

# UNTAPPED OPPORTUNITIES FOR CLIMATE ACTION

An assessment of food systems in  
Nationally Determined Contributions



COUNTRY ASSESSMENT

**SOUTH AFRICA**



#### DISCLAIMER

This document was commissioned from Climate Focus and Solidaridad by the Global Alliance for the Future of Food, for use by Global Alliance members and partners to stimulate discussion about critical issues related to food systems transformation and climate change, and to help guide collective action. The Global Alliance has chosen to make it available to the broader community to contribute to the discussion about sustainable food systems reform. It constitutes the work of independent authors; any views expressed in this document do not necessarily represent the views of the Global Alliance and any of its members.

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## PREFACE

Integrating food systems transformation into the Nationally Determined Contributions (NDCs) – the national climate actions at the heart of the Paris Agreement, is critical to delivering on interconnected ecological, biodiversity, health, economic, social, and cultural goals. Taking a food systems approach builds climate resilience and results in a diversity of context-specific solutions for food production, distribution, consumption, and waste. Yet, food systems are rarely prioritized in climate policy.

This country assessment is part of a suite of publications that are designed to centre food systems transformation in future climate policy:

- 1. Untapped Opportunities for Climate Action: An Assessment of Food Systems in Nationally Determined Contributions:** A summary report providing a synthesis of the 14 country assessments with recommendations and priority actions for policymakers and climate policy advisors
- 2. A Practical Guide to Assessing Food Systems in Nationally Determined Contributions (NDCs):** A guide with a framework designed to enable users to take a food systems approach to developing future NDCs and implementing climate policies.
- 3. A set of 14 country assessments** examining the latest NDCs of 14 countries from around the world, outlining areas of improvement and opportunity.

Users are also encouraged to read **Confronting the Climate Crisis with Food Systems Transformation: Stories of Action from 14 Countries**, which provides a catalogue of global case studies that complement the suite of materials for policymakers, advisors, and advocates of climate action.

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## OVERVIEW OF SOUTH AFRICA'S FOOD SYSTEMS

South Africa's food systems account for 15 to 20% of greenhouse gas (GHG) emissions in South Africa.<sup>1</sup> Most of these emissions come from agriculture, energy consumption, and food waste. Livestock contributes 75% to the country's direct Agriculture, Forestry and Other Land Use (AFOLU) emissions, driven by enteric fermentation, pasture deposits, and manure management. The agricultural system is highly bimodal, comprising both scattered smallholder farming in small parcels of land and large-scale commercialized farming (largely mixed cereal and livestock farms).

The agriculture sector contributes approximately 136.9 billion South African Rand (ZAR) (9 billion USD) to the country's gross domestic product (GDP). The South African agricultural sector is mainly market-oriented and includes the production of grains (barley, maize, oats, sorghum, and wheat), oilseeds, subtropical fruits, sugar, citrus, wine, and most vegetables. Livestock production (sheep, hog, and dairy cattle) is also an important contributor to the agricultural economy. The grain industry contributes more than 30% of the total gross value of agricultural production, and corn is the largest locally produced field crop in South Africa. Since corn is the most important source of carbohydrates in the Southern Africa Development Committee (SADC) region, South Africa plays a major role in the food systems of its neighbouring countries, producing around 12 million tons per year.<sup>2</sup>

South Africa is food secure at the national level but is still food insecure at household level, as not all households have access to adequate food. Almost 20% of South African households had inadequate or severe inadequate access to food in 2017.<sup>3</sup> Food security varies by province, population groups, and household size. South Africa suffers from the triple burden of undernutrition, overnutrition, and micronutrient deficiencies. The low-income population consumes meals predominantly consisting of maize, bread, and ultra-processed foods relative to fruits and vegetables. The diet has an effect on the statistics of stunting, which is prevalent in children living in rural areas.<sup>4</sup> Over 27% of children under 5 years are stunted due to malnutrition, which is higher than the 25% average for developing countries.<sup>5</sup> In addition, 2.5% of children under 5 years are wasted, and 44% are vitamin A deficient. Of adult males and females (ages 15 to 19), 30% and 70% are overweight, respectively. It is estimated that 13% of children under 5 are overweight.<sup>6</sup> The rising trend of obesity and persistent stunting remains a risk factor for child mortality, poor development, adult obesity, metabolic syndrome, non-communicable diseases, and early adult mortality in South Africa.<sup>7</sup>

Over 10 million tons (about one-third) of food produced goes to waste in South Africa.<sup>8</sup> Overall annual food waste was estimated at 177 kilograms per person.<sup>9</sup> Half of this food loss and waste occurs during production and post-harvest handling and storage.<sup>10</sup> In the later stages of food value chains, most loss happens during processing, packaging, and distribution, and only a small amount of food (5% of total food loss and waste) is wasted at the consumption stage.<sup>11</sup>

\* Conversions based on February 2, 2022, exchange rates.

