40.8% |
| SFA, Tertiary | 42.4% | 41.9% | 41.4% | 41.0% | 40.7% | 40.5% | 40.3% | 40.2% |
| SFA, Tertiary and *EGA, Services | 41.5% | 40.0% | 38.3% | 36.6% | 34.7% | 32.8% | 30.9% | 29.0% |
| SFA, Tertiary and EGA, Industry | 41.8% | 40.4% | 38.9% | 37.2% | 35.2% | 33.1% | 30.7% | 28.3% |

Source: CGE Model Simulation (2023).

21 The rationale behind excluding government services from this list even when its performance compares favourably to identified sectors is of course that we are seeking from the intervention to stimulate private sector participation in the economy to assist the Government in achieving the committed SDGs (see Stakeholder Dialogue Report).

**Table 25: Poverty and inequality 2023–2030**

| | UPPER-BOUND POVERTY LINE (PP) | LOWER-BOUND POVERTY LINE (PP) | FOOD POVERTY LINE (PP) | GINI INDEX |
|---|---|---|---|---|
| Baseline | -1.2 | -1.1 | -0.8 | 0.021 |
| SFA Tertiary | -1.3 | -1.2 | -0.8 | 0.021 |
| SFA, Tertiary and EGA, Services | -3.7 | -3.4 | -2.5 | 0.034 |
| SFA, Tertiary and EGA, Industry | -3.8 | -3.4 | -2.5 | 0.034 |

Source: CGE Model Simulation (2023).
Note: pp=percentage point.

**Table 26: Sectors for targeting demand stimulus based on contribution to change in economic growth and in unemployment reduction**

| INDUSTRY | CONTRI-BUTION TO GDP | ANNUAL CHANGE IN TOTAL FACTOR PRODUCTIV-ITY (%) | GDP GROWTH ACCELERA-TION (PER-CENTAGE POINT) | LABOUR, ALL SKILL CATEGORIES | LABOUR WITH PRIMA-RY SCHOOL EDUCATION (GRADES 1–7) | LABOUR WITH MID-DLE SCHOOL EDUCATION (GRADES 8–11) | LABOUR COMPLETED SECONDARY SCHOOL EDUCATION (GRADE 12) | LABOUR WITH TERTIARY EDUCATION |
|---|---|---|---|---|---|---|---|---|
| Personal and social service activities | 16.8% | 5.0 | 1 | -3.7% | -6.8% | -4.3% | -1.9% | -2.3% |
| Transport | 9.7% | 8.4 | 1 | -3.3% | -2.7% | -2.8% | -3.4% | -4.9% |
| Business activities | 8.9% | 15.0 | 1 | -3.1% | -3.8% | -2.9% | -2.6% | -3.5% |
| Electricity and distribution of water | 7.6% | 14.3 | 1 | -3.0% | -3.3% | -2.9% | -2.7% | -3.3% |
| Construction | 5.1% | 11.9 | 1 | -2.9% | -3.0% | -2.8% | -2.7% | -3.6% |
| Financial and insurance | 4.6% | 4.9 | 1 | -2.9% | -2.7% | -2.7% | -2.8% | -3.9% |
| Real estate ac-tivities | 4.3% | 13.7 | 1 | -2.9% | -3.4% | -2.8% | -2.4% | -3.3% |
| Post and telecom-munications | 3.8% | 46.0 | 1 | -2.8% | -3.4% | -2.8% | -2.4% | -2.9% |
| Agriculture | 2.9% | 21.5 | 1 | -1.9% | -1.2% | -1.7% | -2.0% | -2.9% |
| Mining of coal and lignite | 2.5% | 13.6 | 1 | -1.8% | -2.1% | -1.5% | -1.6% | -2.5% |
| Mining of gold and uranium ore and metal ores | 2.4% | 13.6 | 1 | -1.8% | -2.1% | -1.5% | -1.6% | -2.5% |
| Food industry | 2.0% | 23.7 | 1 | -1.4% | -2.0% | -1.0% | -1.0% | -1.8% |
| Government | 1.8% | 4.8 | 1 | -1.1% | -1.5% | -1.3% | -0.8% | -0.8% |

Source: CGE Model Simulation (2023).

# The Social Grant Scenarios – The social challenges in achieving the SDGs are addressed

## Scenario 4

- Unconditional social grant scenario
- Conditional social grant scenario
- Financed domestically via increased government spending

  or

- Financed externally using SDG Stimulus Package.

The scenarios are built on the following set of restrictions: (i) reduced headcount poverty index at 5 percent at the lower bound national poverty line; (ii) increased social grant amount to poor by 100 percent on average; (iii) increased income of poor by 30 percent on average; and (iv) unchanged socio-demographic attributes of poor households, i.e. household size, share of population by residential types, and share of population by provinces. The Conditional Social Grant scenario includes an additional restriction on increased economic active of poor or beneficiary individuals.

### Participation in economic activities

The rate of participation to economic activities is different between poor and non-poor individuals. On average, 64 percent of poor individuals are economically active against 72 percent for non-poor individuals. Thus, under this scenario, beneficiaries of social grants are conditional upon participating more in the economy. The economic participation restriction is imposed on all adult grantees. Thus, implicitly, this scenario envisages a 10 percent increase of labour supply for all skill categories. Table 27 shows the results.

**Table 27: Participation in economic activities**

| | POOR | NON-POOR |
|---|---|---|
| All | 64% | 72% |
| Primary | 57% | 65% |
| Middle | 58% | 62% |
| Secondary | 86% | 83% |
| Tertiary | 77% | 57% |

Source: National Income Dynamics Study 2017.

### Output variables

Social grants affect beneficiaries' consumption and supply behaviours. Expenditure on food and non-food products and supplies of various labour categories (i.e. primary, middle, secondary and tertiary education) are computed from the micro-simulation model under each of the two scenarios (unconditional and conditional) and fit into the CGE model.

The results of the Social Grants Scenario are now discussed, and this is done in two steps. First, the effects of increased social grant on consumption of products and supplies of labour are discussed. These effects are produced by the MS model and designated the 'direct effects' of increased social grants. Second are the macroeconomic effects of real cost financing of the scenario. The latter are then discussed in a following sub-section on economic and fiscal cost of the scenario.

