

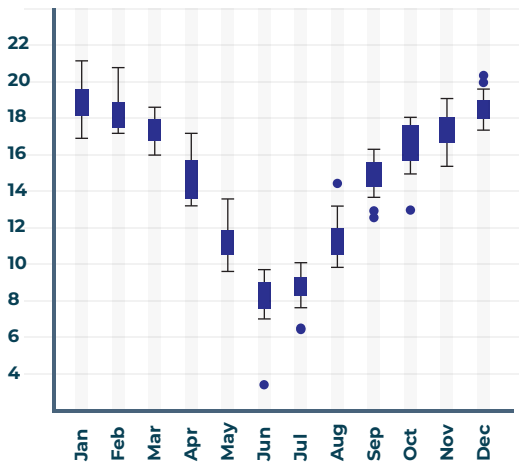
COUNTRY OVERVIEW

Although the Kingdom of Eswatini has a sub-tropical climate with rainfall ranging from 400-1,500 mm per year, a modest drop in normal rainfall can trigger water shortages (Eswatini, 2020). As such, it is as vulnerable to drought and other extreme natural and human induced hazards as its drier neighbours. These hazards and risks adversely affect the development prospects of the country and remain a concern for socio-economic and sustainable development. Eswatini has faced dry spells and El Nino-induced drought episodes that have resulted in multi-faceted negative effects. In 2015/16, one such episode resulted in a decline of crop production by about 30%, extremely low water levels in the main Hawane Dam that serves the capital, drying up of rural boreholes and forcing the closure of many schools. The drought negatively impacted health, food security and productive economic activity, while significantly affecting the rural poor. During this drought about 620,000 people received support either as in-kind or cash transfers, and over 80,000 cattle deaths were recorded. The total economic loss was about E3.8 billion, representing 7% of the country's GDP or 19% of government expenditure that year. Women, children and people in vulnerable situations were disproportionately affected.

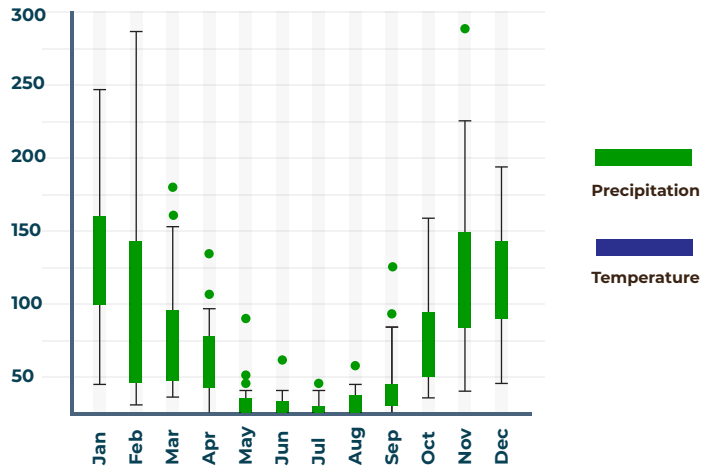


Fig 1. Long-term rainfall and temperature anomaly over Eswatini 26.93S, 31.23E

Distribution of Temperature [°C]



Distribution of Precipitation [mm]



Vulnerability and Impact Assessment

Medium

Monitoring and Early Warning Systems

Medium

Mitigation, Preparedness and Response

Medium

■ Low
 ■ Medium
 ■ High

The Integrated Drought Risk Management Framework highlights a three-pillar approach centered around interconnected, multi-disciplinary, multi-institutional activities. These are 1) Monitoring and early warning systems; 2) Vulnerability and impact assessment; 3) Mitigation, preparedness and response.

This country's Drought Resilience Profile contains drought information based on these three pillars. This profile provides an overview of Eswatini's drought resilience capacity in the three pillars. Eswatini's vulnerability and impact assessment capacity is categorised as medium. Despite its functional institutional arrangements to assess the impact of drought, there continues to be a lack of comprehensive approach to drought risk assessments. Eswatini's monitoring and early warning systems capacity is also categorised as medium.

Through its National Drought Plan, Eswatini has crafted a proactive plan to improve its early warning systems and is also developing a combined drought indicator (CDI). The challenge however is operationalising these actions through capacity strengthening, and improved communication and coordination. Similarly, Eswatini's capacity in Pillar 3: mitigation, preparedness and response, is categorised as medium, due in large part to the need for stronger disaster risk reduction (DRR) management structures, in which drought management is embedded.



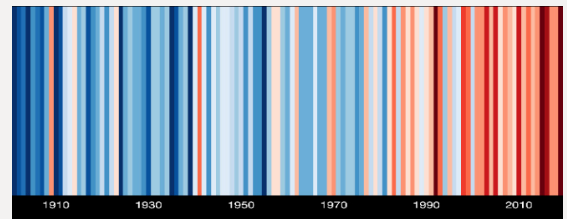
This document provides a brief overview of drought risk issues. The key resources at the end of the document provide more in-depth country and sectoral analyses. The contents of this report do not necessarily reflect the views of the World Bank, CIWA, SADRI, NDMC or IWMI.



Historical climate

- As illustrated in the #ShowYourStripes 'warming stripe' graphic for Eswatini (Fig. 2), the stripes turn from mainly blue to mainly red in more recent years, illustrating the rise in average temperature since 1901.
- Drought frequency may be increasing. There were two droughts in the 1980s, one in the 1990s, two in the 2000s, and several in the 2010s (Table 1).
- An analysis of climate data from 1970 to 2015 shows an average rise of around 1°C (UNDRR and CIMA, 2018).
- Trends for precipitation are not as clear as those for air temperatures and are variable in time and space.

