Federal Ministry
for Economic Cooperation
and Development

Climate Risk Profile: Mauritania

Summary

This profile provides an **overview of projected climate parameters and related impacts** on different sectors in Mauritania until 2080 **under different climate change scenarios** (called Representative Concentration Pathways, RCPs). RCP2.6 represents the low emissions scenario in line with the Paris Agreement; RCP6.0 represents a medium to high emissions scenario. **Model projections do not account for effects of future socio-economic impacts.**

Agro-ecological zones might **shift, affecting ecosystems, biodiversity** and **crop production**. Models project increases in species richness for south-western Mauritania, while projections of tree cover are uncertain.

Agriculture, biodiversity, health, infrastructure and water are highly vulnerable to climate change. The **need for adaptation in these sectors has been stressed in Mauritania's NDC targets and should be represented in the German development cooperation portfolio** in the country.

Per capita water availability will decline by 2080 mostly due to population growth. Model projections indicate that **water saving measures are expected to become more important all over Mauritania after 2030**.

Depending on the scenario, **temperature** in Mauritania is projected to **rise by between 2.0 and 4.5 °C by 2080**, compared to pre-industrial levels, with higher temperatures and more temperature extremes projected for the south and west of Mauritania.

The **population affected by at least one heatwave** per year is projected to **rise** from 6 % in 2000 to 35 % in 2080. This is related to 49 more very hot days per year over this period. As a consequence, **heat-related mortality** is estimated to **increase by a factor of three** by 2080.

Precipitation trends are highly uncertain with projections ranging from a slight increase to an **annual precipitation decrease of up to 11 mm by 2080**. Nevertheless, future dry and wet periods are likely to become **more extreme**.

Under RCP6.0, the **sea level** is expected to **rise by 36 cm** until 2080. This threatens Mauritania's coastal communities and may cause saline intrusion in coastal waterways and groundwater reservoirs.

Climate change is likely to cause **severe damage to the infrastructure sector** in Mauritania including roads and bridges. As roads are the backbone of the country's transportation network, investments will need to be made into building climate-resilient roads and other infrastructure.

The models project a possibility of an **increase in crop land exposure to drought**. Yields of maize are projected to decline, while yields of millet and sorghum are projected to benefit from CO_2 fertilisation. Farmers will need to adapt to these changing conditions.

Context

Mauritania is **located in Western Africa** with access to the Atlantic Ocean through more than **750 km of coastline** [1]. The population is estimated to exceed **4.7 million** in 2020, given **an annual demographic growth rate of 2.8 %** [2]. Since large areas of the country are part of the Sahara region, the majority of the inhabitants live in the coastal cities of Nouakchott and Nouadhibou and in the Senegal River Valley, which has a more moderate Sahelian climate. With a real GDP per capita of 1 756 USD and an annual GDP growth rate of 3.1 %, Mauritania **counts as a lower middle-income country (LMIC)** [2]. Its economy is dominated by the services sector, contributing 45.8 % to the country's GDP in 2019, followed by the industrial sector with 25.3 % and the agricultural sector with 18.7 % [3]. Mineral products (e.g. iron and copper ore), shellfish products and frozen fish are Mauritania's key exports, with fruits and malt being the main agricultural exports [4]. In 2018, over 90 % of fruits were exported to France and malt was exclusively exported to Mozambique [4]. **Over 50 % of Mauritania's population is employed in the agricultural sector** heavily relying on agriculture for sustaining food security and securing livelihoods [1]. Therefore, concerns are rising over the effects of climate change including rising temperature, reduced water availability and the occurrence of floods and other extreme weather events. **Agricultural production in Mauritania is primarily subsistence-based and rainfed. The main staple crops are cereals, most importantly sorghum, in addition to rice, maize, cow peas and millet** [5]. In 2004, less than 0.1 % of the national crop land was irrigated [6]. Hence, especially smallholder farmers are directly affected by the impacts of climate variability, which can reduce their food supply and increase the risk of hunger and poverty. **Limited adaptive capacity in the agricultural sector underlines the country's vulnerability to climate change.**

Quality of life indicators [2], [7]–[9]

Human Development Index (HDI) 2019	ND-GAIN Vulnerability Index 2018	GINI Coefficient 2014	Real GDP per capita 2019	Poverty headcount ratio 2014	Prevalence of undernourishment 2016–2018
0.527 **161 out of 189** (0 = low, 1 = high)	**40.2** **133 out of 181** (0 = low, 100 = high)	**32.6** (0–100; 100 = perfect inequality)	**1 756 USD** (constant 2010 USD)	**6.0 %** (at 1.9 USD per day, 2011 PPP) [1]	**10.4 %** (of total population)

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[1] Poverty headcount ratio for the year 2014 adjusted to 2011 levels of Purchasing Power Parity (PPP). PPP is used to compare different currencies by taking into account national differences in cost of living and inflation.

