



# **Kingdom of Eswatini**

## **Update of the Nationally Determined Contributions**

**Submitted to the United Nations Framework Convention on Climate Change (UNFCCC)**

October 2021

## 1. Introduction

The Government of Eswatini submitted its Intended Nationally Determined Contributions (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC) in 2015 and ratified the Paris Agreement on 21<sup>st</sup> September 2016. Post enforcement of the Paris Agreement in November 2016, Eswatini's INDC came to be known as its first NDC. Eswatini is not a major contributor to the global Greenhouse Gas (GHG) emissions. Although the impacts of climate change are largely linked to the historical and contemporary industrial development of other nations, like most countries in the Global South, the country is disproportionately impacted by the changing climate. Under these circumstances Eswatini presents its enhanced NDC, acknowledging that despite our contribution to climate change emissions being miniscule, the country is committed to climate action. The country intends to communicate that climate resilient, sustainable, and equitable development are its priorities.

The enhanced NDC of Eswatini comes at an opportune moment as the country is developing a new National Development Plan (NDP), National Adaptation Plan (NAP), Adaptation Communication and revising its National Development Strategy (NDS). The revision of NDC allowed the country to take cognizance of the recent findings on the gaps and needs related to global climate action. Analysis of the first NDCs submitted to the UNFCCC by the parties suggests that though ambitious, the global efforts would fall well short of the goals of the Paris Agreement to keep the temperature increase well below 2°C. As per the Special Report on Global Warming of 1.5°C released by Intergovernmental Panel on Climate Change (IPCC) in 2018, even a half-degree of rise in global temperature will have profound impacts on the sea level rise, biodiversity and increase frequency and intensity of extreme weather events<sup>1</sup>. Furthermore, since the submission of NDC in 2015, there has been considerable improvements and progress in technologies, policies, partnerships, data, and stakeholder engagement for climate action globally, including in Eswatini. Eswatini uses this opportunity to incorporate the current realities and progress made by the country to revise its NDC targets and roadmaps so as to ensure greater alignment with the objectives of the Paris Agreement. Eswatini's enhanced NDC communicates the country's intent and ambition towards achieving the objectives of the Paris Agreement. It provides accompanying information to facilitate clarity, transparency and understanding of NDCs as per Katowice decisions<sup>2</sup>. The country, while cognisant of the fact that climate change affects all sectors of the economy, has prioritised some sectors and measures as detailed below.

## 2. Eswatini's Nationally Determined Contribution

**The enhanced and more ambitious NDC of Eswatini represents a progression beyond the 2015 NDC by adopting an economy wide GHG emissions reduction target of 5% by 2030 compared to the baseline scenario<sup>3</sup> and help achieve a low carbon and climate resilient development. This economy wide emission reduction can increase to 14% with external financing and this translates to 1.04 million tonnes fewer GHG emissions in 2030 compared to a baseline scenario.**

## 3. Adaptation Contribution

Eswatini has achieved significant progress in overall socio-economic development which is visible through economic growth, improvements in health, educational outcomes, greater access to energy, and, improvement in water supply, sanitation and hygiene (WASH) including associated infrastructure. However, climate change impacts felt by communities and ecosystems are reversing the development gains achieved till now. There is an urgency to act now as evidenced by AR6 IPCC report. Investing in adaptation will help reduce the effects of climate change that are felt by the country today. Additionally, cost of adaptation to climate change now can prove to contribute towards the outright avoidance of

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<sup>1</sup> <https://www.wri.org/ndcs>

<sup>2</sup> As per requirements published in 'Report of the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement on the third part of its first session, held in Katowice from 2 to 15 December 2018'

<sup>3</sup> The baseline scenario was developed based on historic GHG emissions between 2010 and 2017 and an updated scenario showing the change in GHG emissions between 2018 and 2030

adverse impacts of climatological hazards and related disasters, which will be much less costly than disaster relief and response.

Based on review of national assessments<sup>4</sup>, a risk mapping exercise and stakeholder consultations, five sectors (Agriculture, Water, Health, Ecosystems and Biodiversity, and Infrastructure) were prioritized for adaptation action. Furthermore, this revised NDC has enhanced and strengthened its prior goals from 2015 by adding additional measures for sectors and incorporated a new sector, which is the infrastructure sector. Eswatini's adaptation contribution across all sectors includes finalization and implementation of the National Adaptation Plan (NAP) and enhancing governance and legal framework through the development of a national climate change bill.

### **Sector wise key adaptation contributions of Eswatini to the Paris Agreement**

#### **3.1 Agriculture**

1. Increase the contribution of agriculture to economic development to support both food security and income generation through:
  - Converting flood irrigation systems to water efficient systems and adopt water saving practices to increase water availability, equity and security
  - Supporting development of in-farm water harvesting (including small earth dams) and move to more efficient technologies for intensive farming methods to improve food security
  - Facilitating utilization of invasive species of economic value and agriculture bi-products to reduce GHGs
  - Diversifying from heavy water consuming enterprises to drought tolerant commercial crops, trees, and small livestock
  - Developing sustainable utilization and management of rangeland practices to reduce GHG emission and
  - Monitoring Genetically Modified Organisms (GMO) use to ensure biodiversity losses and other negative impacts are kept in check.
2. 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. This can be achieved through:
  - Restoring and managing degraded land for adaptation benefits and mitigation co-benefits
  - Developing an integrated early warning and timely response climate information management system to help farmers and value chain actors take informed decision and improve their adaptive capacity
  - Facilitating production of diverse foods, biofortification and fortification to meet the nutritional needs of the population
  - Improving alternative nutrition security with special focus on all vulnerable groups
  - Upscaling and replicating climate smart agriculture, (Crops, aqua-culture, fisheries, and livestock production) for improved food security and nutrition security and higher income
  - Managing alien/invasive species using the National Invasive Alien Plant Species Strategy to enhance productivity of rangeland, riparian areas and preservation of endemic species
  - Building the capacities and support communities towards a diversification of livelihoods to alleviate the economic burden on women and

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<sup>4</sup> Documents referred- Third National Communication 2016, Vulnerability Assessment Report (2016), State of the Environment Report (2020), National Development Plan (2019-22), Technology Needs Assessment (2016, 2017, 2018)

- Intensifying post-harvest preservation and processing of foods to increase availability of food and
- Promoting healthy eating and healthy lifestyles in line with adaptation needs.