Fig 2. Temperature change in Eswatini, 1901 - 2019



Source: Berkley Earth/#ShowYourStripes

Future climate

- Most climate prediction models show a sharp rise in temperature in the mid-term future (2050-2074) and far future (2071-2095) across all emission scenarios.
- In high emission scenarios (RCP8.5), model projections anticipate an increase of between 2°C and 3.5°C from 2050-2074, and between 3°C and 5.5°C from 2071-2095.
- Future changes in precipitation are less predictable, where variability is high for all considered emission scenarios (containing both negative and positive changes). For example, annual precipitation ranges from -30% to +20% from 2050-2074 and from -40% to +25% from 2074-2095 (UNDRR and CIMA, 2018).

Table 1. Major droughts in Eswatini (Source: EM-DAT.2020)

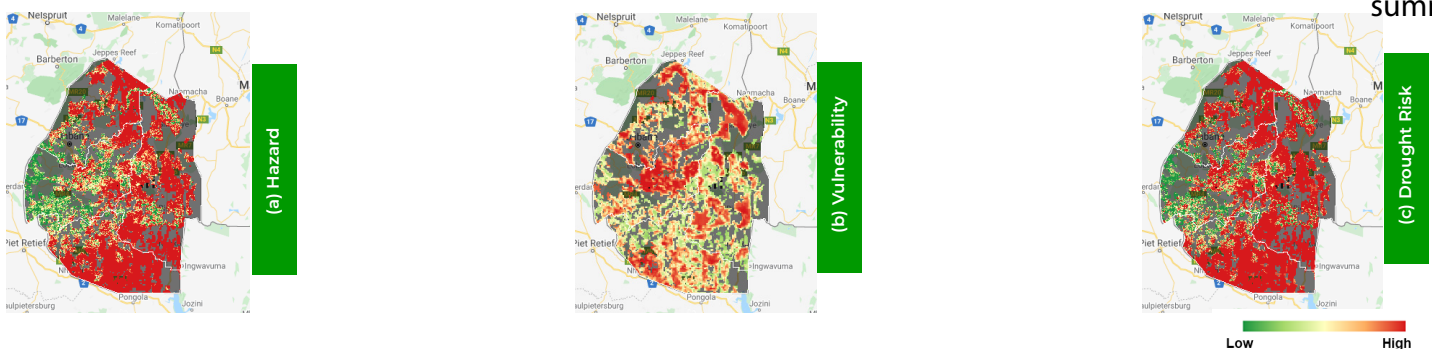
Year	Location	Affected Population
1981	Nationwide	500 deaths
1984-85	No data*	No data*
1990	South-east	250,000
2001-02	All regions	970,000
2006-07	Hhohho, Lubombo, Manzini, Shiselweni provinces	410,000
2015-16	Whole country: Hhohho, Lubombo, Manzini, Shiselweni provinces	492,000
2018-19	Shiselweni, Lubombo & Hhohho provinces	232,000

* No data provided from source

Vulnerability and Impact Assessment



Fig 3a-c. Drought hazard, vulnerability and risk maps for Eswatini



summarize

While drought vulnerability, risk and impact assessments have been conducted in Eswatini, several have relied on external institutions. For example, the drought risk assessment completed for the period 2000-2014 was conducted by the Joint Research Centre of the European Commission.

The above maps (Fig 3a-c) depict: (a) Drought hazard areas, (b) Areas of vulnerability and (c) Drought risk. Drought risk is defined by characterising hazard and exposure to vulnerability and the lack of adaptive capacity, using multisource information from satellite-derived drought indices and socio-economic conditions. In terms of components, hazard is defined through meteorological and agricultural drought i.e. Integrated Drought Severity Index (IDSI); and exposure and vulnerability expressed through population density, the human modification index, water risk, and irrigated systems. Agricultural production (agricultural practices i.e. irrigated area, food production as provided on HarvestChoice) was used to define levels of vulnerability which were finally combined with all three components to define levels of drought risk at the country level, referred to as the National Drought Risk Index (NDRI). This drought risk profile is therefore based on the probabilistic estimation of hazard and vulnerability to assess the drought risk in the exposed areas. Among the drought prone areas in Eswatini, the NDRI estimates 37% of the agricultural areas in the regions of Hhohho, Lubombo and Shiselweni (maps generated by IWMI).



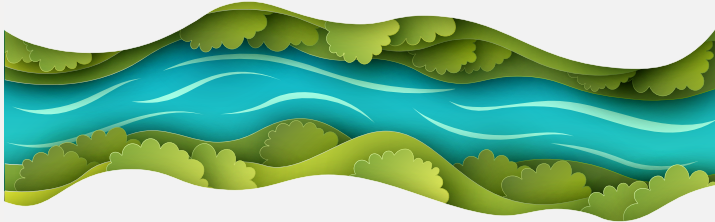
Droughts have adverse on effects population and GDP

According to the UNDRR and CIMA (2018; Fig. 4), GDP exposed to droughts is expected to increase by a factor of two. Currently, an average of 15% of GDP (~0.5 billion USD) is potentially affected by droughts. This is expected to rise to more than 40% in future. The impacts of drought in Eswatini include grass and forest fires, food shortages, reduced hydropower generation, loss of income and increased crime rates (Eswatini, 2016).

Moreover, UNDRR and CIMA (2018) have cited an average of almost 14% of the population (180,000 people) per year potentially affected by droughts, and have projected that the number of people annually living in drought-hit areas is expected to increase to 33% of the population (almost 500,000 people if population growth is accounted for) under future climate conditions.