Topography and environment

Mauritania's landscape is mostly flat. Altitudes rise from the coastal plains in the west towards the central mountains, reaching the **highest peak at Mount Kediet ej Jill** (915 m) and descending towards the eastern plateau with altitudes ranging from 200 to 500 m [1]. **The country has an arid climate defined by the Saharan desert:** Especially **the north of the country is extremely dry**, part of which can be ascribed to the **north-eastern trade winds and the harmattan**, a dry wind, which is strongest from late November to mid-March and which carries large amounts of sand and dust [10]. The **south of the country has a Sahelian climate with higher amounts of precipitation**. Accordingly, Mauritania can be divided into **three major agro-ecological zones (AEZ)**: Desert, Arid/Sahel and Semi-arid/Sudan Savannah (Figure 1) [11][2]. Each of these zones is characterised by specific temperature and moisture regimes, and consequently, specific patterns of crop production and pastoral activities. Overall, Mauritania has **very limited freshwater resources**. The **Senegal River**, which flows along the border with Senegal, presents an exception here. Its **perennial flow supports millions of people** in Mauritania, Senegal and Mali with freshwater, arable land, pastures and fish [12]. Dams on the Senegal River allow for year-round availability of water and, therefore, more intensive agricultural production. However, the existence of **permanent freshwater has also allowed for the spread of parasites and invasive species** such as snails, causing changes to ecosystems and threatening human health and livelihoods [13]. Other human-induced environmental pressures include land degradation and desertification as a result of poor agricultural practices, overgrazing and deforestation [14]. Extreme weather events, including heavy precipitation and severe droughts, are expected to intensify in the context of climate change, highlighting the **need for adaptation measures to protect biodiversity and maintain fragile ecosystems and their services**.

Present climate [15]

Mauritania is characterised by an arid climate as the country is located in the Saharan desert and the Sahel region. Mean annual temperatures range from 21° to 30 °C with lower values on the northern coast and higher values in the south-east of the country.

Annual precipitation sums range from as little as 20 mm on the northern coast to 400 mm in the central south, which is characterised by a Sahelian climate.

Mauritania has a single rainy season (unimodal precipitation regime) from June to October in the south with decreasing length of the rainy season and precipitation sums towards the north.

