

# Swaziland's INDC

## Introduction

The Kingdom of Swaziland is a landlocked, culturally-rich country situated in Southern Africa, and home to 1.25 million Swazi people. As a developing, lower-middle income country, Swaziland's ultimate vision is to improve its world standing in terms of measurable indices of human development. Underlying this vision is a focus on sustainable economic development<sup>1</sup>, social justice, political stability, poverty eradication, employment creation, gender equity, social integration and environmental protection<sup>2</sup>.

Swaziland recognises that climate change can severely impact on the achievement of the ultimate vision for the country. As such, climate change is considered a priority development concern, and the country is committed to taking urgent and long-term actions to reduce the vulnerability of its people and risks to national development<sup>3</sup>. Since ratifying the Convention<sup>4</sup> in 1996, Swaziland has developed a series of notable climate actions which include (amongst others) the establishment of a multi-stakeholder National Climate Change Steering Committee in 2011. This Committee spearheaded the development of Swaziland's 2014 National Climate Change Strategy and Action Plan and 2015 National Climate Change Policy. The goal of this Policy is to support the development of a sustainable, climate resilient and inclusive low-carbon green growth economy in line with vision 2022 outlined in the national development strategy.

Swaziland is pleased to submit its Intended Nationally Determined Contribution (INDC) to the Convention. This INDC presents yet another step that the country is taking towards the development of an effective climate change response, both in terms of reducing GHG emissions and adapting to the impacts of climate change. The INDC supports the achievement of Swaziland's developmental objectives of sustainable development, poverty eradication and enhanced adaptive capacity.

Swaziland has contributed little to greenhouse gas (GHG) concentrations in the atmosphere. Estimates put Swaziland's 2010 emission inventory at 0.8 MtCO<sub>2</sub>e (including the Land Use Land Use Change and Forestry (LULUCF) sector), meaning that Swaziland's emissions represent less than 0.002% of global emissions. Despite not emitting large quantities of GHGs, Swaziland is facing severe climate change impacts. Variable precipitation patterns, droughts, desertification, higher temperatures and increased storm intensities have already affected the country's key economic sectors. As a developing, lower-middle income country, with 69% of the population living below the poverty line, Swaziland has little capacity to cope with these impacts. Adaptation action within the country is crucial, and this forms the basis of Swaziland's climate change response and INDC.

The full implementation of Swaziland's INDC is contingent upon continuous strengthening of the country's technical capacities, technology transfer and development, as well as financial support received.

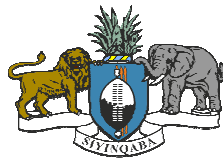
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<sup>1</sup> With regards to economic development, Swaziland's 2014 gross domestic product was USD 3,400 million, with 2.5% annual growth rates anticipated over the next five years (World Bank (2014)).

<sup>2</sup> Ministry of Economic Planning and Development, Government of Swaziland (1997): The National Development Strategy.

<sup>3</sup> This is undertaken within the context of Swaziland's national and regional development priorities, objectives and circumstances.

<sup>4</sup> United Nations Framework Convention on Climate Change.



## Adaptation

Evidence of climate change is already visible in Swaziland through the dwindling crop yields, violent storms and persistent drought. This is exacerbating the country's existing challenges which include chronic poverty, food insecurity<sup>5</sup>, the ability to attain the United Nations Sustainable Development Goals, and the highest prevalence of HIV/AIDS in an adult population in the world<sup>6</sup>. Adaptation to the impacts of climate change is of utmost importance in Swaziland, particularly in four key sectors of the economy that will form the foundation of the adaptation contribution of Swaziland's INDC:

- **The biodiversity and ecosystems sector** provides a range of services for the Swazi people. Swaziland is heavily dependent on these services; the country's rural poor are especially vulnerable to the degradation of healthy ecosystems through climate change.
- **The water sector** will likely be impacted by a (projected) 40% reduction in the country's river flows, which will impact on the achievement of Swaziland's developmental objectives, particularly food security and human health.
- **The agriculture sector** contributes approximately 9.5% to the country's gross domestic product. This sector forms the critical foundation of Swaziland's population as more than 70% of the rural population is dependent on subsistence agriculture. Variable precipitation patterns, droughts, higher temperatures and increased storm intensities have already significantly impacted this sector.
- **The health sector** will be affected by climate change impacts, with groups such as households with members living with HIV expected to be particularly vulnerable. The health sector is a cross-cutting sector and is dependent on the climate resilience of the agriculture, water, and biodiversity and ecosystems sectors.