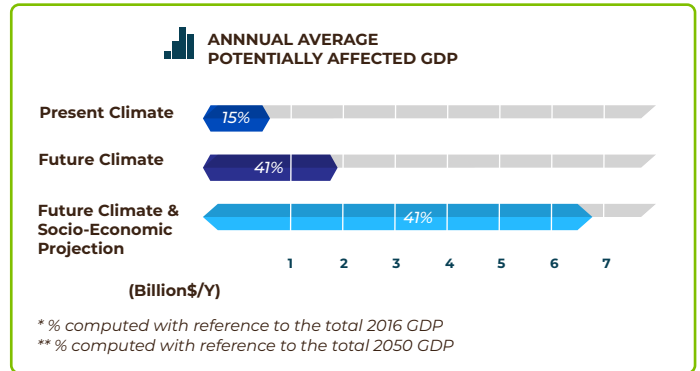
Water resources

The main water sources for Eswatini are surface water and groundwater. However, water bodies make up only 4% of the land surface area, which is about 160 km² of the total area of 17,364 km² (Eswatini, 2020). The major drought of 2016, when the country experienced rainfall of up to 65% below average, had significant impacts on reservoir storage. Storage at the Mnjoli Dam (Fig 5) declined to less than 5% of capacity, and resulted in an 80% reduction of sugarcane irrigation requirements at Simunye Plantation and other estates (Eswatini, 2016).



According to the National Drought Plan (NDP), water supply schemes were initiated in response to drought in order to meet emergency needs in a number of respects (Eswatini, 2020). In some instances, this led to scarce resources being diverted to implement water supply schemes, initiated under drought relief programs. Some urban areas implemented water restrictions (Eswatini, 2016).

Fig 4. Percentage GDP affected by drought in Eswatini

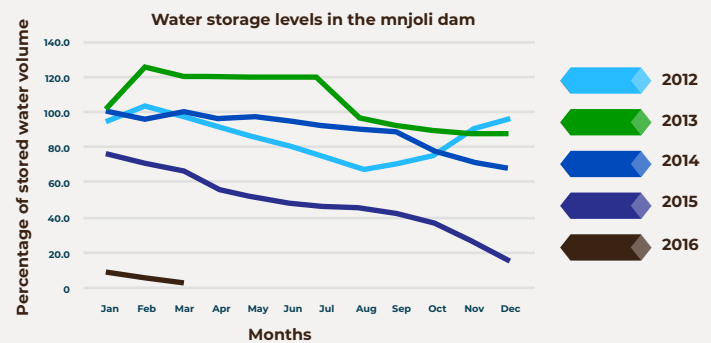


Source: UNDRR and CIMA, 2018

Droughts impact on livestock

During the 2015/16 drought, over 80,000 cattle deaths were reported (Eswatini, 2020). Under future climate conditions, double the number of livestock is expected to be affected by droughts on an annual basis. Currently, an average of 15% of livestock is annually exposed to drought events. This is expected to increase to 38% under future climate conditions (UNDRR and CIMA, 2018).

Fig 5. Water storage levels in the Mnjoli Dam, 2012-2016



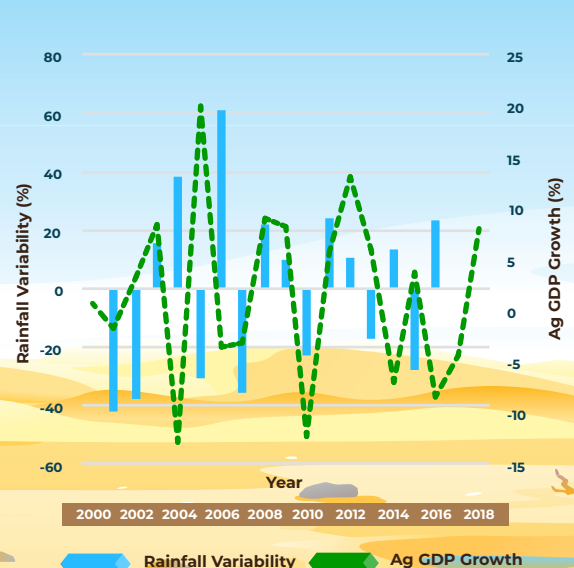
Source: Eswatini, 2016

Droughts drag macro-level agricultural growth

The relationship between Ag GDP and rainfall is variable and whilst other factors are involved, the influence on the share of agricultural production is highlighted in Fig. 6. When rainfall is greater than the mean, agricultural growth increases (see 2008, 2010, 2011, 2012 and 2013).

The 2015/16 El Niño drought was extreme in Eswatini with the poor harvest disrupting the supply of commodities into the market (Ainembabazi, 2018). This is reflected in a sharp decline in Ag GDP growth in 2015/16. Agricultural losses in absolute terms were mainly from sugarcane and vegetable production (UNDRR & CIMA, 2018), seeing respectively losses of 30% reduction in revenue for sugarcane and 80% of vegetable production. In 2016, maize production was reduced by 60% compared to the previous season and by 63% compared to the five-year average at the time (Eswatini, 2016).