Changes in poverty and inequality measures (Table 28) show that the poverty headcount rate at the lower-bound poverty line is set at 5.0 percent in both unconstrained and constrained scenarios. In parallel, food poverty declines to the same extent, displaying a strong correlation between the two measures of poverty, i.e. individuals that are poor at the lower poverty line are more likely to be poor at the food poverty line. In 2015, the lower-bound poverty line and food poverty line were set at ZAR 9,096 and ZAR 6,372, respectively. The poverty head count rate at the higher bound poverty line (i.e. ZAR 13,656) remains unchanged, at 56.1 percent in both scenarios. In-

come inequality, measured by the Gini index, declines from 0.670 to 0.614 in both unconstrained and constrained scenarios.

**Table 28: Poverty and inequality measures, by scenario**

| | BASE (2017) | UNCONSTRAINED | CONSTRAINED |
|---|---|---|---|
| Poverty line, higher bound | 0.561 | 0.561 | 0.561 |
| Poverty line, lower bound | 0.420 | 0.050 | 0.050 |
| Poverty line, food | 0.293 | 0.049 | 0.046 |
| inequality, Gini index | 0.670 | 0.614 | 0.614 |

Source: National Income Dynamics Study 2017.

Table 29 shows that under the unconstrained scenario, the economic activity of grant beneficiaries declines by 33 percent. There is a decline for all skill categories, but the decline is more pronounced for individuals holding a secondary school education level. The latter display the largest decline (-52.7 percent) while constituting the largest proportion of the economically active population (43.8 percent).

Under the constrained scenario, economic activities of beneficiaries are set to increase on average by 10 percent for all categories, except individuals with a tertiary school education.

**Table 29: Changes in the economic activity of beneficiaries, by skill level and scenario**

| | INITIAL SHARE | SCENARIO - UNCONSTRAINED | SCENARIO - CONSTRAINED |
|---|---|---|---|
| All education levels | 100.0 | -0.330 | 0.103 |
| Primary school education | 15.4 | -0.494 | 0.108 |
| Middle school education | 40.4 | -0.161 | 0.102 |
| Secondary school education | 43.8 | -0.527 | 0.104 |
| Tertiary school education | 0.4 | -0.986 | 0.080 |

Source: Compilation from simulation results (2023).

Table 30 shows changes in household consumption expenditure. Here, the results show that consumption of food and non-food products increase under both the unconstrained and constrained scenarios. Interestingly, the results on consumption differ, depending on whether or not the labour supply faces restrictions. Thus, consumption of food products increases more slowly than non-food products under the unconstrained scenario, i.e. consumption of food (non-food) products is inelastic (elastic) with respect to income. Under increased labour supply restriction, total consumption expenditure increases more slowly than in the unconstrained scenario. While food consumption expenditure continues to increase at a faster pace, non-food consumption expenditure increases at a much slower pace.

**Table 30: Change in household final consumption, by scenario**

| | INITIAL SHARE | UNCONSTRAINED | CONSTRAINED |
|---|---|---|---|
| Food products | | 0.744 | 0.675 |
| Non-food Products | | 0.678 | 0.696 |

Source: Compilation from simulation results (2023).

Effects on public finances of the Social Grant Scenario can be gleaned from Table 31, which are derived under an assumption of constant prices. Estimates with changes in relative prices given by the macro model are discussed under macroeconomic effects. Note that the estimates shown the table are in current prices and need to be adjusted by the inflation rate.

**Table 31: Poverty alleviation social grants and South Africa public finances**

| DESCRIPTION | DATA | SOURCE |
|---|---|---|
| 1. South Africa population (2021) | 59.39 million people | World Bank |
| 2. Poverty head count ratio at lower-bound poverty line (2017) | 42.0% | NIDS 2017 |
| 3. Population below the national poverty line | 24,943,800 people | (1) x (2) |
| 4. Poverty alleviation transfer, average amount per individual | SAR 4,020 | NIDS (2017) |
| 5. Poverty alleviation transfer, total amount | SAR 100.3 billion | (3) x (4) |
| 6. Exchange rate, ZAR per US dollar (2021) | 14.8 | World Bank |
| 7. Poverty alleviation transfer, total amount | US$6.8 billion | (5)/(6) |
| 8. Current GDP (2021) | US$419.02 billion | World Bank |
| 9. Poverty alleviation transfer, ratio GDP (2021) | 1.623% | (7)/(8) |
| 10. Public expenditure (2021) | US$138.19 | World Bank |
| 11. Poverty alleviation transfer, ratio public expenditure (2021) | 4.921% | (7)/(10) |

Tables 32 through to 35 shed light on the mechanisms through which the SDG Push policy package affects the economy and its public finances. Impacts are the net effect of three transmission channels, namely: an increase (decrease) in labour supply (Table 35); an increase in expenditure on food and non-food products (Table 39); and an increase government deficit Table 33). The decrease/ increase in labour supply works through decrease (increase) in: (i) expected wages rates; (ii) output level (supply of products); and (iii) output prices. The mechanism of expenditure on the food and non-food products transmission channel is through increases in final demand for food and non-food products as well as output prices. Finally, the increase of the government deficit mechanism is translated into: (i) an increase in internal debt (financing mechanism assumption); (ii) a decrease in private savings (crowding-out effect); (iii) a decrease in investment; (iv) a decrease in output prices (short-term); and (iv) an increase in output prices (long-term).

Table 32 shows a lower annual GDP growth rate under the Conditioned Social Grant Scenario compared to Baseline. This result can be traced to the observation that the transmission of savings into private investment, as shown in Tables 34 and 35, tends to lower or crowd out economic growth prospects.

Under the unconditional Social Grant Scenario, results show a further increase of public deficit and a decrease of aggregate investment (Tables 33 and 34). The decrease in labour supply witnessed earlier in Table 35 increased direct economic costs through two channels of transmission: increased wage cost; and reduced job and economic opportunities to increase income for the grantees (graduation), thus increasing the social grant cost (Table 33). The GDP growth declines by 2.7 percentage points per year (on average) compared to BAU.