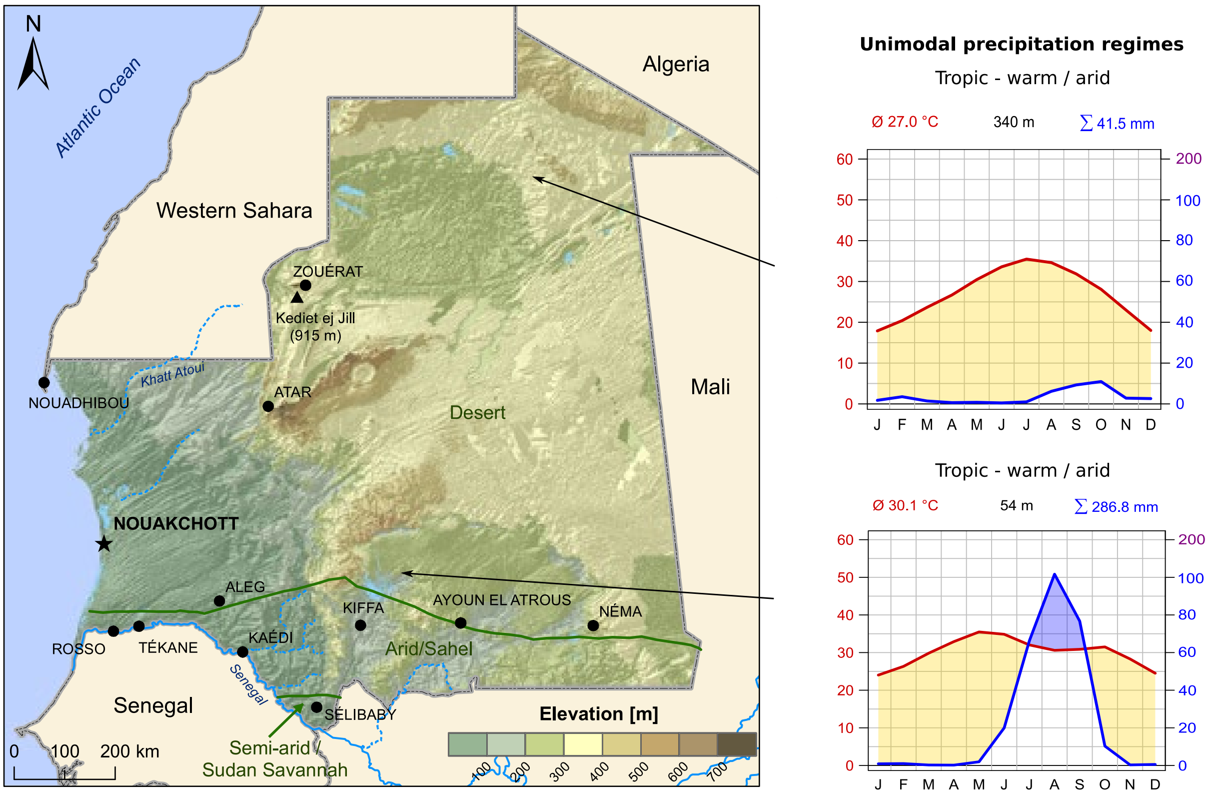

Figure 1: Topographical map of Mauritania with agro-ecological zones and existing precipitation regimes.[3]

[2] It should be noted that there are different classifications of AEZs in Mauritania. We focused on a commonly used classification of three zones.

[3] The climate graphs display temperature and precipitation values which are averaged over an area of approximately 50 km × 50 km. Especially in areas with larger differences in elevation, the climate within this grid might vary.

Projected climate changes

How to read the line plots

historical — best estimate

RCP2.6 — likely range

RCP6.0 — very likely range

Lines and shaded areas show multi-model percentiles of 31-year running mean values under RCP2.6 (blue) and RCP6.0 (red). In particular, lines represent the best estimate (multi-model median) and shaded areas the likely range (central 66 %) and the very likely range (central 90 %) of all model projections.

How to read the map plots

Colours show multi-model medians of 31-year mean values under RCP2.6 (top row) and RCP6.0 (bottom row) for different 31-year periods (central year indicated above each column). Colours in the leftmost column show these values for a baseline period (colour bar on the left). Colours in the other columns show differences relative to this baseline period (colour bar on the right). The presence (absence) of a dot in the other columns indicates that at least (less than) 75 % of all models agree on the sign of the difference.
For further guidance and background information about the figures and analyses presented in this profile kindly refer to the supplemental information on how to read the climate risk profile.

Temperature

In response to increasing greenhouse gas (GHG) concentrations, **air temperature over Mauritania is projected to rise by 2.0 to 4.5 °C (very likely range) by 2080** relative to the year 1876, depending on the future GHG emissions scenario (Figure 2). Compared to pre-industrial levels, median climate model temperature increases over Mauritania amount to approximately 2.1 °C in 2030, 2.3 °C in 2050 and 2.5 °C in 2080 under the low emissions scenario RCP2.6. Under the medium/high emissions scenario RCP6.0, median climate model temperature increases amount to 2.1 °C in 2030, 2.7 °C in 2050 and 3.8 °C in 2080.

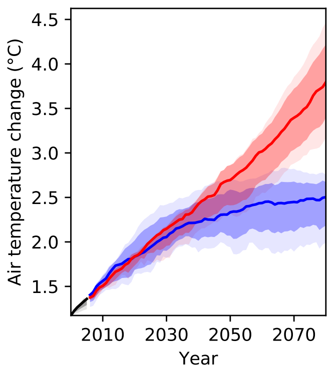

Figure 2: Air temperature projections for Mauritania for different GHG emissions scenarios.[4]