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## NDC STATUS

South Africa's updated Nationally Determined Contribution (NDC), published in September 2021, limits the country's annual GHG emissions to 398 to 510 million tons of CO<sub>2</sub> equivalent between 2021 and 2025, and 350 to 420 million tons of CO<sub>2</sub> equivalent between 2026 and 2030.

The updated NDC outlines how South Africa considers its contribution to be fair and ambitious (in sections on adaptation and mitigation, and the dedicated section on equitable access to sustainable development). The NDC highlights the importance of ensuring that "food production is not threatened and to enable economic development to proceed in a sustainable manner."

**The following assessment draws mainly on the text of South Africa's NDC and supplementary documents, including the Low-Emission Development Strategy (LEDS), as well as public responses to the draft and updated NDCs and six stakeholder interviews.**

# KEY FINDINGS

## NDC DEVELOPMENT PROCESS

TABLE 1: NDC DEVELOPMENT: KEY FINDINGS AT A GLANCE

### Key findings

- Coordination mechanisms are set up within and across levels of government to develop the NDC.
- The NDC development process was participatory and involved an extensive process of consultation, awareness-raising, and dialogue to engage key stakeholders.
- The NDC is based on existing policies, some of which are relevant to food systems.

### Areas for improvement

- Increase effective and sufficient participatory approaches to consult all relevant food systems stakeholders, including health and nutrition experts, academia, women, local communities, smallholder farmers, and other traditionally marginalized groups, including Indigenous Peoples.
- Conduct a holistic food systems assessment to inform the development of the NDC, highlighting the climate mitigation and adaptation potential of food systems transformation as well as other co-benefits and possible trade-offs.

**A coordination mechanism was set up within and across levels of government to revise and update the NDC.** The Department of Forestry, Fisheries and the Environment (DFFE), which heads up the fight for climate change in South Africa, led the preparations for updating South Africa's first NDC, including technical analysis (and ensuring collaboration between technical and policy experts), consultation within government, consultation with broader stakeholders, and provincial public stakeholder workshops.

**The NDC update involved a process of consultation, awareness-raising, and dialogue to engage all stakeholders.** The DFFE published its updated draft NDC for public comment to solicit inputs from all stakeholders before it was approved by Cabinet and submitted to the United Nations Framework Convention on Climate Change (UNFCCC). The DFFE also conducted stakeholder consultation workshops in each province and within different sectors. As part of this process, the Minister for Forestry, Fisheries and the Environment requested that the Presidential Climate Commission (PCC), which is a multistakeholder body established by the President to advise government on the country's climate change response, conduct public hearings and make recommendations to government on the draft NDC. The PCC held hearings, on 7 May 2021, where stakeholders expressed their views to identify areas of consensus and disagreement. These recommendations were put forward by PCC to DFFE, which was then considered in the final draft of the updated NDC.

**Individual key stakeholders were identified and engaged during the consultation process.**

Consultation processes included representatives from the business sector, government (including local and

provincial spheres), private sector, embassies, worker representative organizations, researchers, women, and civil society. Participants also included those from the energy and agriculture sectors. Additionally, 2 out of 12 provincial consultation processes took place with the Business Unity South Africa (BUSA) and youth, respectively. BUSA represents the private sector and is the largest federation of business organizations in terms of contribution to the GDP and employment. Interviewees suggested that the consultation process was fairly “typical” (that is, comments were invited and received, but how much relevant stakeholder input had been taken into account was under question), and that broad stakeholder meetings were not overly participatory.<sup>12</sup> This could be because effective consultation with sectors other than energy (especially the food systems and health sectors) were largely overlooked during the consultation process of the NDC.