### 3.2 Water

1. Improve water governance and compliance to help manage water resources more efficiently and effectively to adapt to resultant water shortages from climate change
2. Develop water pricing structures to encourage efficient water use and scale-up smart metering systems
3. Strengthen the control and monitoring of water availability and use to protect surface and groundwater resources from over abstraction and impose timely restrictions when needed
4. Strengthen the capacity of early warning systems to improve preparedness and response while reducing disaster risk
5. Develop and implement catchment adaptation plans and strategies to promote ecosystem and community resilience
6. Control Invasive Alien plant species and pollution in catchments to protect water resources (quality and quantity)
7. Design and construct water storage infrastructure for multiple use i.e., large dams, earth dams, sand dams etc.
8. Enhance Water supply, Sanitation and Hygiene (WASH) Sector contribution to sustain healthy livelihoods
9. Create an enabling environment for the governance of WASH activities to promote resilience against climate change
10. Assess sustainable water supply options beyond 2030 through conducting water assessments/studies to identify potable water supply sources, opportunities, and constraints with a climate lens and
11. Secure climate proof water infrastructure including through developing resilient/ climate proof WASH infrastructure to increase community resilience and boost adaptive capacity.

### 3.3 Health

1. Enhance legal, policy and institutional frameworks for health sector through
  - Mainstreaming climate change into the national health policy and other strategic documents
  - Strengthening climate-informed disease control programs and surveillance systems using climate services to target vector control
  - Improving and integrating the health management information system with other systems from relevant sectors to achieve a centralized Monitoring Review and Verification (MRV) system and
  - Strengthening the preparedness and resilience of the health sector to respond to climate related emergencies and illnesses through preparedness plans and programs.
2. Build capacity in the health sector through
  - Strengthening capacity of healthcare workers on the adverse impacts of climate change; and

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- Educating and informing the public of the needed measures to protect health from the adverse impacts of climate change.
3. Leverage the use of technologies to help health sector adapt to climate change through
    - Adopting sustainable climate smart technologies to enhance the resilience of communities to the adverse effects of climate change and
    - Establishing a multi-hazard early warning system to trigger prompt public health intervention when certain variables exceed a defined threshold.
  4. Enhance adaptive capacity in the health sector through
    - Financing health actions to address inequities and climate related vulnerabilities
    - Promoting capacity building through research and development, education and awareness, and training in climate change related issues
    - Mainstreaming gender responsive climate policies and emphasize special efforts to support vulnerable groups (women, youth, and children) in climate change adaptation efforts within all sectors of the economy and
    - Using co-benefits from mitigation measures e.g., clean technologies in waste and wastewater management, energy, etc.

### 3.4 Ecosystems and Biodiversity

1. Scale up actions and investments in ecological infrastructure including actions for
  - Strengthening Regenerative Landscape Management of degraded lands/ecosystems of Eswatini
  - Improving conservation of genetic resources (indigenous trees and land races)
  - Restoring and protecting wetlands (areas of marshes, fens, peatlands, or water, including artificial, permanent, or temporary) and
  - Improving sustainable utilization of its resources for biodiversity and other benefits to communities.
2. Establish long term biodiversity conservation, landscape management and natural resources management through actions including increasing Protected Area Network and assess climate resilience of the protected areas to identify valuable ecosystem services be managed
3. Strategically plan and manage ecological infrastructure including grasslands, rivers, wetlands, woodlands, and forests including updating and implement the National Biodiversity Strategy and Action Plan (NBSAP) and ensuring that vulnerable ecosystems are addressed in national adaptation programmes
4. Reduce pressures driving biodiversity loss (e.g., deforestation, human settlements) to improve carbon sinks and promote eco-tourism
5. Properly manage quantity and quality of water resources for ecosystems and biodiversity preservation
6. Manage and control invasive plant, fish and animal species and ecological pest management for increasing food sources, habitats, and income generation opportunities and
7. Conduct research, innovation, and knowledge sharing for income generation through use of tree resources and non-timber forest products.

### **3.5 Infrastructure**

1. Improve evidence base of climate change impacts on infrastructure to support decision making
2. Build capacity at institutional level and community level for mainstreaming climate change into infrastructure
3. Climate proof existing infrastructure, particularly critical infrastructure
4. Develop nature-based solutions for urban infrastructure for adaptation benefits and disaster risk reduction to enhance resilience of urban dwellers
5. Manage critical ecosystems in cities to preserve flood control services, habitats for biodiversity and contribute to maintaining micro-climate
6. Implement integrated waste management for resilient ecosystems, reduced pollution, and healthier communities and
7. Build capacity and implement climate smart town planning for urban resilience and enhancing adaptive capacity of urban dwellers.

## **4. Mitigation Contribution**

The Kingdom of Eswatini submitted its INDC in 2015 in support of the Paris Agreement's goals to limit global temperature rise to 1.5°C above pre-industrial levels. The first NDC communicated non-GHG based targets and since then, progressive measures have been taken to increase ambition to curb GHG emissions level.

**The revised NDC of Eswatini represents a progression beyond the 2015 NDC by adopting several mitigation measures in the sectors of energy (including transport), waste, industrial processes, and product use (IPPU) and Agriculture, Forestry and Other Land Use (AFOLU) sectors.** This provides a clear basis for the enhanced ambition of Eswatini to mitigate climate change impacts through the implementation of concrete actions that have been identified across key sectors. Most of the mitigation measures identified across sectors have been aligned with the new policies and strategies that are listed further and also lead to sustainable development co-benefits.