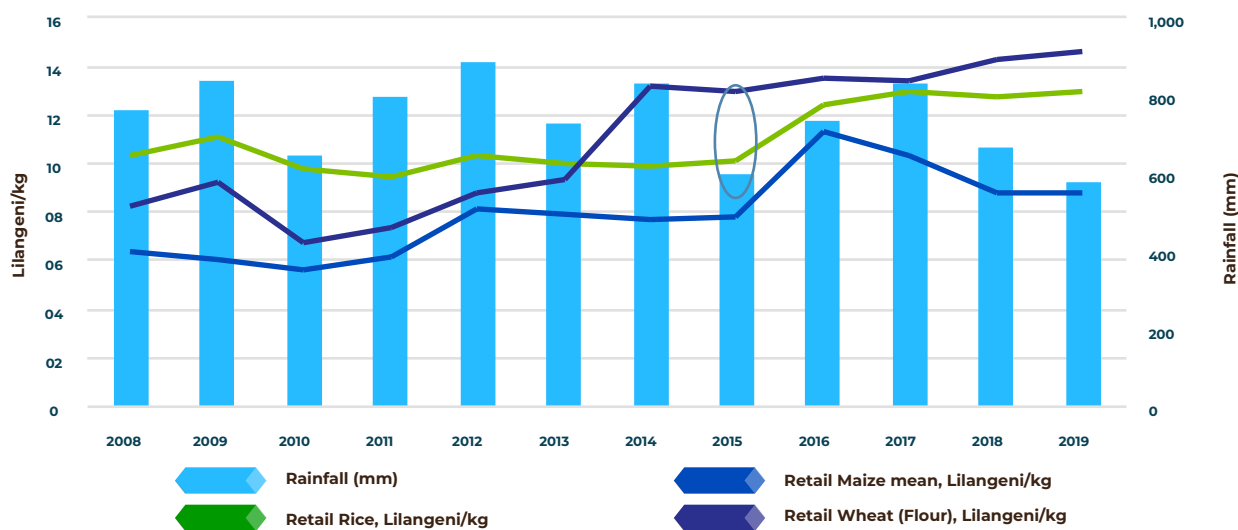
Fig 6. Relationship between rainfall variability and Ag GDP growth





Droughts have an impact on commodity prices

Fig 7. Commodity prices and rainfall patterns, 2008-2020



Source: Own compilation from FAOSTAT & CHIRPS 2020

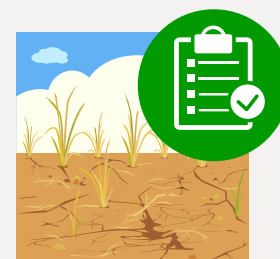
Fig 7 shows the connection between commodity prices and rainfall, with the oval shapes indicating drought years. In 2015/16 and 2018/19 the country was mostly characterised by low and erratic rainfall. As a result, the country observed an increase in prices for most displayed commodities in the subsequent years (2016 and 2019).

The severe droughts experienced by the nation had serious impacts on the achievement of food security associated with the increase in food prices. According to the 2015/16 Rapid Assessment, 68% of households reported a decrease in the number of meals consumed a day, while 63% reported a reduction in the type and variety of food consumed.

Vulnerability and impact assessment capacity

The Government of Eswatini recognises the importance of conducting vulnerability and risk assessments, as is evident by its inclusion in Eswatini's National Drought Plan (NDP).

In terms of institutional oversight of vulnerability and impact assessments, the Eswatini Vulnerability Assessment Committee (EVAC), which sits under the National Disaster Management Agency (National Disaster Management Agency), collects household level information to assess levels of chronic food insecurity, malnutrition, livelihoods and drought vulnerability in rural households in all regions of the country. It also aims to strengthen capacity of core EVAC members to undertake integrated food security and vulnerability analyses of household survey data (Eswatini, 2020).



According to the NDP, Eswatini uses a multi-sectoral approach to conduct disaster risk assessments (including drought) and uses that information for planning (Eswatini, 2020). However, there is no standardised tool that is being used to conduct the assessments by the various sectors and assessments are still done in an ad hoc fashion. The country has however committed to developing such tools for assessment at the onset of a disaster targeting the household and institutional level.

Several other institutions conduct and/or coordinate vulnerability and impact assessments. Apart from the National Disaster Management Agency that acts as a central repository for assessment tools and reports and plays a coordination role, other role-players include the Eswatini National Meteorological Services (EMS) and National Early Warning Unit (NEWU). NEWU falls under the Ministry of Agriculture, and therefore has a strong focus on food supply assessments; and providing advice on food supply policies, collecting, analysing and disseminating information on food security issues. Other institutions include the Surveyor Generals office, which provides maps and detailed locations, the Central Statistics Office, and Emergency Preparedness and Response Unit under the Ministry of Health. These departments deal with risk assessment at their sectoral level.

The NDP, developed in 2020, has effectively created a step change in Eswatini's drought management landscape by identifying institutional roles, coordination mechanisms and key priorities and interventions. However, there is still some way to go to operationalise this. Individual institutions may conduct risk assessments, but they are undertaken in a relatively ad-hoc manner and not fully comprehensive in scope. Eswatini may consider conducting more structured and comprehensive multi-sectoral risk assessments in all its four regions in order to compile a comprehensive drought risk profile. This will serve as guidance to influence decision-making in terms of mainstreaming drought management and disaster risk reduction into development processes.

The data management, use and storage of DRR information is hampered by the absence of a centralised database on previous disaster events and impacts. Historical information and previous disaster events are not yet stored in a centralised database managed by the National Disaster Management Agency. There is no aggregation or analysis undertaken, and detailed maps do not exist. Baseline data on disaster incidents and vulnerability are not available to measure improvement

Eswatini is further constrained by the absence of systematic data collection and information management for DRR due to lack of tools, funding, staff and competencies. Therefore, most data collection is initiated as part of specific projects carried out by UN Agencies, NGOs or other international organisations. Data collection is often halted once the projects end, and in most cases, it does not constitute a nationwide effort.

Vulnerability and Impact Assessment



The lack of continuous datasets is another challenge due to the difficulties in having consistent observations carried out because of resource constraints. There are also frequent breakdowns in the functioning of weather stations leading to sporadic gaps in the recorded dataset series.