### **The NDC was developed based on existing policies, some of which are relevant to food systems transformation in South Africa.**

The NDC is informed by the National Climate Change Response Policy (NCCRP), which is a plan to address both climate change mitigation and adaptation in the short, medium, and long term (up to 2050).<sup>13</sup> This policy acknowledges the role of agriculture in GHG emissions, the effects of climate change on the most vulnerable rural poor, and the challenge of addressing issues related to food security, water, health, and land reform. The adaptation plan in this policy is set to enhance the agriculture sector not only to produce food but also for environmental and socio-economic benefits and livelihood improvement. Furthermore, it integrates agriculture in the rural development plan in an effort to address food security and job creation. It recognizes public health as key to improving the food security index and also seeks to integrate climate change plans into the health sector. The NCCRP also recognizes women as the pivotal caregivers in society, and encourages the empowerment of women to be embedded in the planning of climate adaptation strategies.

The NDC is further informed by the 2019 LEDS\* submitted to the UNFCCC, and the NDC sets the country on a pathway to implement this strategy. LEDS highlights the role of AFOLU as a key sector in achieving its climate change mitigation goals.

The adaptation component of the updated NDC outlines measures for health, water, biodiversity, agriculture, and human settlements sectors. These are drawn from the National Climate Change Adaptation Strategy (NCCAS), which was developed to ensure a safe and healthy environment, and aligns with other policy frameworks, such as the National Climate Change Response Policy (NCCRP), National Development Plan (NDP),\*\* and National Strategy for Sustainable Development (NSSD). Not only does the strategy serve as a common reference point for climate change adaptation efforts in South Africa, but it also provides guidance, planning, and coordination across all levels and spheres of government and guides stronger coherence of action on climate change adaptation between different government institutions. An additional contributing policy, the NSSD makes extensive mention of the participation of community stakeholders and its goal of building community self-sufficient farming systems and Indigenous knowledge.

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\* South Africa has recently communicated its long-term low GHG Emission Development Strategy (LEDS), pursuant to Article 4.19 of the Paris Agreement, building on national and sectoral climate change policies. Retrieved from: <https://unfccc.int/sites/default/files/resource/South%20Africa%27s%20Low%20Emission%20Development%20Strategy.pdf>

\*\* According to the NDP executive summary: “South Africa can realize these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.”

## AREAS FOR IMPROVEMENT

**Consult all stakeholders, including academia, women, youth, smallholder farmers, and other traditionally marginalized groups, including Indigenous Peoples.** While the NDC development process involved consultations with general public and sectoral stakeholders, the process does not seem inclusive. For example, following consultations on the NDC update process, African Climate Alliance, a youth-led grassroots organization acting and advocating for Afrocentric climate justice, published a statement explaining that the NDC consultation process in South Africa is not progressive, inclusive, or accessible enough.<sup>14</sup> They highlight that the population most affected by climate change is not engaged in meaningful ways or given a voice on decision-making platforms.

**Consult key food systems commentators, influencers, and researchers, as well as health and nutrition and food systems experts, in developing food systems measures in the NDC.** Interviewees revealed that because of lack of active consultation with food sector stakeholders, the NDC does not fully consider key food systems elements such as food waste and sustainable and healthy diets in the mitigation or adaptation measures.<sup>15</sup> The consultations were generally open to those sectors who have a particular interest in some aspects of the NDC, which was predominantly energy focused. Where written submissions have been made, it is not clear whether stakeholder inputs relevant to food systems were considered.

## CONTENT OF THE NDC

TABLE 2: NDC CONTENT: KEY FINDINGS AT A GLANCE

### Key findings

- The NDC targets considered research in the update process to embrace adaptive learning that is related to agricultural land restoration.
- The mitigation measures are informed by a long-term perspective contained in LEDS recently submitted to the UNFCCC.
- The NDC includes measures to improve climate services to build climate resilience across water, health, agriculture, human settlements, fisheries, and biodiversity sectors.
- The NDC mentions the promotion of priorities toward climate-resilient water and agriculture sectors and details tools and infrastructure to promote climate resilience across water, agriculture, and human settlement sectors.
- The NDC includes measures for the creation of green jobs, through a climate-resilient and job-rich pathway.
- The NDC has quantified finance needs for mitigation and adaptation measures planned for agriculture, health, water, and biodiversity.