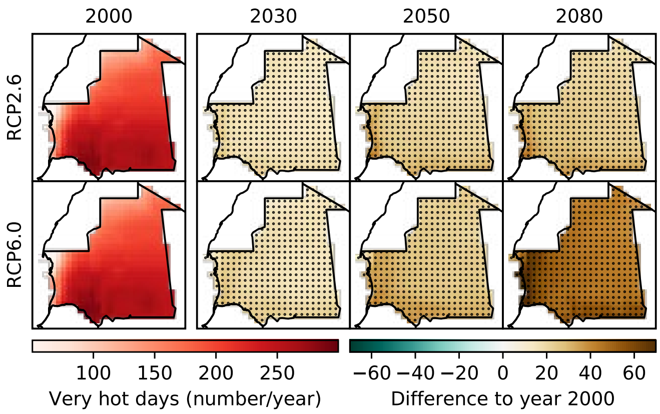

Figure 3: Projections of the annual number of very hot days (daily maximum temperature above 35 °C) for Mauritania for different GHG emissions scenarios.

Very hot days

In line with rising mean annual temperatures, the annual number of very hot days (days with daily **maximum temperature above 35 °C**) is projected to rise substantially and with high certainty, in particular over western Mauritania (Figure 3). Under the medium/high emissions scenario RCP6.0, the multi-model median, averaged over the whole country, projects **18 more very hot days per year in 2030 than in 2000**, **27 more in 2050** and **49 more in 2080**. In some parts, especially in south-western Mauritania, this amounts to about 300 days per year by 2080.

[4] Changes are expressed relative to year 1876 temperature levels using the multi-model median temperature change from 1876 to 2000 as a proxy for the observed historical warming over that time period.

Sea level rise

In response to globally increasing temperatures, the sea level off the coast of Mauritania is projected to rise (Figure 4). Until 2050, very similar sea levels are projected under both emissions scenarios. Under RCP6.0 and compared to year 2000 levels, the median climate model projects **a sea level rise by 10 cm in 2030, 19 cm in 2050 and 36 cm in 2080**. This threatens Mauritania's coastal communities and may cause saline intrusion in coastal waterways and groundwater reservoirs.

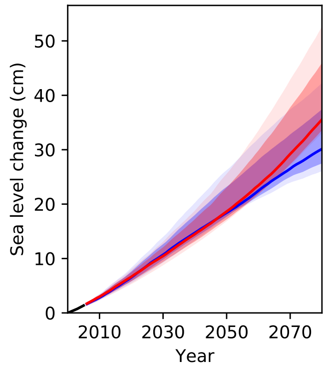

Figure 4: Projections for sea level rise off the coast of Mauritania for different GHG emissions scenarios, relative to the year 2000.

Precipitation

Future projections of precipitation are less certain than projections of temperature change due to high natural year-to-year variability (Figure 5). Out of the four climate models underlying this analysis, two models project no change in mean annual precipitation over Mauritania and two models project a decrease under RCP6.0. Under RCP2.6, one model projects an increase, one a decrease and two no change. Median model projections show **a slight precipitation increase of 6 mm per year by 2080** under RCP2.6, while median model projections for RCP6.0 show a **decrease of 11 mm by 2080** compared to year 2000.

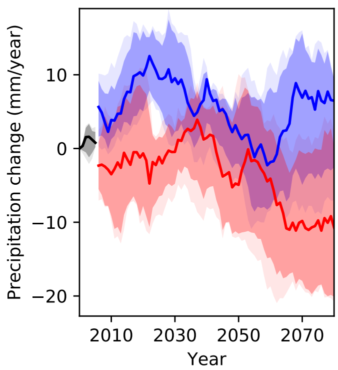

Figure 5: Annual mean precipitation projections for Mauritania for different GHG emissions scenarios, relative to the year 2000.

Heavy precipitation events

In response to global warming, **heavy precipitation events are expected to become more intense** in many parts of the world due to the increased water vapour holding capacity of a warmer atmosphere. At the same time, the number of days with heavy precipitation events is expected to increase. However, this tendency is not reflected in climate projections for Mauritania (Figure 6), with climate models projecting **a decrease in the number of days with heavy precipitation events**, from 7 days per year in 2000 to 6 days per year in 2080 under RCP6.0. Under RCP2.6, no change is projected.