As a signatory to the Paris Agreement, Eswatini will fully utilize the enhanced ambition instruments under Article 6, increase her focus on energy and mobility under the provision on cooperative approaches in Article 6.2 and on targeting adaptation benefits for rural communities, specifically around food and water security. Where possible, Eswatini shall also utilize the provisions under the non-market approaches in Article 6.8. Eswatini recognizes the urgent need for climate action as articulated in AR6 IPCC report.

### ***Key contributions of Eswatini to the Paris Agreement***

The new and enhanced mitigation contributions of Eswatini for all sectors include:

#### **4.1 Energy and transport**

Increasing the share of renewable energy to 50% in the electricity mix by 2030 relative to 2010<sup>5</sup> levels through the adoption of solar, wind, biomass, hydro, and solar water heater technologies. Key measures to be implemented include:

- **Electricity Generation<sup>6</sup>**

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<sup>5</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.

<sup>6</sup> This is the additional installation between 2011-2030

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- Solar: 55.85 MW<sup>7</sup>
- Hydro: 80 MW
- Biomass: 95 MW<sup>8</sup>
- Wind: Conduct feasibility studies and assessments
- **Residential**
  - Achieving 100%<sup>9</sup> access to clean modern energy for cooking at household-level by 2030
  - Improving by 50%, uptake of energy efficient biomass stoves used for cooking by 2030
  - Replacing inefficient wood-based water heating with energy efficiency options to reduce its share by 13% by 2030
  - Reduce energy consumption in water heating, through replacing conventional geysers with 1 000 solar water heaters by 2030
  - Reducing energy intensity<sup>10</sup> (electricity) by 20%<sup>11</sup> by 2030 relative to 2010
- **Industry**
  - Reducing energy intensity<sup>12</sup> (electricity) by 5%<sup>13</sup> by 2030 relative to 2010
- **Commercial and public services**
  - Reducing energy intensity (electricity) by 3%<sup>14</sup> by 2030 relative to 2010 levels
- **Agriculture**
  - Reducing energy intensity (electricity) by 3%<sup>15</sup> by 2030 relative to 2010 levels

Electricity consumption in all these sectors is expected to continue to increase, but the country is committing to efficiency improvements that will reduce the speed of that growth.

### Transport

Under transport sector the measures include:

- Introducing commercial use of 10% ethanol blend in petrol by 2030 and
- Conducting studies to assess the adoption of electric mobility options.

### 4.2 Waste

Reduce GHG emissions by 2030 compared to baseline scenario through improvements in waste treatment (including landfilling) across urban and rural areas. Key measures to be implemented include:

- Decreasing open burning of municipal solid waste (MSW)

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<sup>7</sup> This includes existing grid connected capacity of 15.85MW. In addition, there are a number of smaller installations by companies and individuals for self-consumption, that is not included here. What is included here are the solar power contributions into the grid electricity supply only.

<sup>8</sup> In 2010, 51MW of biomass electricity generation existed.

<sup>9</sup> In 2010, access to clean fuels and technologies for cooking (% of population) was 33.0%.

<sup>10</sup> Definition of the energy intensity in this context of “Residential” is energy use per household.

<sup>11</sup> In 2010 energy intensity (residential) was 4846 kWh per household.

<sup>12</sup> Definition of the energy intensity in the context of “industry”, “commercial and public service” and “agriculture” is energy use per unit of the sectors GDP (or unit of economic output).

<sup>13</sup> In 2010 energy intensity (industry) was 0.072 kWh/E.

<sup>14</sup> In 2010 energy intensity (commercial and public services) was 0.008 kWh/E.

<sup>15</sup> In 2010 energy intensity (agriculture) was 0.1 kWh/E.

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- Increasing composting of organic waste (biological treatment), capturing 30% of the organic waste generated within the country by 2030
- Introducing Landfill Gas Recovery (LGR) in existing and new solid waste disposal sites
- Improving wastewater treatment and control and
- Conduct assessments and develop strategies to move from a linear economy to a circular economy model to support sustainable development in the country.

Eswatini is committed to reducing its carbon footprint by adopting a circular economy model to reduce the pressure and adverse impacts on our natural environment, reduce resource use, maximise the value of materials through a life cycle approach.

### 4.3 IPPU

Reduce GHG emissions by 2030 compared to baseline scenario by implementing the Kigali Amendment to the Montreal Protocol and other measures. Key measures to be implemented include:

- Substitution of HFC consumption for low-GWP alternatives under the Kigali Amendment implementation calendar including through:
  - Substitution of HFC-134A with isobutane (HC-600A) in domestic and commercial refrigeration
  - Substitution of HFC-134A with ammonia in industrial refrigeration
- Phasing out the use of HFC Eswatini is required to freeze HFC production and use in 2024, based on an average of HFC consumption of 2019, 2020 and 2021 levels
- Servicing best practices that allow recovery and reuse of refrigerants and
- Recovery and reuse of refrigerants contained in disposed equipment.

### 4.4 AFOLU

In the AFOLU sector Eswatini commits to move from Tier 1 to Tier 2 <sup>16</sup>GHG inventory and improve data collection and institutional arrangements by 2030. Furthermore, the country commits to reducing land degradation (including in mountain ecosystems) through restoration including tree planting and improving livelihoods through better livestock management. The country aims to plant 10 million trees.

## 5. Cross-cutting areas for action

Climatic factors have affected Eswatini in multiple ways, exposing its population to problems ranging from food insecurity and livelihood loss to epidemics and mortality. However, these impacts are not equal as population segments are disproportionately affected by them. Eswatini has recognized several such vulnerable groups such as women, LGBTQI, rural population, elderly, disabled and youth to name a few. The interests of these vulnerable groups are protected through a series of cross cutting actions.