### Areas for improvement

- Include evidence-based measures to transition to sustainable food systems while considering the environmental, social, and health impacts of such a transition.
- Include targets and measures to facilitate and accelerate the transition toward healthier and more sustainable diets.
- Include measures to ensure a just transition to sustainable food systems by building the resilience and capacity of local food systems among marginalized and vulnerable communities.
- Provide clearer and concrete measures for the transition to agroecology and regenerative approaches to land use that demonstrates the interlinkages between climate change, agriculture, health, and nutrition.
- Specify domestic and international finance needs for implementing food systems-relevant interventions.

**The NDC targets considered research in the update process to embrace adaptive learning that is related to agricultural land restoration.** The NDC emissions-reduction target was informed by two commissioned technical reports and analysis undertaken in 2020. One, by the Energy System Research Group (ESRG) at the University of Cape Town (UCT), using SATIMGE, an economy-wide linked energy-economy-environment model. In the land sector, a number of measures were modelled that included: 1) forest, woodland, and grassland rehabilitation, and thicket restoration; 2) replanting of temporarily unplanted plantations; 3) restoration of agricultural land; 4) conservation agriculture measures; and 5) afforestation measures. In the waste sector, the targets in the 3rd National Waste Management Strategy provides for: 1) the achievement of waste minimization; 2) recycling targets; and 3) diversion of organic waste from landfill. The second systems analysis to support increasingly ambitious CO<sub>2</sub> emissions scenarios in the South African electricity system was conducted by the Council for Scientific and Industrial Research (CSIR).

**Mitigation targets in the NDC are informed by a long-term perspective contained in LEDS recently submitted to the UNFCCC.** While the updated NDC includes AFOLU and waste sectors among the four key sectors identified for climate change mitigation, it does not detail any concrete mitigation measures. The LED, however, outlines several policies for agriculture and land use, including reducing deforestation, afforestation and increasing the uptake of conservation agriculture including no-till, conservation till, precision agriculture, and meat production efficiency. It also highlights national initiatives for addressing food loss and waste; for example, an initiative to support stakeholders in the agriculture sector to minimize food loss, and a consumer awareness campaign to save 245,000 tons of food waste.

**The NDC includes measures to improve climate services to build climate resilience across water, health, agriculture, human settlements, and biodiversity sectors.** The NDC acknowledges the detrimental impacts in the near future on crops, tree species, and livestock produced in marginal growing areas where growing conditions are already close to temperature and water availability thresholds. More significant changes are expected in average maximum and minimum temperatures, as well as the frequency of extremes such as heatwaves. This will have major implications for crops, tree species, livestock, game, and fisheries as well as the prevalence of pests and diseases.

**The NDC mentions the promotion of priorities toward climate-resilient water and agriculture sectors.** In an effort to enhance water security and promote climate-smart agriculture, South Africa's NDC highlights specific national adaptation priorities, strategies, plans, goals, and actions for sectors most likely to be impacted by climate change. South Africa is prioritizing the full implementation of a climate-smart agriculture framework under the National Climate Change Adaptation Strategy. This involves setting up programs to provide support to the agriculture sector to implement sustainable practices that help to increase productivity, build resilience of farmers to stresses, and lower carbon emissions, with particular emphasis on the most vulnerable farmers and while taking gender into consideration. It also details tools and infrastructure to promote climate resilience across water, agriculture, and human settlement sectors. The NDC mentions the deployment of hydro-meteorological monitoring systems, the development of early warning systems for small-scale farmers, the development of a multi-hazard early warning system, and climate change capacity-building in the farming sector. The NDC aims to ensure the development and deployment of climate-resilient infrastructure that will enhance water and energy security. South Africa will integrate climate information into infrastructure development planning, and effectively deploy flood protection measures. The country will ensure climate-proofing of all new infrastructure development projects and facilities, and retrofitting of old infrastructure to achieve a climate-resilient society. With regards to human settlements, South Africa seeks to ensure that urban planning and design incorporates climate change concerns. In the health sector, monitoring, surveillance, and early warning systems for climate-induced diseases will be prioritized. South Africa also aims to enhance the monitoring of climate change impacts on biodiversity and ecological infrastructure.