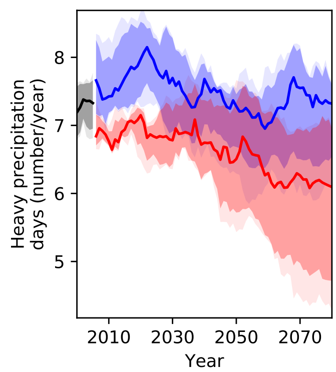

Figure 6: Projections of the number of days with heavy precipitation over Mauritania for different GHG emissions scenarios, relative to the year 2000.

Soil moisture

Soil moisture is an important indicator for drought conditions. In addition to soil parameters and management, it depends on both precipitation and evapotranspiration and therefore also on temperature, as higher temperatures translate to higher potential evapotranspiration. **Annual mean top 1-m soil moisture projections for Mauritania show a minimal increase under RCP2.6 and a decrease of 5 % under RCP6.0** by 2080 compared to the year 2000 (Figure 7). However, looking at the different models underlying this analysis, there is large year-to-year variability and modelling uncertainty, with some models projecting an increase and others projecting a decrease in soil moisture. Hence, a clear trend cannot be identified.

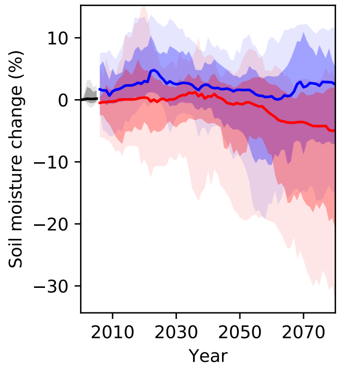

Figure 7: Soil moisture projections for Mauritania for different GHG emissions scenarios, relative to the year 2000.

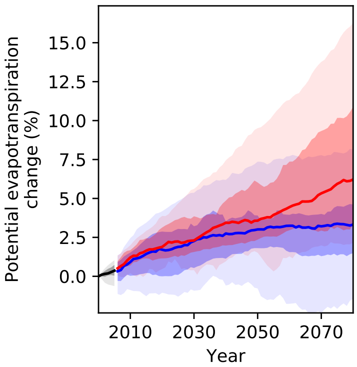

Figure 8: Potential evapotranspiration projections for Mauritania for different GHG emissions scenarios, relative to the year 2000.

Potential evapotranspiration

Potential evapotranspiration is the amount of water that would be evaporated and transpired if sufficient water was available at and below land surface. Since warmer air can hold more water vapour, **it is expected that global warming will increase potential evapotranspiration in most regions of the world.** In line with this expectation, hydrological projections for Mauritania indicate a stronger rise of potential evapotranspiration under RCP6.0 than under RCP2.6 (Figure 8). Under RCP6.0, **potential evapotranspiration is projected to increase by 2.3 % in 2030, 3.6 % in 2050 and 6.2 % in 2080** compared to year 2000 levels.

Sector-specific climate change risk assessment

a. Water resources

Current projections of water availability in Mauritania display high uncertainty under both GHG emissions scenarios. Assuming a constant population level, multi-model median projections suggest only little change in per capita water availability over Mauritania by the end of the century under either RCP (Figure 9A). Yet, when accounting for population growth according to SSP2 projections[5], **per capita water availability for Mauritania is projected to decline by 71 % under RCP2.6 and 77 % under RCP6.0 by 2080** relative to the year 2000 (Figure 9B). While this decline is primarily driven by population growth rather than climate change, it highlights the **urgency to invest in water saving measures and technologies for future water consumption after 2030**.

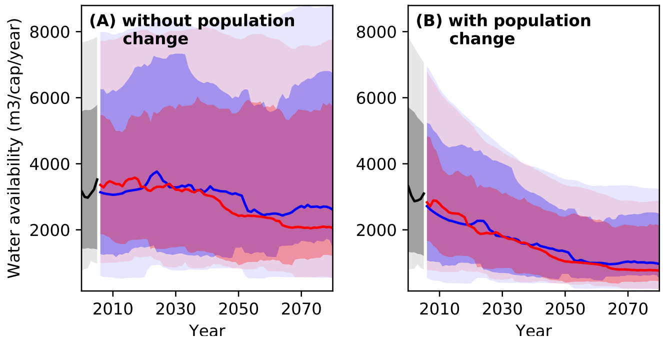

Figure 9: Projections of water availability from precipitation per capita and year with (A) national population held constant at year 2000 level and (B) changing population in line with SSP2 projections for different GHG emissions scenarios, relative to the year 2000.