### **Key contributions of Eswatini to the Paris Agreement**

#### 5.1 Gender

1. Build capacity in gender mainstreaming into climate action

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<sup>16</sup> IPCC provides guidance on methods for estimating emissions (and removals as appropriate) for each gas in mass units. A tier represents a level of methodological complexity. Tier 1 is the basic method, Tier 2 intermediate and Tier 3 the most demanding in terms of complexity and data requirements. Tiers 2 and 3 are sometimes referred to as higher tier methods and are generally considered to be more accurate on condition that adequate data are available to develop, evaluate and apply a higher tier method.

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2. Enhance participation of women and girls in decision making to facilitate representation of gender issues and finding solutions to gender-based problems
3. Develop gender responsive policies and strategies in natural resource management and disaster risk reduction
4. Promote equitable access to knowledge and skills
  - a. to better prepare for climate impacts
  - b. to harvest rainwater to improve health and adaptive capacity
5. Promote equitable access to natural resources, technology and finance including for domestic and agricultural use of water and
6. Promote equitable access to knowledge and skills for women on waste management.

### 5.2 Youth

1. Build capacity of youth in climate policy development, accessing climate finance, to engage in income generating climate action including manufacturing of energy efficient technologies, retail and repair services, climate smart livestock practices, urban gardening, rainwater harvesting, sustainable api-culture, greenhouse farming and innovative agriculture technologies, agri-business, agroecological practices, agri-processing, water resource management technologies, water conveyance, waste management, green industrial processes, bottling and water purification and retrofitting buildings
2. Enhance participation of youth in decision making including in policies and projects development
3. Promote entrepreneurship skills in climate smart technologies including renewable energy retail and repair, agriculture value chain, recycling and community waste solutions
4. Create youth led community centric awareness programmes on climate change adaptation and mitigation
5. Promote innovation in climate smart technologies including through innovation challenges and awards for solutions

### 5.3 Disaster Risk Reduction

1. Update and revise risk and hazard maps and collect data through research for risk reduction
2. Develop a multi hazard early warning system covering all relevant sectors with climate hazard monitoring
3. Modernise meteorological services to improve access to high quality weather data and support risk assessments
4. Strengthen the capacity of early warning centres, for improved emergency preparedness, disaster risks and response capacities across all sectors and
5. Build capacity to monitor climate and disaster risks within relevant institutions.

## 6. Information necessary for clarity, transparency and understanding of Eswatini' NDC

### 1. Quantifiable information on the reference point (including, as appropriate, a base year)

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<p>(a) Reference year, base year, reference period or other starting points</p>	<p>The reference year for Eswatini's NDC is 2010.</p>
<p>(b) Quantifiable information on the reference indicators, their values in the reference year, base year, reference period and or other starting points and as applicable in the target year.</p>	<p>The reference indicator will be quantified on the basis of the total net emissions of greenhouse gases (GHG) in the reference year of 2010 reported in the "National GHG Inventory" (2010). For reference purposes, the level of emissions of greenhouse gases for the base year is registered in the "Third National Communication from Eswatini to the United Nations Framework Convention on Climate Change", submitted in April 2016. During the revision of this NDC, the greenhouse gas mitigation assessment aimed to estimate emissions of GHG for three scenarios:</p> <ul style="list-style-type: none"> <li>i) historical emissions between 2010 and 2017,</li> <li>ii) baseline projections of emissions from 2018 and 2030, and</li> <li>iii) emission estimates in 2030 estimated to simulate the implementation of policies and measures that aim to reduce emissions in key source sectors.</li> </ul>
<p>(c) For strategies, plans and actions referred to in Article 4, paragraph 6, of the Paris Agreement, or polices and measures as components of nationally determined contributions where paragraph 1(b) above is not applicable, Parties to provide other relevant information.</p>	<p>Eswatini is not a major contributor to the global Greenhouse Gas (GHG) emissions, and yet remains vulnerable to climate change impacts. It is experiencing increase in annual average temperature, variation in precipitation, higher occurrence of hot days and cold nights, increase in frequency of extreme events like floods, droughts, and storms. These impacts felt by communities and ecosystems are reversing the development gains achieved till now. There is an urgency to act now as evidenced in the AR6 IPCC report. Investing in adaptation will help reduce the effects of climate change that are felt by the country today. Additionally, the cost of inaction will be too high with negative consequences to society, environment and the economy.</p>
<p>(d) Target relative to the reference indicator, expressed numerically, for example in percentage or amount of reduction</p>	<p><b>Conditional to Eswatini receiving financial, technology and capacity building support, there is potential for the country to reduce GHG emissions in the sectors of energy (including transport), waste, IPPU and AFOLU.</b></p> <p><b>Energy (including transport)</b></p> <p>Increasing the share of renewable energy to 50% in the electricity mix by 2030 relative to 2010 levels through the adoption of solar, wind, biomass, hydro, and solar water heater technologies. Key measures to be implemented include:</p> <ul style="list-style-type: none"> <li>• <b>Electricity Generation<sup>17</sup></b> <ul style="list-style-type: none"> <li>○ Solar: 55.85 MW<sup>18</sup></li> </ul> </li> </ul>

<sup>17</sup> This is the additional installation between 2011-2030

<sup>18</sup> This includes existing grid connected capacity of 15.85MW. In addition, there are a number of smaller installations by companies and individuals for self-consumption, that is not included here. What is included here are the solar power contributions into the grid electricity supply only.