**The NDC mentions the creation of decent work and green jobs via a climate-resilient and job-rich pathway.** South Africa faces a triple development challenge of poverty, inequality, and unemployment. The current projections show a considerable increase in temperature and more erratic rainfall, leading to biodiversity loss, a sector that currently contributes about 418,000 jobs through various biodiversity-related

interventions.<sup>16</sup> The NDC states that the agriculture, forestry, and fisheries sectors are critical for attracting foreign exchange, job creation, and the production of raw materials for the economy. South Africa will seek to develop small, medium, and micro enterprises to implement innovative technologies and create sustainable employment. South Africa's NDC aims to ensure that no one is left behind in its effort to move from a high-emissions, low-employment energy development pathway to a low-emissions, climate-resilient, and job-rich pathway; indeed, it is considered central to the measures for sustainable development and climate change mitigation and adaptation. The country has not formulated a specific framework or policy for green employment transition.

**The NDC has quantified finance needs for mitigation and adaptation measures planned for agriculture, health, water, and biodiversity.** However, South Africa emphasizes the need for international cooperation, climate finance, and concrete support to ensure a just transition to a sustainable future.

## AREAS FOR IMPROVEMENT

**Include research conducted for the public good that emphasizes the ecological, health, social, and economic impacts of transitioning to sustainable food systems.** The NDC should consider integrating evidence-based approaches and policy recommendations that progressively contribute to sustainable food systems transformation. A recent report on Transitions to Agroecological Food Systems for South Africa<sup>17</sup> identifies initiatives and current policies related to agroecological transitions at the national level by various stakeholders such as government, civil society representatives, and farmer organizations. The report provides in-depth knowledge on the contribution of agroecological food systems across: 1) the supply of sufficient, affordable, nutritious, and healthy food; 2) the generation of decent labour and incomes for households; and 3) the sound management of natural resources at the territorial level in the context of climate change. This provides policymakers and stakeholders with sufficient and convincing evidence and arguments on an agroecological transition and supports the fulfillment of South Africa's climate change adaptation and mitigation commitments. Furthermore, it is important to consider the environmental, social, and health impacts of transitioning to sustainable food systems. Large-scale food processors should be more stringently regulated and discouraged from producing ultra-processed foods that contribute to the noncommunicable diseases (NCD) epidemic — these industries also create a market for bulk food commodities derived from monocultural production systems that are known to be ecologically destructive, so discouraging production, sale, and consumption of Ultra-processed Foods (UPFs) could have important up-stream impacts in reducing the viability of extensive monocultural cropping systems.<sup>18</sup>

**Include targets and measures to facilitate and accelerate the transition toward healthier and more sustainable diets.** Overall, emissions reduction potential is heavily dependent on diet shifts (75% reduction potential for a sustainable diet scenario, 40% for business-as-usual diet scenario). South Africa's NDC does not mention any targets or measures to drive a transition to sustainable and healthy diets. Given the prevalence of the triple burden of malnutrition, promoting a diet scenario that is feasible in the South African national context should be considered. Poverty, limited resources, and lack of healthy living programs and regulations add to this burden. Furthermore, noncommunicable diseases account for over half of deaths in South Africa. Integrating measures for dietary transition in the NDC as well as in national policies could contribute to the reduction of non-communicable and diet-related diseases such as diabetes.<sup>19</sup> Nutritional scale policies need to be integrated with local scale policies, and programs could help to shape healthy

environments and help reset food systems so that low-income communities have access to affordable, healthy diets.

**Include measures to ensure a just transition to sustainable food systems by building the resilience and capacity of local food systems among marginalized and vulnerable communities.**

Many rural and urban communities, as well as vulnerable groups (such as women), who are exposed to the impacts of South Africa's climate crisis could become less vulnerable if they engage in ecologically beneficial forms of agriculture and food production. To improve the localization of food systems (that is, to reduce food miles), additional infrastructure — more local fresh-produce markets, cold storage facilities, and micro-processing plants that include smallholder farmers — will be needed.<sup>20</sup> This would increase resilience for the most marginalized and vulnerable groups, particularly for women, provide more ownership over food that is consumed, and can offer more healthier and nutritious choices when it comes to food options that are usually limited in food-insecure areas.<sup>21</sup>

**Provide clearer and concrete measures for the transition to agroecology and regenerative approaches to land use that demonstrates the interlinkages between climate change, agriculture, health, and nutrition.**