Projections of future water availability from precipitation vary depending on the region and scenario (Figure 10). In line with precipitation projections, **water availability is projected to increase in parts of western, central and north-eastern Mauritania** under RCP2.6. Under RCP6.0, however, model agreement is low with precipitation decreases of up to 30 % projected for the south of Mauritania. The projected increase in water availability under RCP2.6 is based on a constant population level. Hence, **water saving measures are likely to become important for Mauritania's rapidly growing population**.

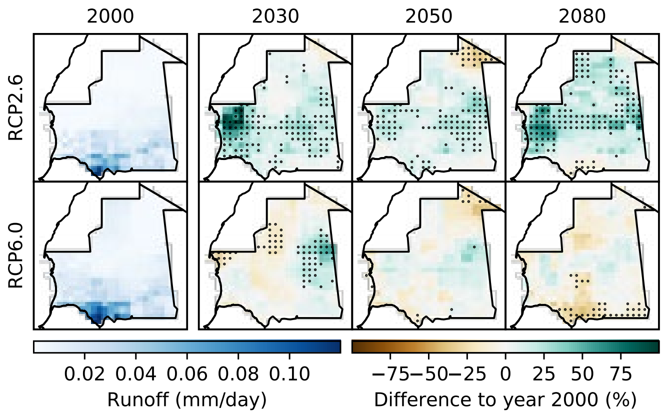

Figure 10: Water availability from precipitation (runoff) projections for Mauritania for different GHG emissions scenarios.

Mauritania has experienced strong seasonal and annual variation in precipitation as well as recurring droughts, all of which present major constraints to agricultural production [16], [17]. The country was hit by **recurring droughts in the 1970s and 1980s** as precipitation amounts decreased during that time [18]. This **decrease in precipitation led to critical reductions in water resources and vegetation**, increased land degradation and desertification, which resulted in loss of arable land and **reduced agricultural production**, as well as loss of pastures and livestock depletion [18]. Poverty rates soared in already vulnerable rural communities and created a mass exodus to urban centres [18]. While in 1980, only 27 % of Mauritania's population was urban, this figure increased more than twofold to 55 % in 2019 [2]. Furthermore, the effects of drought sparked **conflicts between farmers and herders in the Senegal River Valley**, leading to the Senegal-Mauritania Conflict in 1989 with thousands of people killed and hundreds of thousands displaced [19], [20]. Although annual precipitation sums recovered in the 1990s, they remain below the national average of the past century with **further droughts recorded in 2005, 2008, 2010 and 2012** [17], [21]. Overall, Mauritania's **freshwater resources are very unevenly distributed** with concentrations along the southern border, leaving the country's growing population under water stress and in competition over limited water resources.

[5] Shared Socio-economic Pathways (SSPs) outline a narrative of potential global futures, including estimates of broad characteristics such as country level population, GDP or rate of urbanisation. Five different SSPs outline future realities according to a combination of high and low future socio-economic challenges for mitigation and adaptation. SSP2 represents the "middle of the road"-pathway.

b. Agriculture

Smallholder farmers in Mauritania are increasingly challenged by the uncertainty and variability of weather caused by climate change [16], [17]. Since **crops are predominantly rainfed**, yields highly depend on water availability from precipitation and are prone to drought. However, the length and intensity of the rainy season is becoming increasingly unpredictable and the **use of irrigation facilities remains limited**: In 2004, less than 10 % of the estimated irrigation potential of 250 000 ha (0.6 % of total national crop land) were irrigated [6]. The main irrigated crop is rice, in addition to maize, sorghum and vegetables [22]. Especially in central and northern Mauritania, **soils are sandy and poor in nutrients**, which complicates irrigation and crop production [22].

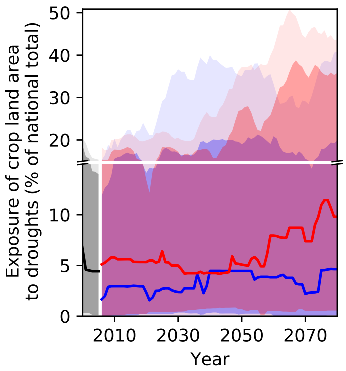

Figure 11: Projections of crop land area exposed to drought at least once a year for Mauritania for different GHG emissions scenarios.