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	<ul style="list-style-type: none"><li>○ Hydro: 80 MW</li><li>○ Biomass: 95 MW<sup>19</sup></li><li>○ Wind: Conduct feasibility studies and assessments</li><li>● <b>Residential</b><ul style="list-style-type: none"><li>○ Achieving 100%<sup>20</sup> access to clean modern energy for cooking at household-level by 2030</li><li>○ Improving by 50%, uptake of energy efficient biomass stoves used for cooking by 2030</li><li>○ Replacing inefficient wood-based water heating with energy efficiency options to reduce its share by 13% by 2030</li><li>○ Reduce energy consumption in water heating, through replacing conventional geysers with 1 000 solar water heaters by 2030</li><li>○ Reducing energy intensity<sup>21</sup> (electricity) by 20%<sup>22</sup> by 2030 relative to 2010</li></ul></li><li>● <b>Industry</b><ul style="list-style-type: none"><li>○ Reducing energy intensity<sup>23</sup> (electricity) by 5%<sup>24</sup> by 2030 relative to 2010</li></ul></li><li>● <b>Commercial and public services</b><ul style="list-style-type: none"><li>○ Reducing energy intensity (electricity) by 3%<sup>25</sup> by 2030 relative to 2010 levels</li></ul></li><li>● <b>Agriculture</b><ul style="list-style-type: none"><li>○ Reducing energy intensity (electricity) by 3%<sup>26</sup> by 2030 relative to 2010 levels</li></ul></li></ul> <p>Electricity consumption in all these sectors is expected to continue to increase, but the country is committing to efficiency improvements that will reduce the speed of that growth.</p> <p><b>Transport</b></p> <p>Under transport sector the measures include:</p> <ul style="list-style-type: none"><li>○ Introducing commercial use of 10% ethanol blend in petrol by 2030 and</li><li>○ Conducting studies to assess the adoption of electric mobility options.</li></ul>
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<sup>26</sup> In 2010 energy intensity (agriculture) was 0.1 kWh/E.

<p><b>Waste</b></p> <p>Reduce GHG emissions by 2030 compared to baseline scenario through improvements in waste treatment (including landfilling) across urban and rural areas. Key measures to be implemented include:</p> <ul style="list-style-type: none"><li>• Decreasing open burning of municipal solid waste (MSW)</li><li>• Increasing composting of organic waste (biological treatment), capturing 30% of the organic waste generated within the country by 2030</li><li>• Introducing Landfill Gas Recovery (LGR) in existing and new solid waste disposal sites</li><li>• Improving wastewater treatment and control and</li><li>• Conduct assessments and develop strategies to move from a linear economy to a circular economy model to support sustainable development in the country.</li></ul> <p>Eswatini is committed to reducing its carbon footprint by adopting a circular economy model to reduce the pressure and adverse impacts on our natural environment, reduce resource use, maximise the value of materials through a life cycle approach.</p> <p><b>IPPU</b></p> <p>Reduce GHG emissions by 2030 compared to baseline scenario by implementing the Kigali Amendment to the Montreal Protocol and other measures. Key measures to be implemented include:</p> <ul style="list-style-type: none"><li>• Substitution of HFC consumption for low-GWP alternatives under the Kigali Amendment implementation calendar including through:<ul style="list-style-type: none"><li>○ Substitution of HFC-134A with isobutane (HC-600A) in domestic and commercial refrigeration</li><li>○ Substitution of HFC-134A with ammonia in industrial refrigeration</li></ul></li><li>• Phasing out the use of HFC Eswatini is required to freeze HFC production and use in 2024, based on an average of HFC consumption of 2019, 2020 and 2021 levels</li><li>• Servicing best practices that allow recovery and reuse of refrigerants and</li><li>• Recovery and reuse of refrigerants contained in disposed equipment.</li></ul> <p><b>AFOLU</b></p> <p>In the AFOLU sector Eswatini commits to move from Tier 1 to Tier 2 <sup>27</sup>GHG inventory and improve data collection and institutional</p>
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<sup>27</sup> IPCC provides guidance on methods for estimating emissions (and removals as appropriate) for each gas in mass units. A tier represents a level of methodological complexity. Tier 1 is the basic method, Tier 2 intermediate and Tier 3 the most demanding in terms of complexity and data requirements. Tiers 2 and 3 are sometimes

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	arrangements by 2030. Furthermore, the country commits to reducing land degradation (including in mountain ecosystems) through restoration including tree planting and improving livelihoods through better livestock management. The country aims to plant 10 million trees.
(e) Information on sources of data used in quantifying the reference point:	<p>The major source of GHG data used for the projections are 2018 inventory and 2020 GHG inventory reports prepared for energy, waste, IPPU and AFOLU sectors. The following sources were also utilized to derive assumptions to project the emissions up to 2030.</p> <ul style="list-style-type: none"> <li>• Energy Master Plan 2034</li> <li>• Unpublished projections from National Accounts data</li> <li>• Eswatini Population Projections Report 2018-2037</li> <li>• Unpublished GDP projections from National Accounts data</li> <li>• What a Waste 2.0 World Bank Report</li> </ul> <p>Furthermore, extensive data collection and stakeholder engagement was done and impact of COVID-19 was explicitly accounted for in the economic projects used to estimate emissions.</p>
(f) Information on the circumstances under which the Party may update the values of the reference indicators:	<p>The GHG emissions level for the BAU scenario and conditional targets in 2030 may be updated and recalculated depending on methodological changes in the GHG inventory, such as recalculating the GHG inventory with the 2006 IPCC Guidelines or changes in Global Warming Potential (GWP) in IPCC Assessment Reports, or the adoption of the 2019 IPCC Refinement. Information on updates made will be included in the Biennial Transparency Reports (BTR) and National Communications (NC). Furthermore, when more reliable data becomes available, the GHG inventory may be recalculated.</p>
<b>2. Timeframe and or period of implementation</b>	
(a) Time frame and period of implementation	Timeframe for NDC implementation shall be 2021 to 2030.
(b) Whether it is a single-year or multi-year target, as applicable	Single year target in 2030.
<b>3. Scope and Coverage</b>	
(a) General description of the target:	Kindly refer to 1(d) above.
(b) Sectors, gases, categories and pools covered by the nationally determined contribution,	Information to be provided in Eswatini's inventory as part of the Biennial Transparency Report (BTR) will be consistent with the IPCC guidelines.

referred to as higher tier methods and are generally considered to be more accurate on condition that adequate data are available to develop, evaluate and apply a higher tier method.