South Africa's NDC does not include enabling measures toward regenerative agriculture, improved livestock efficiencies, better soil management, and rollout of renewable energy adaptation measures, which are urgently required as farmers are already struggling with hotter and drier climates, pests, and diseases. Efficiency improvements in livestock production require access to knowledge, and there is a need to balance cultural views of livestock with the need to reduce emissions. For agroecological transitions to take hold, access to small parcels of land would be essential. This means reversing land consolidation. Accelerating and enhancing land reform will be essential to promote a broad-based transition toward agroecology.<sup>22</sup> Additionally, communal land ownership in historic labour-sending regions makes it difficult to secure finance, increases chances of overgrazing, and may reduce individual farmer incentive to implement long-term levers.<sup>23</sup> Levers include regenerative agriculture, improved livestock efficiencies, better soil management, and rollout of renewable energy. The NDC does not address challenges to the implementation of these levers. The NDC could also consider transition risk of regenerative agriculture and upfront cost of renewable energy, feed additives, and manure management.<sup>24</sup>

**Specify domestic and international finance needs for implementing food systems-relevant interventions.**

In the updated NDC, South Africa expects that adequate international support will be provided for both adaptation and mitigation, as a matter of fairness, as provided for in the Paris Agreement. However, to ensure accountability to the country's climate adaptation and mitigation commitments, South Africa could explicitly indicate anticipated domestic investment as well as international cooperation and support. Additionally, the NDC could further specify the allocated proportion of funding that is expected to be channelled toward implementing food systems-relevant interventions, under its adaptation and mitigation commitments. This includes financing support for local micro-processing, which would enable participation in local economies by smaller-scale producers and processors.

## IMPLEMENTATION OF THE NDC

TABLE 3: NDC IMPLEMENTATION: KEY FINDINGS AT A GLANCE

### Key findings

- Coordination mechanisms are set up within and across levels of government to implement the NDC.
- The NDC includes measures to improve climate services to build climate resilience and climate-resilient development.
- The NDC details estimated costs for the period 2021 to 2030 for the implementation of planned adaptation mitigation measures that includes the agricultural, health, water, and biodiversity sectors.
- The NDC also includes measures to secure public and private sector funding to implement adaptation and mitigation measures highlighted in the NDC.

### Areas for improvement

- Ensure an inclusive approach to implementing NDC measures and targets by engaging all key food systems actors to implement NDC measures and targets.
- Expand the scope of the recently adopted carbon tax law to cover AFOLU and waste sectors to provide an incentive for the adoption of agroecology and regenerative agriculture that contribute toward climate change mitigation and resilience.
- Ensure participatory, integrated, rights-based approaches to governance at all levels in order to address the structural inequities in food systems.
- Include policies and measures that can unlock private and multilateral investments for actions aimed at different levels of food systems transformation.
- Establish a transparent and democratic process that is informed by scientific research to monitor performance under the NDC.

### Coordination mechanisms are set up within and across levels of government to implement the NDC.

The National Climate Change Response Policy (NCCRP) provides a clear framework for the mainstreaming of climate change planning and action between the different spheres of government.<sup>25</sup> Many government departments and municipalities have started mainstreaming climate change into their government strategies, policies, and Integrated Development Plans (IDPs), project steering committees, consultation platforms, national stakeholders, and national working groups. The PCC is tasked with advising on South Africa's climate change response. The Commission monitors and reviews progress with emissions-reduction and climate adaptation goals, as well as the achievement of a just transition linked to broader development objectives of the country. Among others, the planning of a just transition includes key areas of work, such as energy security, water security, food security, infrastructure resilience (urban, rural, and coastal), land use, and the mobilization of the necessary technological innovation and climate finance.

The government plans to use its three levels of government (national, provincial, local) to ensure that adaptation and mitigation strategies as set out in the Presidential Climate Commission, the Inter-Ministerial Committee on Climate Change, and the Provincial Forum on Climate Change are implemented. The government will also continue to engage with business, civil society, and research institutions. The country also commits to building evidence-based support to ensure the implementation of strategies that involve: 1) climate-risk vulnerability assessments; 2) an adaptation needs costing methodology; 3) climate events cost assessments through modelling; 4) developing national, provincial, and local mitigation plans; and 5) distributing toolkits for climate change adaptation.