**Table 32: GDP growth (%)**

| SCENARIO | ANNUAL AVERAGE | PERIOD (2023–2030) |
|---|---|---|
| Baseline | 1.7 | 14.8 |
| Social grants, conditional | 0.9 | 7.5 |
| Social grants, unconditional | -1.0 | -8.0 |

**Table 33: Social grant expenditures, ratio to government revenue**

| YEAR | SOCIAL SPENDING, UNCONDITIONAL | SOCIAL SPENDING, CONDITIONAL |
|---|---|---|
| 2023 | 1.8% | 0.6% |
| 2024 | 3.6% | 1.2% |
| 2025 | 5.3% | 1.8% |
| 2026 | 7.2% | 2.5% |
| 2027 | 9.1% | 3.3% |
| 2028 | 11.1% | 4.2% |
| 2029 | 13.4% | 5.1% |
| 2030 | 16.0% | 6.2% |

**Table 34: Change in aggregate investments**

| YEAR | BASELINE | SOCIAL SPENDING, UNCONDITIONAL | SOCIAL SPENDING, CONDITIONAL |
|---|---|---|---|
| 2023 | 3.4% | -5.2% | 1.0% |
| 2024 | 3.5% | -6.6% | 0.4% |
| 2025 | 3.6% | -8.4% | -0.1% |
| 2026 | 3.9% | -10.8% | -0.6% |
| 2027 | 4.1% | -14.4% | -1.4% |
| 2028 | 4.5% | -19.9% | -2.1% |
| 2029 | 4.8% | -29.6% | -3.2% |
| 2030 | 5.1% | -50.4% | -4.7% |

Finally, Table 35 shows changes in labour supply and demand, resulting in unemployment in both the unconditional and the conditional scenario. Under the conditional social spending on unemployment increases by 8.1 percent, a result driven by a higher labour supply increase of 13.7 percent compared to a demand of 6.3 percent. Unemployment is higher under the unconditional scenario, at 9.1 percent, because labour demand decline is far higher than the corresponding decline in supply, at 10.5 percent. (Note: these are negative numbers or a decline in growth rates.)

**Table 35: Labour supply, employment and unemployment, 2023–2030**

| | SUPPLY | DEMAND | UNEMPLOYMENT |
|---|---|---|---|
| Baseline | 6.8% | 12.2% | -9.8% |
| Social Spending, conditional | 13.7% | 6.3% | 8.1% |
| Social Spending, unconditional | -0.3% | -10.5% | 9.1% |

Summing up the public financing results, it has been observed that with the Social Benefit of Poverty Alleviation Social Grants, 25 million South Africans are lifted out of poverty (using the lower-bound poverty line and the food poverty line). Inequality declines by 8.35 percent. The economic costs under government financing are direct and indirect. Direct costs translate into US$6.5 billion per year on average (US$52 billion, 2023–2030). The indirect costs are an annual GDP growth rate – i.e. a reduction of 0.8 percentage points (US$3.5 billion)

The contribution of the SDG Stimulus is summarized in Tables 37, 39. The SDG Stimulus neutralizes the GDP growth effect over 2023–2030, i.e. similar GDP growth rates under SGD stimulus scenarios (Table 37). The cost of the Social Grants Scenario is 2.63 times higher under the unconstrained scenario than under the constrained scenario. In both scenarios, a substantial contribution of SDG Stimulus (approximately 80 percent on average) is needed to wipe out the negative economic growth impact (Table 32).

**Table 36: Funding requirements, by source, US$ billion 2021 constant price**

| | UNCONSTRAINED SCENARIO | | CONSTRAINED SCENARIO | |
|---|---|---|---|---|
| FUNDING SOURCE | ANNUAL AVERAGE | PERIOD 2023–2030 | ANNUAL AVERAGE | PERIOD 2023–2030 |
| SDG stimulus | 14.1 | 112.7 | 5.2 | 41.4 |
| Government contribution | 3.0 | 23.8 | 1.3 | 10.5 |
| Total | 17.1 | 136.5 | 6.5 | 51.9 |

In terms of the distribution across sectors, industry (with an annual value-added loss of -2.2 percentage points on average) is the most adversely impacted (Table 37). Agricultural sector performance is relatively better, since poor households contribute 21 percent to total food consumption, against 5 percent for non-food products (Table 38). The increase in food and non-food consumption expenditure is likely to increase food demand more than non-food demand. The demand for industrial goods, which contribute 93.6 percent of investment products, is affected by the decline in aggregate investment discussed earlier. The SDG Stimulus, which translates into 80 percent of the financing contribution, and contributes to putting the industrial and services sectors back on their baseline trajectories, while agricultural growth accelerates.

**Table 37: GDP growth under the SDG Stimulus (%)**

| SCENARIO | ANNUAL AVERAGE | PERIOD (2023–2030) |
|---|---|---|
| **BASELINE** | | |
| GDP | 1.7 | 14.8 |
| Value-added, agriculture | 2.5 | 22.1 |
| Value-added, industry | 1.5 | 12.8 |
| Value-added, services | 2.0 | 17.4 |
| **CONDITIONAL SOCIAL GRANTS, UNDER GOVERNMENT FINANCING** | | |
| GDP | 0.9 | 7.5 |
| Value-added, agriculture | 2.4 | 20.7 |
| Value-added, industry | 0.2 | 1.2 |
| Value-added, services | 1.3 | 10.9 |
| **CONDITIONAL SOCIAL GRANTS, WITH THE SDG STIMULUS** | | |
| GDP | 1.7 | 14.8 |
| Value-added, agriculture | 3.1 | 27.2 |
| Value-added, industry | 1.3 | 10.6 |
| Value-added, services | 2.0 | 17.5 |

**Table 38: Households contribution to food and non-food expenses (2021)**

| | FOOD | NON-FOOD | ALL |
|---|---|---|---|
| Poor households | 20.7% | 5.2% | 9.0% |
| Non-poor households | 79.3% | 94.8% | 91.0% |
| All households | 100.0% | 100.0% | 100.0% |

Source: National Income Dynamics Study 2017.

Compared to the baseline, food and non-food consumptions of non-beneficiary households (i.e. initially non-poor households) decline under the government financing option (Table 39). The SDG Stimulus contributes to compensate the loss of non-beneficiary households.