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<p>including, as applicable, consistent with Intergovernmental Panel on Climate Change (IPCC) guidelines;</p>	<p><b>Sectors covered:</b> Energy, transport, waste, IPPU and AFOLU</p> <p><b>Gases covered:</b> Carbon dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>), and Hydrofluorocarbons (HFCs).</p> <p>Further, the NDC also covers short-lived climate pollutants (SLCP) including Black Carbon (BC) and other air pollutants such as Organic Carbon (OC), Particulate Matter (PM<sub>2.5</sub> and PM<sub>10</sub>), Nitrogen Oxides (NO<sub>x</sub>), Non-methane volatile organic compounds (NMVOC), Sulphur dioxide (SO<sub>2</sub>), Ammonia (NH<sub>3</sub>), and Carbon Monoxide (CO).</p>
<p>c) How the Party has taken into consideration paragraphs 31 (c) and (d) of decision 1/CP.21:</p>	<p>Eswatini commits to extend over time, the scope of its NDC to all categories of anthropogenic emissions in line with paragraph 31(c).</p>
<p>(d) Mitigation co-benefits resulting from Parties' adaptation actions and/or economic diversification plans, including description of specific projects, measures and initiatives of Parties' adaptation actions and/or economic diversification plans.</p>	<p>The country's adaptation action plan will result in several mitigation co-benefits:</p> <p><i>Agriculture</i></p> <ul style="list-style-type: none"> <li>• Adaptation action in agriculture sector to restore and manage degraded land that will enhance carbon sequestration.</li> <li>• Adoption of Climate Smart Agriculture practices will contribute to the reduction of GHG emissions. Good farming practices will enhance soil health and carbon sequestration.</li> </ul> <p><i>Ecosystems and Biodiversity</i></p> <ul style="list-style-type: none"> <li>• Wetlands provide valuable ecosystem services and restoring and protecting these areas is likely to help in reducing GHG emissions, increase carbon sequestration and build carbon stocks.</li> </ul> <p><i>Infrastructure</i></p> <ul style="list-style-type: none"> <li>• Nature-based solutions and retrofitting old building will help reduce GHG emissions</li> </ul>
<p><b>4. Planning Processes</b></p>	
<p><b>(a) Information on the planning processes that the Party undertook to prepare its nationally determined contribution and implementation plans, including: domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner.</b></p>	
<p>(i) Domestic institutional arrangements, public participation and engagement with local communities and indigenous peoples, in a gender-responsive manner</p>	<p>Eswatini adopted a consultative process to develop the enhanced NDC which included review of its first NDC, assessment of the progress towards meeting the targets, realigning, and redefining sectoral targets based on national policies and identifying recommendations for framing the 2020 NDC. The process was aided through data collection, review of national policies, strategies, roadmaps and validated through consultations with stakeholders in Eswatini. Separate teams of local and international consultants were involved across sectors under the oversight of the Ministry of Tourism</p>

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	<p>and Environmental Affairs (MTEA) and Ministry of Economic Planning and Development (MEPD). The review and recommendations were discussed through several meetings and capacity building sessions including with gender, disaster and youth experts and representatives. The findings were validated by the Technical Advisory Group (TAG) and relevant stakeholders at the national and sub-national level. A high-level validation with stakeholders conducted and the enhanced NDC was thereafter approved by the Cabinet of Eswatini.</p> <p>Eswatini is currently developing an implementation plan for its enhanced NDC for the sectors and targets indicated above through international support. The implementation plan will act as an overarching framework that will serve as the base for the country to implement projects and activities across sectors and also assist in identifying the support required in the long-term.</p> <p>As the overarching objective of the NDC revision process was to further strengthen Eswatini's commitment towards climate action in addition to the previously identified measures and priority sectors in the first NDC.</p>	
<p>(ii) Contextual matters, including, inter alia, as appropriate: National circumstances, such as geography, climate, economy, sustainable development and poverty eradication;</p>	<p>a. National circumstances, such as geography, climate, economy, sustainable development and poverty eradication</p>	<p><i>Geography:</i> The Kingdom of Eswatini is a land locked country located between Mozambique and South Africa in the south-eastern part of the African continent and covers a total area of 17,364 km<sup>2</sup>. It has four agro-ecological zones classified based on the types of soils and weather patterns, namely Highveld, Middleveld, Lowveld and the Lubombo plateau that make up to 33%, 28%, 31% and 8% of the country's total area respectively.</p> <p><i>Climate:</i> Eswatini's climatic profile varies from tropical to near temperate with summers lasting from October to March, characterized by rainfall that peaks in January. January receives the highest rainfall with long-term average monthly downpour of 134.4mm while the lowest recorded is in July at 19.9mm.</p> <p><i>Demography:</i> The total population of Eswatini is estimated at 1,093,238 with 51% representation from women. A total of 76.2% of the population is classified as rural in the country with great dependence on urban areas for employment.</p> <p><i>Economy:</i> Agriculture is the primary economic sector of Eswatini and is the main source of income for the majority of the population. The secondary sectors comprise of construction and manufacturing (majorly beverages), whereas services constitute the tertiary sector.</p>