**The NDC includes measures to improve climate services to build climate resilience and climate-resilient development.** South Africa undertakes to quantify national adaptation and climate resilience for the period 2021 to 2030. This is supported by its commitment to develop a pipeline of climate change adaptation activities for the period 2021 to 2030. Furthermore, the NDC is linked to the National Development Plan (NDP). While not mentioned in the NDC, the South African government is putting emphasis on tackling the challenges in food systems through improving the sustainability, resilience, and market connectivity of the agriculture sector.<sup>26</sup> Improvements include the development of irrigation infrastructure to optimize production in dry areas, climate resilience through the selection of suitable crop varieties, capacity-building, integrating smallholder farmers in the supply chain, and improving employment opportunities, among other means.<sup>27</sup>

**The NDC details estimated costs for the period 2021 to 2030 for both mitigation and adaptation measures that includes the agricultural, health, water, and biodiversity sectors.** The cost of adaptation needs is estimated at 243.3 to 4,060 billion ZAR (16 to 267 billion USD),\* and investment needs for mitigation is estimated at 912 to 973 billion ZAR (60 to 64 billion USD) for the period 2021 to 2030. The adaptation cost is linked to an ambitious roadmap for proposed activities up to 2030 and mentions that sector departments, both at provincial and local governments level, have the concurrent responsibilities of developing adaptation plans. The adaptation investments will include: 1) 197.7 million ZAR (13 million USD) to build evidence-based support for policy implementation for the period 2021 to 2030; 2) 121.6 million ZAR (8 million USD) for developing tools, strategies, and rollout for the period 2021 to 2030; 3) 45.6 to 60.8 billion ZAR (3 to 4 billion USD) required for the implementation of the NCCAS for the period 2021 to 2030.

**Measures are developed to secure public and private sector funding to implement adaptation and mitigation measures highlighted in the NDC.** The National Treasury has developed a sustainable finance framework and has published a working draft of the Green Finance Taxonomy that aims to unlock access to sustainable finance and stimulate the allocation of capital to support a development-focused and climate-resilient economy. The Treasury, the South African Reserve Bank, financial sector regulators, and DFFE work together on issues of sustainable finance initiatives in the sphere of private finance. This initiative considers climate and green finance as well as the social issues, governance, and financial stability.

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\* Conversions based on February 2, 2022, exchange rates.

## AREAS FOR IMPROVEMENT

**Ensure an inclusive approach to implementing NDC measures and targets by engaging all key food systems actors to implement NDC measures and targets.** The NDC should consider all stakeholders, including traditionally marginalized voices, and how they will be affected as well as a cross-sectoral approach to ensure synergies and avoid trade-offs among different sectoral policies. Although various sectors are represented in the NDC development process, for accountability the NDC needs to provide more clarity on the exact roles and responsibilities for the various sectors in the implementation of policies and measures under the NDC. Climate change does not affect men and women equally. For this reason, a gender-equality perspective is essential when setting measures and implementing climate action. It is important to take into account women's differentiated needs and higher vulnerability (mostly derived from a series of social factors). The role of marginalized groups such as Indigenous Peoples, local communities, women, and youth as key agents of change should be clearly defined and highlighted.

**Expand the scope of the recently adopted carbon tax law to cover AFOLU and waste sectors to provide an incentive for the adoption of agroecology and regenerative agriculture that contribute toward climate change mitigation and resilience.** South Africa became the first African country to launch a carbon tax in 2019 to ensure that polluters take into account negative externalities during production and investment decisions. The NDC indicates that the carbon tax prices all GHG emissions in all sectors other than waste and AFOLU. In 2016, second to the energy sector, the AFOLU sector accounted for 18% of emissions in South Africa (of which 12% came from agriculture), and 3% were as a result of waste management activities.<sup>28</sup>

Although South Africa's NDC includes emissions reductions from agriculture, forestry, and AFOLU, and considers the land sector to be a net carbon sink, it also entails uncertainty about how the emissions reductions from these sectors will be achieved,<sup>29</sup> as no disaggregated emissions-reduction targets for different sectors are indicated. The reduction of emissions through regenerative agriculture, nitrogen inhibitors, use of lower and zero-emissions fertilizers, selective breeding, manure management, energy efficiency, and enhance and protect nature-based sink potential are all important elements that offer critical adaptation opportunities for emissions reductions and food systems changes. Furthermore, the NDC should consider True Cost Accounting to track and report on AFOLU's contribution to climate change, biodiversity loss, health and disease, and food security.<sup>30</sup>