Eswatini may benefit from developing a dedicated national risk observatory, which would continuously collect and analyse data from relevant agencies, coordinate and/or disseminate early warnings and serve as a communications hub. The National Risk Observatory could unify and streamline the disparate databases of various agencies providing invaluable evidence for directing future responses, interventions and policies. Finally, there is need for a centralised database system that will capture and quantify all disaster incidences in financial values to establish trends and compare the impact of the hazards over the years (Eswatini, 2020).

Monitoring and Early Warning Systems



Monitoring and early warning systems capacity

Table 2 represents a summarized traffic light checklist to illustrate the state of monitoring and early warning system capacity in Eswatini. It summarizes key aspects needed for a strong monitoring and early warning systems framework, most notably, whether there is an official definition of drought used in the country; whether drought indicators are used, and if so, which ones; whether there is a drought early warning system (DEWS) in place; and if so, how functional it is, and whether the country makes use of seasonal forecasting. Eswatini has made considerable strides in enhancing its monitoring and early warning system capacity in recent years.

Table 2. Summarized checklist of monitoring and EWS capacity

Official definition of drought	●
Drought indicators used	●
Existence of a DEWS	●
Capacity to tailor EWS messages to end-user needs	●
Effective communication of early warnings with built-in feedback mechanisms	●
Use of most salient communication channels to reach women/youth/disenfranchised communities	●
Use of community relays, extensions services, local media to communicate EWS and reach at risk communities promptly	●
Seasonal forecasting	●

● Yes ● No ● Limited

Drought monitoring is a coordinated task by different institutions. The EMS under the Ministry of Tourism and Environmental Affairs (MTEA) is the national meteorological authority in Eswatini, while the Department of Water Affairs (DWA), under the Ministry of Natural Resources and Energy (MNRE) is the agency responsible for hydrological services. The EMS is mandated to provide weather, flood, climate and astronomical products and services that are used to monitor people's safety and wellbeing. The EMS runs a countrywide network of 20 meteorological stations which ensure the recording, transmission and processing of meteorological information, according to internal needs and the directives of the World Meteorological Organization (WMO).

The information obtained from monitoring is used for the development of meteorological and agro-meteorological forecasts, warnings on natural meteorological phenomena, for use in global and regional meteorological data exchange networks and climate change assessments. The main parameters monitored are temperature, humidity, daily sunshine hours, atmospheric pressure, average daily wind speed, rainfall, lightning data and evaporation rates.

Drought conditions in Eswatini are therefore monitored by the National Disaster Management Agency, EMS and NEWU. The EMS in collaboration with WMO and partners in the SADC region provides three main products that can be used to monitor and forecast drought which all use the Percentage of Normal Rainfall Index (PNRI) at national scale:

1

Monthly climate assessment and outlook - monthly summary of the temperature and rainfall for the past month and a forecast of temperature and rainfall for the next month, including the weather systems and ENSO conditions underpinning the assessment and outlook

2

Season climate outlook - twice-yearly forecast of the temperature and rainfall for the coming two seasons (six months), including the weather systems and ENSO conditions underpinning the outlook

3

Monthly drought and dry spell assessments - monthly summary of drought conditions for the previous month, issued during periods of drought

EMS uses three categories of drought and dry spells, defined as:

1

Drought: Three consecutive months of way below normal rainfall (>60% reduction from average rainfall), or five consecutive months of below normal rainfall (21-60% reduction from average rainfall)

2

Dry spell: Three consecutive months of below normal rainfall (21-60% reduction from average rainfall), or two consecutive months of way below normal rainfall (>60% reduction from average rainfall).

3

Dry condition: Two consecutive months of below normal rainfall (21-60% reduction from average rainfall).

Monitoring and Early Warning Systems



In terms of the indicators used, ideally a drought monitoring indicator would include spatial data on evapotranspiration and soil attributes to get a more complete picture of circumstances within agriculture in Eswatini. However, real time and/or regular collection of this information is expensive especially in a small developing country characterised by complex topography and a low GDP, like Eswatini. Rainfall-based indicators are therefore used as proxies for agricultural and hydrological drought. As such, National Disaster Management Agency recently adopted the Standardized Precipitation Index (SPI), Normalized Difference Vegetation Index (NDVI) and Land Surface Temperature (LST) anomaly, and Root Zone Soil Moisture (RTZSM) for improved drought monitoring and early warning. The cross-sectoral forum of technical experts that will produce and refine this Combined Drought Indicator for Eswatini (CDI-E) is expected to follow an iterative process of monthly monitor map publications, drawing increasing linkages with decision making.

While these priorities have been clearly set out in the NDP, many of them have not materialised and remain blueprints of what Eswatini's EWS and monitoring capacity could be. Overcoming the numerous capacity and resource constraints will be the litmus test of whether Eswatini can rise to the challenge and become a regional leader in this regard.

Efforts to improve transfer and facilitate exchange of relevant information within the country remains essential. To support the operations of the EMS, further capacity strengthening is required to input information, process and issue more timely warnings.

In addition, the system does not incorporate mechanisms for turning scientific/technical information on weather from the NEMU into risk scenarios. The country has historically experienced weak communication and collaboration between producers, managers and users of EWS information. The EWS is fragmented with little synergy and collaboration across sectors. There is an urgent need for effective communication and collaboration between producers of weather and climate information and next users in order to empower farmers, individuals and communities under threat from natural and other hazards to take effective and timely measures to protect lives, property and the environment from the effects of disasters. The improved communication would form a basis for nationwide and regional initiatives against climate change-induced disasters. Traditionally, drought communication has been a one-way process of alerting communities to evolving drought circumstances, providing advice on what they should do, and clarifying and coordinating the roles of each of the relevant government agencies as drought evolves.