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		Eswatini's economy shows marginal growth over the last decade (2010-20) averaging 2% increase, largely due to the fiscal crisis induced by the global economic meltdown in 2008 and droughts in 2015 and 2016 that directly affected the agricultural output. The economic activities in the primary sector (agriculture, forestry, and mining and quarrying) slightly improved in the subsequent years after 2016 that recorded an expansion of the real GDP from 2.0% in 2017 to 2.4% in 2018. However, the COVID-19 pandemic has resulted in significant contraction of growth.
	b. Best practices and experience related to the preparation of the nationally determined contribution;	<p>Best practices and experiences of the NDC revision process in Eswatini include:</p> <p>a. Participatory and inclusive approach: The revision process meaningfully engaged and consulted a wide group of government as well as non-government stakeholders involving ministries and government departments, academia, youth, gender specialists, traditional leaders, civil society organisations and private entities. This process also had active participation from various social grouping, including women and youth.</p> <p>b. Integration of national priorities with the NDC: Eswatini's NDC is developed with an in-depth understanding of the national circumstances and are aligned with development policies and strategies.</p>
	c. Other contextual aspirations and priorities acknowledged when joining the Paris Agreement;	Eswatini's NDC adopts a multi sectoral approach to a green development and climate resilience. The targets are aligned with the Sustainable Development Goals, Sendai Framework and National Development Plan.
(b) Specific information applicable to Parties, including regional economic integration organizations and their member States, that have reached an agreement to act jointly under Article 4, paragraph 2, of the Paris Agreement	Not applicable as Eswatini is not part of any joint agreement under Article 4, paragraph 2, of the Paris Agreement.	
c) How the Party's preparation of its nationally determined contribution has	Eswatini is required to update its NDC by 2020 in line with Article 4 (Paragraph 9) of the Paris Agreement. Participation in the Talanoa Dialogue in 2018 garnered political momentum to undertake this NDC	

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<p>been informed by the outcomes of the global stocktake, in accordance with Article 4, paragraph 9, of the Paris Agreement;</p>	<p>revision process. Eswatini's NDC actions were revised and enhanced in view of the national circumstances. Eswatini will also participate in the global stocktake activity which is scheduled for 2023.</p>	
<p>(d) Each Party with a nationally determined contribution under Article 4 of the Paris Agreement that consists of adaptation action and/or economic diversification plans resulting in mitigation co-benefits consistent with Article 4, paragraph 7, of the Paris Agreement to submit information on:</p>	<p>(i) How the economic and social consequences of response measures have been considered in developing the nationally determined contribution;</p>	<p>Not applicable</p>
	<p>ii) Specific projects, measures, and activities to be implemented to contribute to mitigation co-benefits, including information on adaptation plans that also yield mitigation co-benefit.</p>	<p>Please refer to section 1 (d) and 3 (d)</p>
<p><b>5. Assumptions and methodological approaches, including those for estimating and accounting for anthropogenic greenhouse gas emissions and, as appropriate, removals</b></p>		
<p>(a) Assumptions and methodological approaches used for accounting for anthropogenic greenhouse gas emissions and removals corresponding to the Party's nationally determined contribution, consistent with decision 1/CP.21, paragraph 31, and accounting guidance adopted by the CMA.</p>	<p>Assumptions about socioeconomic development in Eswatini that informed the development of the baseline scenario were derived from national documents such as the Energy Master Plan 2034, Eswatini Population Projections Report 2018-2037, unofficial projections from National Accounts data and other national statistics. Impact of COVID-19 was explicitly accounted for in the economic projections used to estimate emissions.</p> <p>Eswatini followed the IPCC 2006 guidelines for the quantification of GHG emissions. For other pollutants, EMEP/EEA air pollution emission inventory guidebook was also used.</p>	
<p>(b) Assumptions and methodological approaches used for accounting for the implementation of policies and measures or strategies in the nationally determined contribution</p>	<p>Kindly refer 5 (a) above. Eswatini will also apply sector specific assumptions and methodologies where required, when accounting for progress of various policies and mitigation measures under the requirements of the Biennial Transparency Report.</p>	
<p>(c) If applicable, information on how the Party will take into account existing methods and guidance under the Convention to account for anthropogenic emissions and removals, in accordance with Article 4,</p>	<p>Eswatini will continue to follow methodologies and guidance as indicated in 5 (a) above.</p>	

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paragraph 14, of the Paris Agreement, as appropriate		
(d) IPCC methodologies and metrics used for estimating anthropogenic greenhouse gas emissions and removals	Eswatini followed the IPCC 2006 guidelines for the quantification of GHG emissions using Tier 1 methodology across all sectors.	
(e) Sector-, category- or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, as appropriate, including, as applicable	(i) Approach to addressing emissions and subsequent removals from natural disturbances on managed lands	GHG emissions and removals from natural disturbances, if any, will be accounted for in accordance with the 2006 IPCC guidelines.
	(ii) Approach used to account for emissions and removals from harvested wood products	GHG emissions and removals from harvested wood products, if any, will be accounted for in accordance with the 2006 IPCC guidelines.
	(iii) Approach used to address the effects of age-class structure in forests;	Not applicable.
(f) Other assumptions and methodological approaches used for understanding the nationally determined contribution and, if applicable, estimating corresponding emissions and removals, including:		
(i) How the reference indicators, baseline(s) and/or reference level(s), including, where applicable, sector-, category- or activity-specific reference levels, are constructed, including, for example, key parameters, assumptions, definitions, methodologies, data sources and models used;	The 2030 emissions levels in the BAU scenario were projected based on assumptions for GDP, population, sectoral activity such as fuel consumption in the residential sector, industry and services, number of vehicles, electricity generation fleet, etc. In addition, national documents, strategies, and master plans were discussed with relevant stakeholders to construct the mitigation and adaptation measures. The impact of covid-19 on the economy was also taken into consideration. Studies included assessing GHG mitigation potential of actions which were discussed and validated with national stakeholders.	
(ii) For Parties with nationally determined contributions that contain non-greenhouse-gas components, information on assumptions and methodological approaches used in relation to those components, as applicable;	Short Lived Climate Pollutants (SLCP) and air pollutants were included in the mitigation assessment. Assumptions were made as to how the activity in each economic sector are likely to change into the future, based on national plans and reports, projections in changes in activity variables were linked to socioeconomic development in Eswatini, such as expected GDP and population growth. The impact of COVID-19 on the economy is explicitly accounted for in the economic projections used to estimate emissions.  Emission sources were grouped according to the IPCC source categories. Historical emissions of SLCP and air pollutants were	