**Ensure participatory, integrated, rights-based approaches to governance at all levels in order to address the structural inequities in food systems.** Municipalities would need to play a significant role in implementing strategies at the local level. However, it is unclear how national directives will cascade to the local scale, and how the departmental siloization and short-term planning at local government scale will be overcome to facilitate implementation. New governance structures and networks would be essential to ensure that transitions are more inclusive and democratic, rather than favouring existing incumbents.<sup>31</sup>

**Include policies and measures that can unlock private and multilateral investments for actions aimed at different levels of food systems transformation.** The NDC targets investments in infrastructure, technology development, and capacity-building. These investments should also strengthen

rural livelihoods and support communities in producing better and healthier food under ecologically beneficial forms of farming. This can include specific vehicles for financial assistance, capacity-building for farmers, and the development and transfer of technologies that are suited to local realities. Channelling investments to smallholder farmers would align with the commitment to just and equitable transition under the NDC. Investments in agricultural diversification, local adaptation, and pathways to scaling should be considered.

**Establish a transparent and democratic process that is informed by scientific research to monitor performance under the NDC.** A robust monitoring mechanism is needed to track progress and effectiveness of the actions in NDC implementation and identify co-benefits, negative impacts, and trade-offs; to help identify downstream national and sectoral priorities; and to strengthen policy planning and prioritization of actions in the future. In addition, research is needed to support an ambitious, transdisciplinary, and inclusive transformation of South Africa's food systems.

## CASE STUDY SUMMARY

### **Food and Trees for Africa, South Africa**

*“The idea behind the Barcelona Challenge was not to launch another declaration but to focus on commitments linked to practical action and targets which can deliver concrete results.”* —Maria Carrascosa, Project Coordinator

Food and Trees for Africa (FTFA) is a leading South African Non-Profit Organization that addresses food security, climate issues, and environmental sustainability through tree planting, the establishment of food gardens, practical permaculture workshops, advocacy, and skills training. They operate as a social enterprise, focusing their work on making a positive difference in the lives of all South Africans, with a focus on the most under-resourced groups, including women and low-income communities. FTFA is now regarded as one of the leading social development organizations working across the African continent. Although based in South Africa, FTFA also works in Zambia, Nigeria, Angola, Lesotho, and Swaziland.

FTFA focuses on practices that support what they call “bio intensive agriculture,” including agroecology, permaculture, conservation and rehabilitation agriculture, and natural farming. While highlighting the science, they also consider the needs and experiences of the communities in which they work to ensure solutions relevant to the needs of the people they are designed to support. This includes taking a longer-term view so that agriculture works with nature, focusing on “bio-inputs” that improve soil health, biodiversity, and food security outcomes while reducing climate impacts. Tree planting programs focus on establishing endemic trees through the planting of a 50:50 mix of local fruit trees and trees that provide shade, although this mix may vary according to the exact needs of the beneficiaries.

One of FTFA's flagship initiatives is their EduPlant School Gardening and Nutrition Program, which offers schools in under-resourced areas training, resources, and support to develop or improve their food gardens. The program, endorsed by the South African Department of Basic Education's National School Nutrition Program, develops school-linked food security clusters in townships and other disadvantaged communities — creating impact in communities beyond the school grounds. As part of the EduPlant program, educators learn about nature stewardship, climate change, and their right to a clean environment. The program has supported, trained, and resourced thousands of schools with educational materials, seeds, tools, fruit trees, and other plants and on-site workshops. The school gardens also play a pivotal role in community integration by acting as food security hubs within the communities they serve.

*“Children are our future and are an important part within the wheel of life. EduPlant takes a holistic approach to children's education, and the gardens that we establish are about more than just producing healthy and nutritious foods — they aim to enrich children's lives and provide a safe space where children can feel cared for, improving both their physical and mental well-being.”* —Robyn Hills, Programme Director, Food and Trees for Africa

Further information and access to the detailed case study can be found [here](#).

## ENDNOTES

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