This is still very important to ensure coordination for effective response. Therefore, National Disaster Management Agency has recently developed an disseminated improved mechanisms for two-way communication around disasters, providing emergency warning messages and receiving real-time impacts reports through a dedicated website, text messages, and Smartphone Apps. This new communication protocol outlined in the NDP is multi-dimensional and presents actions for opening effective lines of communication with communities during drought and actions that the Government of Eswatini and communities take during and after drought.

Combined Drought Indicator (CDI)

As noted, Eswatini is in the process of operationalising a CDI that consolidates indices and indicators into one comprehensive national drought map. The CDI map for Eswatini was created using a weighted combination of four indicators of drought - precipitation, vegetation stress, land-surface temperature and soil moisture. January 2016 was selected to depict the severity of the 2015/16 drought.

The January CDI, usually being the peak of the rainy season, provides an assessment of the drought's magnitude (duration and intensity), spatial extent, probability of occurrence and impacts. The January 2016 CDI map shows the areas of the country impacted by some degree of drought, with the concentration predominantly in the north and eastern part of the country.

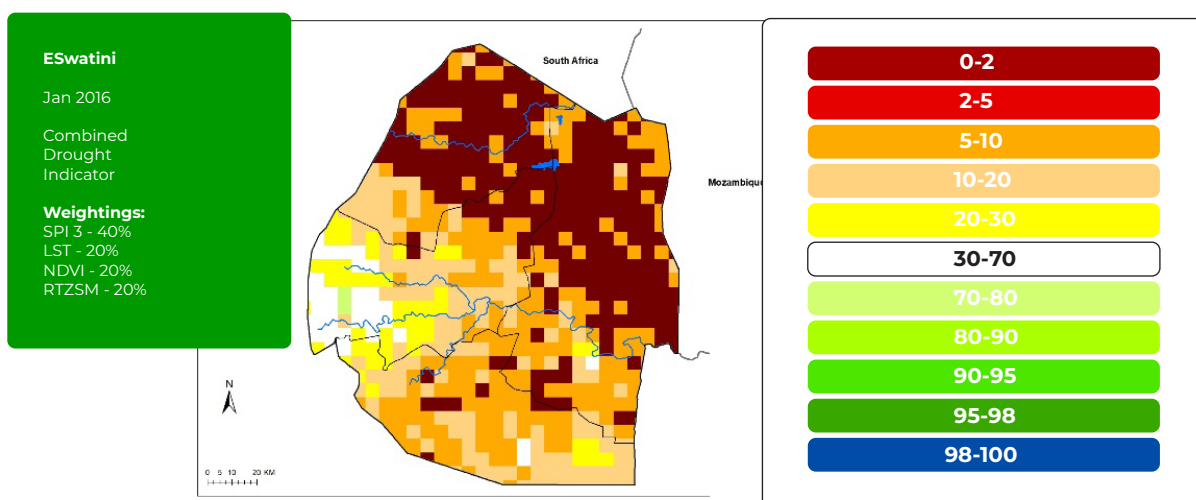
With support from the World Bank and the National Drought Mitigation Center (NDMC) at the University of Nebraska, Eswatini is currently developing this CDI-based drought monitor to be operational. Through this process Eswatini will improve collaboration among stakeholders on drought information, enhance monitoring systems and information delivery for preparedness and reduced drought impacts. It is envisaged that this will support a proactive approach to drought mitigation and planning measures, risk management, public outreach and resource stewardship.

Multiple users of the tool will be able to enhance their network and build the necessary capacity for a more substantive and sustained drought preparedness and resilience program in the country (Eswatini, 2020).

The CDI approach consolidates the various indices and indicators that can be used to identify drought into one comprehensive national drought map, making decision-making clearer. This will be developed and validated through a consultative process leading to the Eswatini (CDI-E) which will capture existing conditions on a monthly basis.

The validation will involve checking temporal and spatial extents of historic drought events generated by the CDI-E against existing impact data

Fig 8. Combined drought indicator for Eswatini, January 2016



Source: NDMC, 2020



Drought policy framework

Eswatini has a wide range of policy instruments to enhance water security, reduce risks associated with natural disasters, conserve natural resources, increase national wealth and increase the nation's resilience to climate change. All these instruments are directly relevant to national drought planning and risk reduction. These include: the National Development Strategy (NDS) Vision 2022; the Poverty Reduction Strategic and Action Plan (2007-2015); the National Food and Nutrition Security Policy and Action Plan; the National Disaster Management Act (2006); the National Disaster Risk Management Policy (2010); the Swaziland Disaster Resilience Strategy and Action Plan (2017); the National Emergency Response, Mitigation and Adaptation Plan 2016-2022, the Swaziland Environment Action Plan (SEAP); the Water Management Policies and Act; Eswatini Multi-Hazard Contingency Plans; Climate Change and Disaster Risk Reduction; the National Climate Change Policy (2016); the National Biodiversity and Action Plan-2 (2018); the National Agricultural Research Policy (2013); the National Irrigation Policy (2005); the Urban Government Act (1969); and the National Drought Plan (2020-2030).

The government works through the National Disaster Management Agency to apply the Disaster Risk Management (DRM) Policy to guide all disaster management programs in the country. The policy is well aligned with the National Development Strategy: Vision 2022 and other national development instruments with respect to making the country disaster-proof. The DRM policy aims to change the approach to and the nature of Disaster Risk Management in Eswatini. Specifically, in recognition of the country's changing disaster profile, it sets out the requirements for the institutionalisation of Disaster Risk Management in Eswatini in a cost-effective, permanent and sustainable way (Eswatini, 2020)

While the DMA and DRM Policy are in place, their implementation has not been optimal due to the factors already described. As a result of the current limitations to implementation, drought response and management in Eswatini generally remains reactive; known to be untimely, poorly coordinated/integrated and lacking scientific underpinnings (Eswatini, 2020).