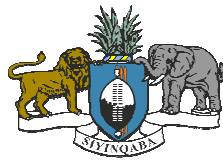
The adaptation contribution of Swaziland's INDC is presented in Table 1 below:

**Table 1: Adaptation contribution**

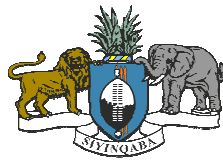
Coverage	Actions
<b>National level</b>	<p>Swaziland's contribution is to develop a National Adaptation Plan (NAP) by 2020. This NAP has three primary objectives:</p> <ul style="list-style-type: none"> <li>▪ Identify the level of climate risk given the economic, social and environmental constraints of the country.</li> <li>▪ Reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience. This will be achieved through integrated water resource management, climate smart agriculture, cross-cutting themes of early warning systems, disaster risk management, improving emergency preparedness and response capacities, energy efficiency and energy security, biodiversity conservation and sustainable land management.</li> <li>▪ Facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular through development planning and budgeting processes within relevant sectors and at different levels.</li> </ul> <p>It is envisaged that the NAP will also develop Swaziland's institutional and regulatory framework which will enhance and enable investments in adaptation for vulnerable sectors.</p>

<sup>5</sup> 25 – 50% of the population are currently dependent on food aid.

<sup>6</sup> 26% of Swaziland's adult population is currently living with HIV.



Coverage	Actions
<b>Biodiversity and ecosystems sector</b>	<p>Swaziland's contribution is to:</p> <ul style="list-style-type: none"> <li>▪ Scale up investments in restoring and maintaining ecological infrastructure, with a focus on the priority ecological assets.</li> <li>▪ Establish effective long-term biodiversity conservation, landscape management and natural resource management programmes.</li> <li>▪ Strategically plan and manage the ecological infrastructure, which includes healthy grasslands, rivers, wetlands, woodlands and natural forests.</li> <li>▪ Enhance biodiversity and promote ecotourism with benefit sharing for the surrounding communities.</li> </ul> <p>The possible actions that have been identified to achieve these contributions include: agro-forestry; ecological pest management; flood mapping; grazing land management; degraded land rehabilitation; fire management; and erosion control through terracing.</p>
<b>Water sector</b>	<p>Swaziland's contribution is to:</p> <ul style="list-style-type: none"> <li>▪ Align the climate change policy and strategy components of the National Water Policy with the 2003 Water Act.</li> <li>▪ Develop water pricing structures to encourage efficient water use.</li> <li>▪ Implement measures to reduce water consumption throughout the value chain.</li> <li>▪ Strengthen the capacity of early warning centres, for improved emergency preparedness, disaster risks and response capacities.</li> <li>▪ Develop systems to integrate water resource management across all the sectors of human endeavour, land use and the environment.</li> </ul> <p>The possible actions that have been identified to achieve these contributions include: artificial groundwater recharge; integrated river basin management; leakage detection; rainwater harvesting; sand dams; solar pumps borehole water pumping; water recycling and reuse; and wetland restoration.</p>
<b>Agriculture sector</b>	<p>Swaziland's contribution is to:</p> <ul style="list-style-type: none"> <li>▪ Increase the contribution of agriculture to economic development, to support both food security and exports.</li> <li>▪ Reduce poverty and improve food and nutrition security through sustainable use of natural resources, improved access to markets, and improved disaster and risk management systems.</li> </ul> <p>The possible actions that have been identified to achieve these contributions include: conservation tillage; crop diversification; greenhouse farming; hydroponics; livestock selective breeding; micro irrigation; organic farming; and solar dryers.</p>
<b>Conditionality</b>	<p>The extent to which Swaziland's adaptation contribution can be achieved is dependent on the level of support received – in the form of appropriate capacity building, technical assistance, technology transfer, skills training and finance.</p>
<b>Unconditional contribution</b>	<p>Swaziland will focus human capital on adaptation as a response to climate change. Swaziland will participate in research, pilot projects and planning and implementation of adaptation actions.</p>



## Mitigation

Though Swaziland is not a high GHG emitter – neither in absolute terms nor per capita terms – the country recognises that it still has an important role to play in global GHG mitigation efforts.

Swaziland has experienced various challenges in the compilation of its national GHG inventories. Challenges include data collection and archiving, quality assurance and control, and uncertainties in the estimation of emissions from all IPCC<sup>7</sup> sectors. Due to these uncertainties, there is no clear departure point for Swaziland’s emission trajectory and therefore Swaziland’s mitigation contribution is framed on an action-based approach that is strongly dependant on financial and technical support as well as capacity building.