**Table 39: Changes in household consumption, 2023–2030**

| | FOOD | NON-FOOD | ALL |
|---|---|---|---|
| **BASELINE** | | | |
| Poor households | 14.7% | 20.6% | 17.7% |
| Non-poor households | 11.1% | 12.9% | 12.6% |
| All households | 11.9% | 13.3% | 13.1% |
| **CONDITIONAL SOCIAL GRANTS, UNDER GOVERNMENT FINANCING** | | | |
| Poor households | 69.9% | 65.5% | 67.7% |
| Non-poor households | 6.2% | 5.1% | 5.3% |
| All households | 20.6% | 8.4% | 10.7% |
| **CONDITIONAL SOCIAL GRANTS, WITH THE SDG STIMULUS** | | | |
| Poor households | 70.0% | 65.6% | 67.7% |
| Non-poor households | 10.6% | 12.9% | 12.5% |
| All households | 24.0% | 15.7% | 17.3% |

# The Results Framework and the SDG Status Assessment

Table 40 shows the Results Framework for South Africa. It helps track progress toward the SDGs using SDG indicators under the BAU and SDG Push Policy Package scenarios (respectively, simulations 1–4 in the preceding section 3). The economic modelling for South identified six SDGs (1, 2,4, 8, 9 and 10) and 13 corresponding indicators to focus on. If South Africa were to persist with the BAU path, the country would be completely off-track on four of the six indicators. Some progress is made with the indicators 'prevalence of undernourishment', 'completion rate of primary, lower, upper and upper secondary education' and 'GDP growth rate'. With the SDG Push scenarios but without social grants (SS1, SS2 and SS3), it can be observed that consistent with earlier findings, a mixed picture emerges. In general, the purely economic-oriented SDGs (SDGs 8 and 9) are met, driven by their corresponding indicators, while those that pertain to poverty (SDGs 1 and 10) driven by their associated indicators will not be met. It is a positive sign that the country meets SDG 9 relating to manufacturing growth, because this begins to address an important underlying, long-term problem of deindustrialization that the country faces. Between 2023 and 2030, the country makes good progress, particularly in respect of income- and employment-oriented SDGs and their indicators, as would be expected from the earlier discussion. Finally, under the SDG Push Policy Package Scenario with social grants (SS4), consistent with economic modelling results, substantial progress on all socially oriented SDGs relating to poverty is made when grants are made conditional on labour market participation with the SDG Stimulus. Even purely economically oriented SDGs show substantially good progress, with the exception of hourly earnings (wage rate changes). Overall, these results reinforce those witnessed earlier in the economic modelling, i.e. that a combination of policy interventions is a more effective way for South Africa if it wishes to get back on track to achieving the respective SDGs by 2030.

**Table 40: Reduced SDG Result Framework**

| SDG | INDICATOR | TARGET | BASELINE | BAU | SS1 | SS2 | SS3 | SS4 |
|---|---|---|---|---|---|---|---|---|
| 1 | Eradicate extreme poverty (1.1.1) | <5% | 42.5% (2015) | 40.1% | 40.0% | 39.1% | 39.1% | 5% |
| | Halve population below national poverty line (1.2.1) | -50% | 55.5% (2015) | -1.2% | -1.3% | -3.7% | -3.8% | -3.8 |
| | Population covered by social protection floors/systems (1.3.1) | > | - | - | > | > | > | > |
| | Government spending on essential services (1.a.2) | > | - | - | > | > | > | > |
| 2 | Prevalence of undernourishment (2.1.1)* | <5% | 25.2 | 25.0% | 25.0% | 24.6% | 24.6% | 5% |
| | Income of small-scale food producers (2.3.2)** | 100% | 0% | 20.0% | 20.9% | 41.1% | 47.7% | 52.8% |
| 4 | Completion rate, primary, lower, and upper secondary education) | 100% | - | > | > | > | > | > |
| 8 | GDP growth rate (8.1.1) | 7% | 1.7% | 1.7% | 1.9% | 6.0% | 6.0% | 7.4% |
| | GDP growth rate per employed person (8.2.1) | > | 0% | -0.1% | 0.1% | 4.3% | 4.4% | 4.4% |
| | Hourly earnings (8.5.1) | > | 0% | -0.1% | -0.3% | 0.2% | 0.2% | -0.1% |
| | Unemployment rate (8.5.2) | <5% | 42.2% | 40.8% | 40.2% | 29.0% | 28.3% | 28.3% |
| 9 | Manufacturing value added as a proportion of GDP and per capita (9.2.1) | > | 0% | -2.3 | -2.2 | -12.0 | 12.7% | 10.2% |
| 10 | Growth rates of household expenditure or income per capita among the bottom 40 percent of the population and the total population (10.1.1)*** | > | 0% | < | < | < | < | > |

Note: **BAU** – Business as usual; **SS1** – Tertiary skill formation acceleration; **SS2** – Tertiary skill formation acceleration and service sector development; **SS3** – Tertiary skill formation acceleration and industrialization; **SS4** – Tertiary skill formation acceleration, industrialization, and social grant expansion (i.e. with SDG stimulus);
*Food poverty; **Agricultural value-added growth; *** Based on changes in the Gini index.

On-track (target value reaches 90% or more)
Off-track - good progress (target value reaches between 50% and 90%)
Off-track - slow progress (target value reaches between 10% and 50%)
Off-track - no progress (target value reaches below 10%)

# Conclusions and policy implications

This report shows that achieving the SDGs by 2030, consistent with reductions in poverty, inequality and unemployment, is feasible from an economic and a fiscal perspective for South Africa. The results of the economic modelling of the SDG Push policy package highlight that there are benefits and costs to effectively addressing the country's persistent low economic growth, high inequality, poverty and unemployment challenges. The net benefits are that 25 million South Africans will be lifted out of poverty (lower-bound poverty line and food poverty line), while income inequality will decrease by 8.35 percent. As regards the economic indicator, economic growth increases from 4.5 percent in 2023 to 7.0 percent by 2030, which will increase GDP by 55.6 percent. Under the combined scenario, there is a substantial reduction of the unemployment rate by more than 13 percentage points, from the current 41.8 percent in 2023 to 28.3 percent by 2030. Personal and social service activities, transport, finance and insurance can make the greatest contribution of all the industries tested to reducing unemployment. These sectors within services and industries can increase overall productivity and reduce unemployment while also contributing to absorbing tertiary skills education employment, which would otherwise remain very high if the current policy trajectory (BAU) persists. Putting together a programme to stimulate these sectors would be economically viable. The economic cost, when financed by government, is US$6.5 billion per year on average (US$52 billion, 2023–2030), or indirectly, an annual GDP growth loss of 0.8 percentage points (US$3.5 billion). However, with the SDG Stimulus, the losses in GDP are neutralized. The cost of social grants is 2.63 times higher under the unconstrained scenario compared to the constrained scenario. Still, a substantial contribution of the SDG Stimulus (approximately 80 percent on average) is needed to wipe out the negative economic growth impact.