Arguably the most comprehensive and progressive policy instrument for drought is the NDP. The NDP encompasses a paradigm shift to a proactive approach at reducing the country's vulnerability and increasing drought resilience. It is time-bound (10 years) and definitive in its goals and actions and follows best-practice models for disaster management, including but not limited to, the Sendai Framework and the three pillars of Integrated Drought Risk Management. Its implementation ultimately relies on Eswatini's disaster risk reduction framework, and strong cross-sectoral coordination, led by National Disaster Management Agency and in partnership with other key agencies such as the Ministry of Agriculture.

Institutions and coordination

In terms of institutional arrangements, there are different structures are set up to assist with coordination and delivery of services during drought. The Government of Eswatini has the ultimate mandate and responsibility to lead and coordinate all national disaster preparedness and response actions to prevent and mitigate the effects of disasters. Under DPMO the National Disaster Management Agency is the overall national coordinator of Disaster Risk Reduction (DRR) and Disaster Risk Management (DRM) programs.

The National Disaster Management Agency coordinates different DRR clusters in line with the Disaster Management Act (2006) and Disaster Risk Management Policy (2010). Multi-sector involvement/engagement is undertaken through the Multi-Hazard Contingency Plan (MHCP), which is led, coordinated and managed through the National Disaster Management Agency clusters. In the context of an expanded humanitarian country partnership, civil society organisations such as Red Cross, World Vision Eswatini, Nazarene Compassionate Ministries and Save the Children play a vital role in DRR coordination and implementation of DRR activities.

United Nations Country Team (UNCT) operates under the guidance of the UNRC and is responsible for effective and efficient implementation of Inter-Agency disaster risk management activities. It provides overall leadership to the cluster planning, response and recovery and for initiating dialogue with the Government and donors.

The National Emergency Preparedness and Response Unit is another structure set up to assist with drought-related matters and it is responsible for providing leadership and coordination on health emergencies, monitoring disease outbreaks and assessing performance of health system during emergencies.

While the policy and institutional framework is proactive, and holistic, key challenges remain including those of capacity, communication and coordination, as well as an operational structure still in its infancy (or under development).

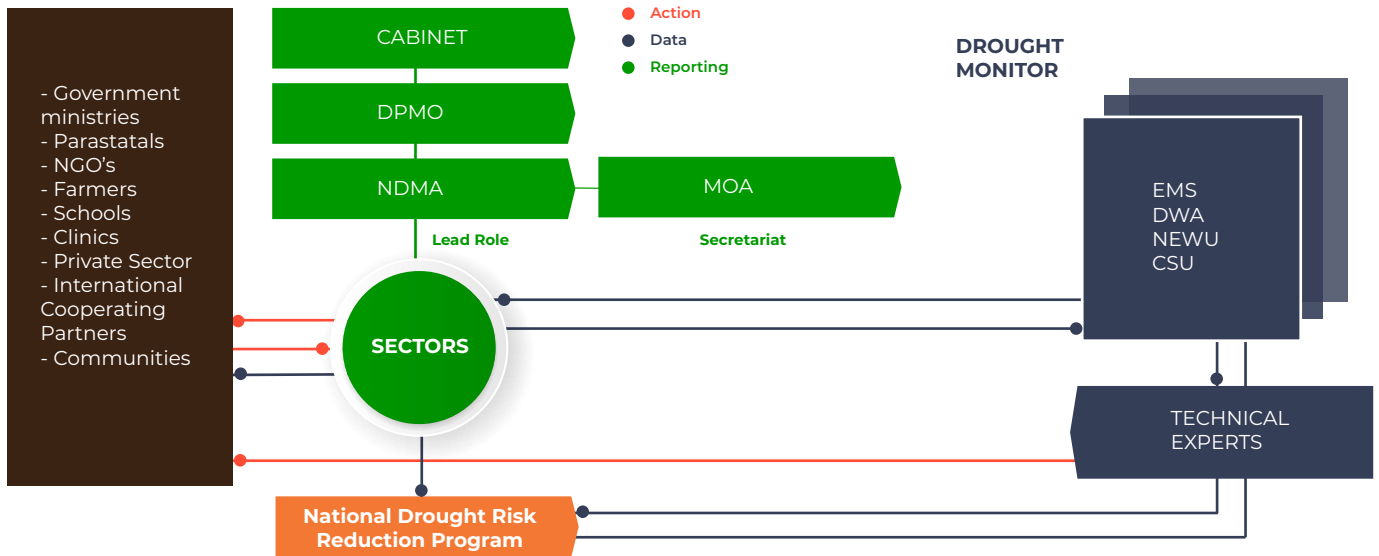
The DMA has complex management structures and thus coordination needs can grow exponentially, at the risk of duplication. Most of the organs created by the act are not in place except for the National Disaster Management Agency. The National Action Plan (NAP) 2008-2015 was adopted by Cabinet. However, due to National Disaster Management Agency institutional constraints, the NAP lacks a coherent systematic coordination and management in terms of its implementation. The national DRM Policy was adopted, however it has not been operationalised since this. The policy also lacks a coherent strategy for its operationalisation. In this regard, Eswatini may wish to consider reviewing and aligning the DMA and DRM Policy with the aim of promoting efficacy in DRM interventions in the country at various institutional levels.

There is weak mainstreaming of DRR into national development plans, sector plans and budgets which translates into lack of ownership of DRR initiatives.