The mitigation contribution of Swaziland’s INDC is presented in Table 2 below:

**Table 2: Mitigation contribution**

Coverage	Actions
<b>National level</b>	<p>Swaziland’s contribution is to develop a robust national GHG inventory, a credible baseline and emissions trajectory, and a comprehensive measurement, reporting and verification (MRV) system.</p> <p>This will provide the framework on which to develop a mitigation goal and associated action plan by 2020.</p>
<b>Energy sector</b>	<p>Swaziland’s contribution is to double the share of renewable energy in the national energy mix<sup>8</sup> by 2030, relative to 2010 levels<sup>9</sup>.</p> <p>Swaziland recognises that access to renewable forms of energy plays a significant role in improving livelihoods of its people – both in terms of increasing social equity and improving economic growth. This contribution will also reduce the energy sector’s GHG emissions.</p> <p>The contribution covers grid and off-grid applications where Swaziland will:</p> <ul style="list-style-type: none"> <li>▪ Implement small scale, decentralized renewable energy technologies to improve energy access in rural areas. This will also reduce the unsustainable wood harvesting practices that are currently undertaken.</li> <li>▪ Increasing the use of grid-connected renewable technologies with fuel sources such as waste, solar, bagasse (from the sugar industry) and wood chips.</li> </ul> <p>This contribution has further co-benefits of improving universal energy access and security, particularly relevant in the context of the current challenges experienced in the regional electricity system.</p>

<sup>7</sup> Intergovernmental Panel on Climate Change

<sup>8</sup> Swaziland Government Ministry of Tourism and Environmental Affairs 2014: Sustainable Energy for All Country Action Plan

<sup>9</sup> The share of renewable energy in the national energy mix in 2010 was 16%, this includes both grid connected renewable energy and sustainable/renewable biomass.



Coverage	Actions
<b>Transport sector</b>	<p>Swaziland's contribution is to introduce the commercial use of a 10%<sup>10</sup> ethanol blend in petrol by 2030. This is additional to the energy sector contribution discussed above.</p> <p>This contribution will reduce the transport sector's GHG emissions, which accounted for 9% of the nation's inventory in 2010. These emissions are anticipated to exponentially increase as more vehicles are purchased. Currently the average growth rate of the number of vehicles, of all types, in Swaziland is 7% per year.</p> <p>Swaziland does not currently blend ethanol in petrol, though successful pilot projects have been undertaken. This commitment is also likely to have a positive influence on Swaziland's agricultural sector, particularly in the sugar industry. Bagasse and molasses are by-products from this mature industry and can be used as feedstock for the production of ethanol.</p>
<b>Substitutes for ozone depleting substances</b>	<p>Swaziland's contribution is to phase out the use of HFCs, PFCs and SF<sub>6</sub> gases.</p> <p>This contribution will be achieved by developing the value chain for alternative zero-GWP gases, and enhancing the skill level for these conversions.</p> <p>In 2010, emissions from HFCs and SF<sub>6</sub> accounted for more than 20% of the national inventory. As a ratifying partner to the Montreal Protocol on Substances that Deplete the Ozone Layer, Swaziland has already phased out its HCFCs production (which was replaced with HCs which have no global warming potential). As a progression beyond this current undertaking, this contribution will see Swaziland phasing out the consumption of ozone depleting gases as well as substitutes with GWP.</p>

The specifics of Swaziland's mitigation contribution, as required by the Lima Call for Climate Action, is presented in Table 3 below.

**Table 3: Specifics of Swaziland's mitigation contribution**

<b>Mitigation actions</b>	<p>Swaziland's four mitigation actions, based on technology, financial and capacity building support are:</p> <ul style="list-style-type: none"> <li>▪ Developing a robust national GHG inventory, a credible baseline and emissions trajectory, and a comprehensive MRV system.</li> <li>▪ Doubling the share of renewable energy in the national energy mix. This includes electricity generation and reduced consumption of non-sustainable biomass.</li> <li>▪ Introducing the use of a 10% ethanol blend in petrol for use in all vehicles. This is additional to the contribution of doubling the share of renewable energy.</li> <li>▪ Phasing out the use of HFCs, PFCs and SF<sub>6</sub> gases.</li> </ul>
<b>The reference point (including, as appropriate, a base year)</b>	The base year for Swaziland's INDC is 2010.
<b>Time frames and/or periods for implementation</b>	<p>The development of a robust national GHG inventory, credible baseline and emissions trajectory and a comprehensive MRV system for Swaziland will commence from the submission of the INDC.</p> <p>The mitigation actions will be implemented between 2020 and 2030.</p>
<b>Scope and coverage</b>	<i>Sectors covered:</i> The development of a robust national GHG inventory covers all IPCC sectors. Whilst additional actions specific to the energy, transport and industrial processes sector are also covered by Swaziland's INDC.