The analysis carried out also sheds light on the mechanisms through which the SDG Push policy package affects the economy and its public finances. Impacts are the net effect of three transmission channels: (i) an increase(-decrease) in labour supply; (ii) an increase in expenditure on food and non-food products; and (iii) an increase in the government deficit. The decrease or increase in labour supply are caused by a decrease or increase in; (i) expected wages rates; (ii) output level (supply of products) and (iii) output prices. Changes in output prices and final demand for food and non-food products are the main transmission mechanisms feeding into poverty outcomes. Finally, the increase of government deficit mechanism is transmitted through the (i) an increase in internal debt (financing mechanism assumption); (ii) a decrease in private savings (i.e. crowding-out effect); (iii) a decrease in investment; (iv) a decrease in output prices in the short term; and (iv) an increase in output prices in the long term.

Finally, it emerged from the SDG Results Framework assessment that under the BAU scenario, South Africa will not be on a trajectory that would allow to achieve the SDGs of interest by 2030. Conversely, with skill matching and targeting for growth sectors that are more intensive in their demand of skills generated, the country gets on track with SDGs directly associated with higher economic growth and reduced unemployment, yet partially meets the SDGs related to poverty, while not meeting those related to inequality. With social grants, particularly when conditional and financed under the SDG Stimulus, the SDGs pertaining to poverty and inequality are met by 2030. Thus, the combined SDG push scenarios would help the country achieve the identified SDGs consistent with its overarching aim to tackle the triple challenge of reducing unemployment, inequality and poverty.

Overall, the analysis presented in this report shows that transitioning towards SDGs by 2030 is not only desirable from a social (pov-

erty and inequality reduction) viewpoint, but also feasible when considering economic and fiscal impacts and consequences. While the SDG Push market-based interventions focused on addressing both the demand and supply side, propel the economy onto the desired high growth and employment path, inequality and poverty remain stubbornly high. A conditional increased social grant package under the SDG Stimulus is needed to address poverty and inequality. Thus, what South Africa requires for the SDG Push is a combination of policies, rather than one policy alone to effectively addresses its persistent low economic growth and high inequality, poverty and unemployment challenges. Based on the analysis, the Government can choose to design its policy package according to its economic and social preferences while also considering the effective achievement of the related SDGs.

In conclusion, certain caveats to the analysis in this paper are in order. The results presented need to be interpreted with care, as they are subject to uncertainty and depend on modelling assumptions, including: (i) baseline developments; (ii) the rate of technological development; (iii) the costs of social grants interventions; and (iv) the scenario design, and specifically the data and information-sources used to model the different policy instruments – both nationally and provincially. Given that this report presents a first analysis of the economic and fiscal consequences of the SDG Push, several additional developments on this issue can be envisaged: (i) the national analysis presented in this report can be followed by more detailed analyses for specific regions (provinces, municipalities and other magisterial districts); (ii) while not the focus of this report, climate policies with a commitment to achieve carbon neutrality by 2050 can also be modelled as part of the SDG Push. This work should also focus on environmental justice (including a Just Energy Transition) in the context of a just transition: and (iii) trade-related issues related to the implementation of[22] different trade policy instruments is a fruitful area left for future analysis and could tie into the broader SDG Push discussion on the interlinkages between trade and climate change.

22 Examples of these analyses for the EU and its respective regions include Dellink et al. (2017).

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# Appendix A

## A1. The Scoping Note - Synthesis

The Scoping note marked the initial stride towards developing South Africa's Sustainable Development Goal (SDG) Push framework. To provide the South African Government with a high-level overview of the development landscape and the existing challenges, an overview of existing strategic policy and planning documents was a first step towards developing South African's SDG Push framework. An in-depth overview of national development plans and strategies was essential to understand countries' socioeconomic, institutional and environmental landscape, map out SDG gaps, evaluate SDG progress, and identify potential interventions that could accelerate the achievement of the 2030 Agenda for Sustainable Development. In addition, the initial phase of SDG Push framework has identified data availability, disaggregation and consistency in their monitoring over time. This is important because data availability, reliability and accuracy are needed to correctly identify SDG gaps and the development pathways that can accelerate the SDGs.

Since the advent of democracy in 1994, South Africa has prepared and put forward a series of strategic and sectoral plans, frameworks, strategies and programmes to alleviate poverty and marginalization that colonialism and apartheid caused the country. The National Development Plan (NDP) 2030 aims to tackle deep-rooted, socio-economic inequalities inherited from the oppressive apartheid government system predating the democratic transition in 1994. While released three years ahead of the SDGs, 92 percent of the NDP objectives map to the 169 SDG targets.

Over the last three decades, the country introduced a wide array of housing, transport, water, mining, energy, economic, labour, spatial planning and land-use management, municipal and environmental laws in the national and provincial domains that call for the preparation, adoption, implementation, monitoring, evaluation and review of plans, policies and frameworks that have very similar objectives to those captured in the SDGs.

**The development conduits are summarized in the following documents:**

- **the National and Provincial Development Platform/Conduit** consisting of the National Budget, the Medium-Term Strategic Framework (MTSF), the Medium-Term Expenditure Framework, the 2012 NDP, the National Infrastructure Plan, the National Spatial Development Framework, the Economic Reconstruction and Recovery Plan (ERRP) and the Agriculture and Agro-processing Masterplan;

- **the Provincial Development Platform/ Conduit** consisting of the Provincial Budget, the Provincial Medium-Term Expenditure Framework, the Provincial Growth and Development Plans/ Strategies and the Provincial Spatial Development Frameworks; and

- **the Municipal Development Platform/ Conduit**: consisting of the Municipal Budget (MB), the Municipal Integrated Development Plans and the Spatial Development Frameworks, all three of which have legally binding powers on all public investment in their municipal areas of jurisdiction, and increasingly so in the district and metro One Plans, called to life by the District Development Model.