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	analysed from 2010 to 2017. The GHG mitigation assessment conducted for Eswatini also quantified emissions of SLCPs and air pollutants, and their emission reduction potential.
(iii) For climate forcers included in nationally determined contributions not covered by IPCC guidelines, information on how the climate forcers are estimated	Not applicable
(iv) Further technical information, as necessary;	None.
(g) The intention to use voluntary cooperation under Article 6 of the Paris Agreement, if applicable	Eswatini is committed to contributing towards developing market mechanisms via international cooperation under Article 6 of the Paris Agreement. While at present, there is no clarity on Article 6, Eswatini does not exclude the possible of utilizing international market mechanisms to achieve its NDC targets.
<b>6. How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances</b>	
(a) How the Party considers that its nationally determined contribution is fair and ambitious in the light of its national circumstances	<p>Although emissions are not significant compared to those of developed countries, there is potential to reduce emissions and the country has undertaken considerable efforts to achieve this. The first NDC communicated non-GHG action-based targets, Eswatini has taken progressive measures to define economy-wide GHG targets covering all priority sectors. The updated NDC of Eswatini represents its intention to adopt an economy-wide GHG emissions reduction target of 5% and potential to increase to 14% reduction with external financial support in 2030 compared to the baseline scenario. This translates to 1.04 million tonnes fewer GHG emissions in 2030 compared to a baseline scenario<sup>28</sup>.</p> <p>As Eswatini did not commit to a quantitative emission reduction target in the 2015 INDC, the results from this GHG mitigation assessment provide a clear basis to increase climate change mitigation ambition in Eswatini, and provide a concrete set of actions through which this increase in ambition can be achieved.</p> <p>Eswatini's enhanced NDC is more ambitious than before as the country as it has included more sectors. It has also set clear targets for priority adaptation sectors and included additional sectors. The enhanced NDC of the country has meaningfully included disaster risk reduction, gender and youth considerations into its mitigation and adaptation targets.</p>
(b) Fairness considerations, including reflecting on equity;	
(c) How the Party has addressed Article 4, paragraph 3, of the Paris Agreement;	

<sup>28</sup> Baseline scenario means Business As Usual Scenario using historical data from 2010 to 2017 and an updated scenario showing change in GHG emissions from 2018 to 2030.

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	Global emissions in 2018 was 45,873,850 <sup>29</sup> Gg of CO <sub>2</sub> eq and Eswatini's net emissions in 2018 was 3240.10Gg of CO <sub>2</sub> eq, therefore, Eswatini's share of global emissions is 0.007%. In this context, Eswatini's NDC contribution is considered fair and ambitious.
(d) How the Party has addressed Article 4, paragraph 4, of the Paris Agreement;	Eswatini has broadened its ambitions by expanding to new relevant sectors. Eswatini has also enhanced its adaptation commitments.
e) How the Party has addressed Article 4, paragraph 6, of the Paris Agreement.	Not applicable as Eswatini is not an LDC or SID

### 7. How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2

(a) How the nationally determined contribution contributes towards achieving the objective of the Convention as set out in its Article 2;	<p>Eswatini revised NDC is an indication of the country's commitment in line with the objectives under Article 2 of the Paris Agreement and will contribute towards achieving the temperature goal agreed under Article 2 paragraph (a) and Article 4, paragraph 1 of the Paris Agreement.</p> <p>Eswatini has enhanced its NDC by adding new sectors and measures.</p>
(b) How the nationally determined contribution contributes towards Article 2, paragraph 2(a), and Article 4, paragraph 1, of the Paris Agreement.	<p>By presenting a more ambitious NDC, Eswatini understands it is significantly contributing to the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system", consistent with Article 2 of the UNFCCC. Furthermore, Eswatini believes it is contributing to the collective effort to hold "the increase in the global average temperature to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels", consistent with Article 2.1(a) of the Paris Agreement. Eswatini's NDC is compatible with a long-term indicative objective of achieving carbon neutrality in 2050.</p>

## 7. Means of implementation

Eswatini can implement the NDC measures conditional to receiving finance, capacity building and technology development and transfer. The estimated total cost of implementing NDC is **\$950 million to \$1.5 billion**. A full cost estimation will be provided in the NDC implementation plan. Eswatini recognizes that while the cost of climate action is substantial, the cost of in-action is even higher. The country needs technical capacities, technology transfer and skills development for implementing adaptation and mitigation measures. The country recognizes that Indigenous knowledge can help with climate change adaptation and mitigation actions. There is need for awareness raising across sectors and with all stakeholders to implement the NDC.

## 8. Alignment of NDCs with developmental priorities

The Paris Agreement presents an opportunity for countries to identify linkages between climate change targets and the larger developmental priorities. In this context, Eswatini has identified potential

<sup>29</sup> <https://data.worldbank.org/indicator/EN.ATM.GHGT.KT.CE>

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synergies of NDC targets with SDGs, Sendai framework and the National Development Plan 2019 in this updated NDC, thereby setting forth an innovative and complimentary framework to accelerate climate action. Furthermore, there are opportunities to ensure that the updated NDC can inform the revision of Eswatini's National Development Plan and National Development Strategy.

*Eswatini's NDC revision process was spearheaded by the Ministry of Tourism and Environmental Affairs and supported through NDC Partnership's Climate Action Enhancement Package (through development partners United Nations Environment Programme, Food and Agriculture Programme, Common Market for Eastern and Southern Africa, International Renewable Energy Agency, World Resources Institute, Commonwealth Secretariat) and United Nations Development Programme Climate Promise project.*



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