<sup>10</sup> Swaziland Government Ministry of Natural Resources and Energy (2009): National Biofuel Development Action Plan



*Greenhouse gases covered:* Emissions of CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O will be avoided by increasing the share of renewable energy in the mix and ethanol blending in petrol. The consumption of HFCs, PFCs and SF<sub>6</sub> gases will be phased out.

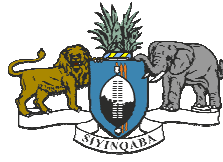
*Geographical coverage:* The contribution applies to the entire country.

<b>Assumptions and methodological approaches for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals</b>	<p>The emission reductions associated with the mitigation actions were calculated by:</p> <ul style="list-style-type: none"> <li>▪ Determining the share of renewable energy in the national electricity mix in 2010. The additional grid connected renewable energy that will be generated between 2010 and 2030 was multiplied by the Southern Africa Power Pool’s grid emission factor for 2010. The additional non-grid connected renewable energy that will be used between 2010 and 2030 was multiplied by the 2006 IPCC Guidelines’ emission factor for wood combustion and used global warming potentials for CH<sub>4</sub> and N<sub>2</sub>O from the IPCC’s fourth assessment report over a 100-year time series. This contribution is estimated to reduce emissions by 0.94 MtCO<sub>2</sub>e.</li> <li>▪ Determining the emissions associated with petrol combustion in 2010 and assuming that ethanol has a net zero emission factor. It is estimated that this could reduce emissions by 0.03 MtCO<sub>2</sub>e.</li> <li>▪ Estimating the country’s HFC, PFC and SF<sub>6</sub> related emissions in 2010 using the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and global warming potentials from the IPCC’s fourth assessment report over a 100-year time series. Conversion to alternative zero-GWP gases will be monitored throughout the implementation phase.</li> </ul>
<b>Conditionality</b>	<p>The implementation of Swaziland’s INDC is conditional upon appropriate support in the form of finance, technical assistance and capacity building. Depending on the level of support received, Swaziland will update its INDC accordingly.</p> <p>These mitigation actions have clear GHG reduction potential and could be converted to carbon credits. Swaziland intends to sell emission reductions units through international and regional carbon markets and/or carbon pricing mechanisms that may be established under the new agreement.</p> <p>To ensure environmental integrity of the emission reduction units and to avoid double-counting, Swaziland suggests the use of internationally recognized accounting principles and MRV standards such as under the Clean Development Mechanism or similar types of baseline-and-crediting mechanisms.</p>
<b>Unconditional contribution</b>	<p>Swaziland will focus human capital on mitigation as a response to climate change. Swaziland will participate in research, pilot projects and planning and implementation of mitigation actions.</p>
<b>Planning process</b>	<p>Swaziland’s INDC was developed through several iterations of stakeholder consultation, along with an assessment of priority emitting sectors and key vulnerabilities. The INDC is aligned with the country’s National Development Strategy and the National Climate Change Policy.</p>

### Fairness and ambitiousness of Swaziland’s INDC

Swaziland is a small, developing country and is vulnerable to the impacts of climate change. Though not a large GHG emitter – with per capita emissions of 0.6 tCO<sub>2</sub>e/year in 2010 – Swaziland remains committed in contributing to the transition towards a low carbon and climate resilient future.

This contribution is reflected in a fair and ambitious INDC that will see Swaziland improving the share of renewable energy in the nation’s energy mix, increasing the ethanol blend in petrol, and phasing out the consumption of HFCs, PFCs and SF<sub>6</sub> gases. Further ambition is reflected in Swaziland’s efforts to develop



synergies and co-benefits between climate change mitigation and adaptation. These actions not only help to tackle global warming, but will assist the country in reducing poverty, strengthening ecological infrastructure, and improving water and food security. As Jabulani Mabuza, Swaziland's Minister of Tourism and Environmental Affairs, noted when speaking at World Environment Day in June 2014: *"Swaziland may not have contributed significantly to the causes of climate change, but needs to start looking for options to 'climate proof' its economy since it would not be spared from its effects."*