While these documents all bear testimony to the unique contexts and specific configurations of the challenges of the times in which they were drafted, and highlighted one or more priorities or goals, they all share a series of similar post-1994 objectives, as follows:

- inclusive, rapid, shared, equitable and sustainable growth;
- job creation at scale;
- a just economic transition from a natural resource-intensive, high-carbon economy to a knowledge-intensive carbon-neutral one;
- macro and micro spatial transformation;
- urban, regional and rural development;
- urban and rural land reform;
- the management, wise use and protection of the country's natural resources;
- agrarian reform and the expansion of agriculture produce and agro-processing;
- access to transport, telecommunications and logistics infrastructure networks, power grid and facilities investment, maintenance and upgrading;
- skills development;
- social service planning and provisioning.

An integral aspect of the scoping process is the utilization of the SDG Push Diagnostic Simulator, which leverages sophisticated machine learning techniques to detect disparities in SDG advancement on a national scale. Moreover, it undertakes a preliminary, in-depth examination of accessible national data and knowledge reservoirs to pinpoint areas of paramount importance for national development.

Based on the diagnostic simulator it was possible to assess the progress that South Africa made in attaining distinct SDG targets, systematically organized in accordance with the 'five Ps of sustainable development': People (comprising 47 targets), Peace (encompassing 12 targets), Planet (encompassing 46 targets), Prosperity (encompassing 45 targets) and Partnership (comprising 19 targets). As illustrated below, countries' national priorities are generated using machine learning to reveal the most prominent SDGs referenced in national policy documents. Through the assessment of six strategic documents (Revised Medium Term – 2024; National Development Plan 2030; the United Nations Sustainable Development Cooperation Framework; the Common Country Analysis; Voluntary National Review 2019; Economic Reconstruction and Recovery Plan 2020). SDGs 16, 8, 10 and 1 are the most prominent goals.

**Figure A1. Artificial intelligence-generated national priorities**

In addition, the mapping of SDG priorities according to current SDG progress that was identified in a trend analysis helps to understand which SDGs are off-track but potentially of low or high priority in national documents, thus providing an insightful starting point for national dialogues. For instance, SDG 16 has been identified as off-track and ranks very high in national development documents.

Furthermore, through the analysis of synergies and trade-offs, more than 70 synergy links with other targets, shared across all SDGs, are found for indicator 16.6. Thus, getting this indicator back on track for 2030 through improved governance systems could help elevate many other indicators, some of which are also currently lagging. For instance, achieving full employment and improving living standards could help alleviate poverty and reduce inequalities. In addition, access to reliable and secure energy is crucial to achieve meaningful progress in South Africa. The persistent issue of electricity load shedding highlights the need for short- and medium-term strategies. However, a long-term focus on significantly increasing the share of renewable energy is essential. This would result in greater electricity availability, reduced business disruptions, environmental protection and decreased inequality.

Synergy links allow to identify possible accelerators for SDG 16, for instance, through improved and upgraded infrastructure with increased resource use efficiency. Specifically, SDG Target 9.4's emphasis on technological advancement, innovation and connectivity through information and communications technology (ICT) can contribute significantly to achieving the objectives of SDG Target 16.6. By providing broader access to technology, ICT and the internet, communities and societies can experience increased transparency, access to information and improved communication. This, in turn, can promote more effective and participatory decision-making, enhance accountability, and contribute to the development of responsive and inclusive institutions.

Given that South Africa has one of the most widespread social protection systems, its successful implementation requires accountable and transparent institutions. The latter can ensure that social protection measures are effectively targeted, resources are efficiently allocated, and benefits reach the intended beneficiaries without corruption.

**Based on the conclusions of the scoping phase, several challenges linked to South Africa's ongoing SDG journey can be enumerated as follows:**

1. **Resistance to change**: Considering the magnitude of the challenges confronting the nation, putting the SDG 2030 Agenda for Sustainable Development at the forefront of political conversation and adding additional responsibilities to officials' workload are likely to encounter opposition.

2. **Inadequate funding/funds**: Given the country's highly constrained fiscal situation, and the fiscal tightening underway both globally and domestically, obtaining enough funding will be no easy task, and will, in all likelihood, require doing far more with less, putting far more effort into securing funding and use it more effectively than in the past.

3. **Lack of political leadership**: Unless political leaders fully internalize the importance of achieving the SDGs, the likelihood of officials actively engaging in the tasks of advancing and expediting progress toward fulfilling the SDGs remains limited.

To overcome the challenges and achieve the developmental goals, the Scoping Note identified eight priority areas:

- A swift and comprehensive land reform, focusing on youth participation in both urban and rural areas. This aims to; (i) create opportunities for settlements and economic activities, including 'smart villages' in rural regions; and (ii)

enhance social cohesion and stability. This entails providing essential services such as water, electricity, sewerage and broadband, potentially generating new businesses and jobs, and introducing competition in concentrated industries.

- Dedicated support for agriculture and agro-processing at a significant scale, particularly for emerging farmers. The goal is to bolster food production, decrease food prices and strengthen small and medium-sized agricultural enterprises. This initiative is expected to yield numerous upstream and downstream jobs across primary, secondary and tertiary sectors.

- Amplified investment in the tourism sector, necessitating a comprehensive range of activities and opportunities. Key aspects include diversifying ownership within the industry to create decent employment for all, expanding tourism to rural areas and small towns, and prioritizing the safety and security of tourists. This approach aims to improve lives and opportunities for vulnerable citizens.

- Extensive infrastructure investment, focusing on ports, main roadways and railway networks. This initiative aims to enhance competitiveness through improved trade efficiency and reduced costs. Additionally, it is projected to create numerous jobs, stimulate innovation, and bolster the country's appeal to investors and tourists.

- Expansion of renewable energy generation and distribution, encompassing local micro-projects and grids. This seeks to provide reliable energy access, particularly to rural settlements. Such projects offer significant potential for enterprise growth and job creation, particularly for youth.

- Scaling up water capture, storage and distribution efforts, including dam construction, ecological restoration, and maintenance of water networks. This initiative addresses climate change impacts and holds potential for enterprise development and job creation across various sectors.