Closing these gaps and inconsistencies in the national institutional framework by reviewing and harmonising drought-relevant policy will be key to the successful implementation of the NDP. This may include the development of action plans for operationalising the DRM Policy through a review of the Disaster Risk Reduction National Action Plan in order to take into consideration new emerging issues. Eswatini has also noted the need to establish DRM structures at regional and local levels to strengthen local urban government capacity in DRR, EPR as well as climate change adaptation and mitigation (Eswatini, 2020).



Fig 9. Eswatini's drought institutional framework (2020-2030)



Legend

- DPMO-Deputy Prime Minister Office
- NDMA- National Disaster Management Agency
- MOA-Ministry of Agriculture
- EMS- Eswatini National Meteorological Services
- DWA- Department of Water Affairs
- CSU-Central Statistics Unit

Recent drought resilience efforts and recommendations

In terms of drought mitigation, preparedness and response, the government of Eswatini employs a multi-stakeholder approach. The government has made a clear commitment and priority to protect its citizens and national assets by reducing the risk of losses from disaster. This has involved saving lives, livelihoods and property by anticipating disaster threats and erecting necessary structures and plans of action to reduce the risk of impact before the events occur.

To create a favourable socio-economic environment that can effectively shield households from disasters, the country needs to address and eradicate the synergistic effects of poverty, HIV and food insecurity, among other issues. The DRM Policy follows the Sendai Framework (2015-2030) on disaster management that emphasises the need to address the underlying drivers of disaster risk such as the consequences of poverty and climate change, including the specific socio-economic conditions that predispose households and their communities to the worst of disaster impacts. The assessment of the impacts of the 2014-2016 drought shows that it exacerbated the already existing impacts of poverty and further deepened food insecurity at the household level in addition to wiping out household assets and savings.

There are several measures that Eswatini could take to mitigate risk and be better prepared, including the development of new and alternative water sources, community education and outreach to encourage water conservation practices and improved water resource monitoring and impact assessment. The NDP outlines these in sufficient detail.

In addition, it is recommended that the Government of Eswatini consider incorporating and refining aspects of disaster mitigation in its natural hazard policies. The National Disaster Management Agency may wish to focus on implementing the programs stipulated in the DRM Policy to address the endemic risks to drought at the household level and in all sectors of the economy. Lastly, since the National Disaster Management Agency's mandate is to make sure that every citizen in the country, regardless of income status, receives adequate protection in the event of a disaster, Eswatini would benefit from the establishment of a dedicated Disaster Management Budget and Funding Model.

Recent drought resilience efforts by the international community

Table 3. Selected drought projects implemented by international organisations during the most recent drought in Eswatini

World Bank	ACP-EU	IFAD/GEF	UN-Lead and UNICEF
<p>Water Supply and Sanitation Access Project - The recently approved Eswatini Water and Sanitation Access Project has several activities specifically focused on improving drought resilience. The project is supporting infrastructure development and expansion of sanitation access in particularly vulnerable and under-serviced portions of the country. It also supports the development of a long-term water and sanitation master plan that will account for climate change and other uncertainties in recommending future infrastructure investments. The Project is also helping the country to institutionalize a Drought Program that addresses many of the gaps and recommendations mentioned in this Drought Profile, including to support the development of: the CDI-E, drought management plans for all Eswatini cities and towns, detailed disaster risk profiles and an accompanying DRR investment plan and decision support tools, a disaster risk financing strategy, and ultimately, an updated Disaster Risk Reduction strategy.</p> <p>Budget (USD): 45M Time Period: 2020 -2025</p>	<p>Natural Disaster Risk Reduction Program - Activities will foster the development of a combined drought monitor and early warning system; analysis will be undertaken to quantify drought risk in key sectors of Eswatini, such as agriculture, water, health, and/or education; several pilot drought contingency plans will be supported; identifying identify the most appropriate risk financing and insurance mechanisms for mitigating the impacts of droughts; and communication, knowledge.</p> <p>Budget (USD): 200K Time Period: 2019 -2021</p>	<p>The Smallholder Market-led Project (SMLP)</p> <p>Budget (USD): 24.5M Time Period: 2015 -2020</p>	<p>Water and sanitation mitigation approach for population living in water scarce drought affected areas.</p> <p>Budget (USD): 14,8K Time Period:</p>

References and data sources

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4. Mlenga, D. H., Jordaan, A. J., & Mandebvu, B. (2019). Monitoring droughts in Eswatini: A spatiotemporal variability analysis using the Standard Precipitation Index. Jamba (Potchefstroom, South Africa), 11(1), 725. <https://doi.org/10.4102/jamba.v11i1.725>
5. National Disaster Management Agency (NDMA) (30th JUNE 2017). The Socio-Economic Impacts of the 2015/16 EL Niño Induced Drought in Swaziland.
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7. Swaziland Drought Assessment Report. Rapid Assessment 2015/16 Season.
8. UNDRR and CIMA (2018). Eswatini Disaster Risk Profile. Nairobi: UNDRR and CIMA Research Foundation.

Data Sources:

Climate Data: CHIRPS
Drought Risk: International Water Management Institute (IWMI)
CDI: National Drought Mitigation Center at the University of Nebraska-Lincoln
Population Data: WorldPop
Livestock, GDP: FAO, World Bank

About the Southern Africa Drought Resilience Initiative (SADRI)

SADRI is a World Bank initiative supported by the Cooperation in International Waters in Africa Program (CIWA) that integrates across the energy-water-food-environment nexus to help lay the foundations for making southern African countries more resilient to the multi-sectoral impacts of drought. Its main objectives are to generate tools and dialogue for enhancing partnerships and capacity across Member States and to inform future national and regional investments in drought-related activities.