- Implementation of widespread post-graduate youth service, involving the placement of graduates for research and professional services in urban and rural areas. This approach aims to elevate qualifications, foster innovation and create employment opportunities while contributing to community development.

- The establishment and reinforcement of partnerships and compacts between various levels of government, the private sector, labour, communities and non-governmental organizations (NGOs). This strategy aims to align infrastructure investment with social and economic development, strengthen communities, and enhance social cohesion and security. Sustained engagement, adherence to agreements, progress monitoring, and corrective action are crucial elements.

## A2. Summary of the multistakeholder SDG Push Dialogue

Part of the SDG Push process is the incorporation of a series of systemic and multi-stakeholder dialogues. The SDG Push Dialogue was organized by the National Planning Commission (NPC) Secretariat in collaboration with the United Nations Development Programme (UNDP). A total of 43 people from the government, academia, civil society and development partners attended the SDG Push dialogue; 27 on the first day and 31 people on the second day. The participants' mandate was to identify SDG Push interventions that would accelerate the SDGs while taking into

consideration the interlinkages (synergies and trade-offs).

In South Africa, the Scoping Note identified three primary issues (poverty, inequality, unemployment) and eight potential accelerators. The design of the SDG Push Dialogue based on the results of this Scoping Note began by having small groups of diverse participants explore the root causes of the issues, as well as what they thought were the most significant bottlenecks. The group then explored current government interventions (programmes and policies) on the ground. The aim was also for them to ideate and identify additional necessary interventions; however, this did not take place as planned.

## Identifying challenges

The first phase of the Dialogue was a focused discussion on the three challenges of poverty, unemployment, and inequality. The objective here was to identify the issues that prevented overcoming the key triple challenges previously identified. The participants were encouraged to reflect on:

- the causes of these challenges;
- why these challenges are not addressed;
- what the barriers and bottlenecks are from a Social, Technological, Economic, Environmental, Political and Value (STEEPV) as well as a legal perspective.

The overall conclusion was that there was a lack of implementation of programmes and projects designed to address these challenges. In addition, the participants mentioned the lack of a coordinating body that would oversee the various interventions and programmes and have monitoring oversight to determine whether these programmes are achieving their intended objectives.

Exploring current interventions and determining their effectiveness

The second phase explored current interventions and determined whether or not these are stop gap, or long-term interventions for the triple challenges. Participants were encouraged to consider a set of issues including:

- identifying the programmes and interventions (e.g. social grants; Expanded Public Works Programme) in place to address these challenges;
- determining whether these interventions are stop gaps or long-term solutions.

For each intervention they could explore:

- the enablers of this intervention;
- the barriers;
- whether or not it is a sustainable intervention;
- its strengths, where it falls short, and how can this be improved;
- potential new interventions.

The lack of or poor implementation was seen as the biggest stumbling block to address the key development challenges. Six issues were identified as key for lack of implementation:

- lack of government accountability;
- Inactive citizens;
- coordination of programmes;
- collaboration between branches of government (e.g. various departments) and between government and other sectors of society (e.g. the private sector, civil society);
- corruption;
- budget allocations and misallocations.

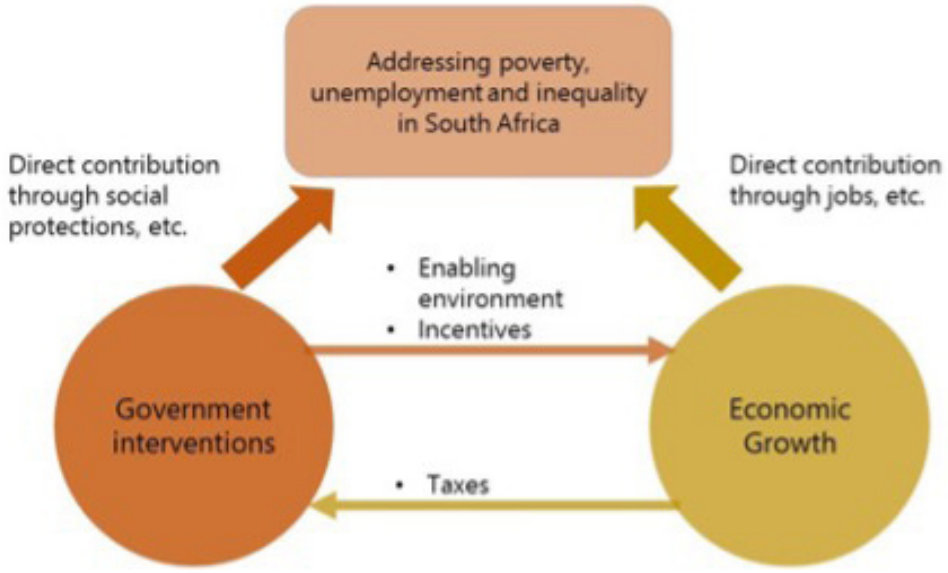
## Identifying accelerators

The final phase of the dialogue was focused on finding the set of accelerators that would drive the SDG progress in the short and medium term. These included expanding social protection schemes, growing the economy, and involving the private sector and other actors in the effort to achieve the sustainable development goals.

There was a consensus on the need for social protection and its value as an accelerator for addressing multiple challenges of poverty, inequality and unemployment. Since these programmes had already been implemented for some time in South Africa, the discussion focused more on potential areas of expanding these programmes in terms of raising the monetary value to match the poverty lines, increasing child support grant and extending them to start while the mother is still pregnant, and expanding the grants to the population aged 8–59 who are currently not covered.

A complementary solution to social protection was to enact economic growth, since the two are directly linked (Figure 2). The role of the private sector was highlighted as being critical for to addressing the development challenges of the country; hence, the conversation is currently focused on how the private sector should benefit from the Government.

**Figure A2.**



# Appendix B - Input Data

| PARAMETER | VALUE | SOURCE |
|---|---|---|
| **PRODUCTION** | | |
| Elasticity of substitution between capital and labour (value added) | 0.3 | Literature/Guestimate |
| Elasticity of substitution between value-added and intermediate consumption | 0.3 | Literature, guesstimate |
| Elasticity of substitution between intermediate demand | 0.3 | Literature, guesstimate |
| **TRADE** | | |
| Export demand elasticity | 6.0 | Literature, guesstimate |
| Elasticity of transformation between domestic and foreign markets | 2.0 | Literature, guesstimate |
| Elasticity of substitution between domestic and foreign products | 3.0 | Literature, guesstimate |
| **CONSUMPTION** | | |
| Income elasticity, food products | 0.8 | Literature, guesstimate |
| Income elasticity, non-food products | 1.6 | Literature, guesstimate |
| **INVESTMENT** | | |
| Investment demand parameter | 2.0 | Literature, guesstimate |
| **UNEMPLOYMENT (2021)** | | |
| Unemployment rate primary | 42.7 % | DHET (2022) |
| Unemployment rate middle | 52.7 % | DHET (2022) |
| Unemployment rate secondary | 46.0 % | DHET (2022) |
| Unemployment rate tertiary | 22.2 % | DHET (2022) |
| **POPULATION (AVERAGE, 2010–2019)** | | |
| Population growth rate | 1.15 % | World Development Indicator |
| **LABOUR FORCE GROWTH RATE (AVERAGE, 2010–2019)** | | |
| Labour with primary school education (grades 1–7) | -3.3 % | DHET (2022) |
| Labour with middle school education (grades 8–11) | 0.7 % | DHET (2022) |
| Labour completed secondary school education (grade 12) | 4.3 % | DHET (2022) |
| Labour with tertiary education (certificates, diplomas, or degrees) | 2.2 % | DHET (2022) |
| **REAL WAGE DIFFERENTIAL (2019) *** | | |
| Labour with primary school education (grades 1–7) | 1 | DHET (2022) |
| Labour with middle school education (grades 8–11) | 3.7 | DHET (2022) |
| Labour completed secondary school education (grade 12) | 5.8 | DHET (2022) |
| Labour with tertiary education (certificates, diplomas, or degrees) | 21.6 | DHET (2022) |
| **ECONOMIC GROWTH RATE (AVERAGE, 2010–2019)** | | |
| GDP growth (annual percent) | 1.7 | World Development Indicator |
| Agriculture, forestry, and fishing, value added (annual percent growth) | 2.3 | World Development Indicator |
| Industry (including construction), value added (annual percent growth) | 0.7 | World Development Indicator |
| Manufacturing, value added (annual percent growth) | 1.2 | World Development Indicator |
| Services, value added (annual percent growth) | 2.0 | World Development Indicator |
| **POVERTY AND INEQUALITY (2015)** | | |
| Upper-bound poverty line | 55.5 | Statistics South Africa |
| Lower-bound poverty line | 40.5 | Statistics South Africa |
| Food poverty line | 25.2 | Statistics South Africa |
| Gini index | 0.65 | Statistics South Africa |

# Appendix C - Calibration of the consumption parameters

Labour supply equation

$$L_{h,l} = \overline{H_{h,l}^{max}} - \frac{\beta_{h,l} \cdot \left(Y_h - P^{fd} \cdot \overline{CFD_h^{min}} - P^{nn} \cdot \overline{CNN_h^{min}}\right)}{W_l \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

Demand for food products

$$CFD_h = \overline{CFD_h^{min}} + \frac{\alpha_h^{fd} \cdot \left(Y_h - P^{fd} \cdot \overline{CFD_h^{min}} - P^{nn} \cdot \overline{CNN_h^{min}}\right)}{P^{fd} \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

Demand for non-food products

$$CNN_h = \overline{CNN_h^{min}} + \frac{\alpha_h^{nn} \cdot \left(Y_h - P^{fd} \cdot \overline{CFD_h^{min}} - P^{nn} \cdot \overline{CNN_h^{min}}\right)}{P^{nn} \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

The approach by De Melo and Tarr (1992) derives the maximum time available for work and leisure from the formula of elasticity of labour supply with respect to income.

$$\varepsilon_{h,l} = \frac{\beta_{h,l} \cdot Y_h}{W_l \cdot L_{h,l} \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

$$\beta_{h,l} = \frac{\varepsilon_{h,l} \cdot W_l \cdot L_{h,l}}{\sum_l \left(\varepsilon_{h,l} \cdot W_l \cdot L_{h,l}\right) - Y_h}$$

$$\overline{H_{h,l}^{max}} = L_{h,l} + \left(\frac{\beta_{h,l}}{W_l \cdot \left(1 - \sum_l \beta_{h,l}\right)}\right) \cdot \left(\frac{-Y_h}{Frisch_h}\right)$$

The elasticity of demand for food products with respect to income is used to calibrate the parameters of the food demand equation.

$$\varepsilon_h^{fd} = \frac{\alpha_h^{fd} \cdot Y_h}{P^{fd} \cdot CFD_h \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

$$\alpha_h^{fd} = \frac{\left(1 - \sum_l \beta_{h,l}\right) \cdot \varepsilon_h^{fd} \cdot P^{fd} \cdot CFD_{h_i}}{Y_h}$$

$$\overline{CFD_h^{min}} = CFD_h + \left(\frac{\alpha_h^{fd}}{P^{fd} \cdot \left(1 - \sum_l \beta_{h,l}\right)}\right) \cdot \left(\frac{-Y_h}{Frisch_h}\right)$$

The elasticity of demand for non-food products with respect to income is used to calibrate the parameters of the non-food demand equation.

$$\varepsilon_h^{nn} = \frac{\alpha_h^{nn} \cdot Y_h}{P^{nn} \cdot CNN_h \cdot \left(1 - \sum_l \beta_{h,l}\right)}$$

$$\alpha_h^{nn} = \frac{\left(1 - \sum_l \beta_{h,l}\right) \cdot \varepsilon_h^{nn} \cdot P^{nn} \cdot CNN_{h_i}}{Y_h}$$

$$\overline{CNN_h^{min}} = CNN_h + \left(\frac{\alpha_h^{nn}}{P^{nn} \cdot \left(1 - \sum_l \beta_{h,l}\right)}\right) \cdot \left(\frac{-Y_h}{Frisch_h}\right)$$

Demand for individual food commodities

$$P_{ifd} \cdot C_{h,ifd} = \delta_{h,ifd} \cdot P^{fd} \cdot CFD_h$$

Demand for individual non-food commodities

$$P_{inn} \cdot C_{h,inn} = \delta_{h,inn} \cdot P^{nn} \cdot CNN_h$$

With $i$={ifd, inn}