Currently, the high uncertainty of projections regarding water availability (Figure 10) translates into high uncertainty of drought projections (Figure 11). According to the median over all models employed for this analysis, **the national crop land area exposed to at least one drought per year will increase from 6 % in 2000 to 10 % in 2080 under RCP6.0 and decrease to 5 % under RCP2.6.** Under RCP6.0, the likely range of drought exposure of the national crop land area per year widens from 0.3–19 % in 2000 to 0.6–36 % in 2080. The very likely range widens from 0–20 % in 2000 to 0.01–44 % in 2080. This means that **some models project a doubling of drought exposure over this time period, while others project no change.**

In terms of **yield projections**, model results **indicate high uncertainty** (Figure 12)[6]. Compared to the year 2000, **yields of cow peas are projected to decrease by 6 % under RCP2.6 and increase by 4 % under RCP6.0**. A possible explanation for the positive results under RCP6.0 is that cow peas are so-called C3 plants, which follow a different metabolic pathway than maize, millet and sorghum (C4 plants), and benefit more from the CO_2 fertilisation effect under higher concentration pathways. For **maize**, the trend is reversed: Under **RCP2.6, yields are projected to slightly increase by 3 % and decrease by 11 % under RCP6.0**. **Millet and sorghum are projected to gain 8 % under RCP2.6 and 6 % under RCP6.0**. The higher increases under RCP2.6 can be explained by higher precipitation projections under RCP2.6 (Figure 5). Finally, **yields of rice are projected to not change** under either RCP, however, some models project **an increase of up to 200 %**. Although some yield changes may appear small at the national level, they will likely increase more strongly in some areas and, conversely, decrease more strongly in other areas as a result of climate change impacts.

Overall, adaptation strategies such as switching to improved varieties in climate change-sensitive crops need to be considered, yet should be carefully weighed against adverse outcomes, such as a resulting decline of agro-biodiversity and loss of local crop types.

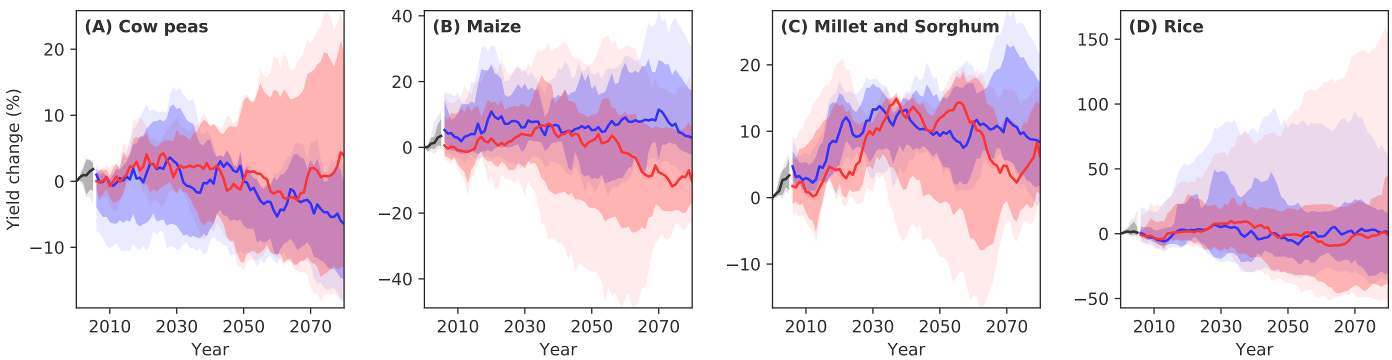

Figure 12: Projections of crop yield changes for major staple crops in Mauritania for different GHG emissions scenarios assuming constant land use and agricultural management, relative to the year 2000.

[6] Modelling data is available for a selected number of crops only. Hence, the crops listed on page 2 may differ. Maize, millet and sorghum are modelled for all countries, except for Madagascar.

c. Infrastructure

Climate change is expected to significantly affect Mauritania's infrastructure through extreme weather events. High precipitation amounts can lead to the **flooding of roads**, while high temperatures can cause **roads, bridges and protective structures to develop cracks and degrade more quickly**. This will require earlier replacement and lead to **higher maintenance and replacement costs**. The near-total absence of passenger railways and limited airport facilities increase Mauritania's reliance on road transportation [23]. The country has only 2 743 km of paved roads, which is one of the lowest densities on the continent [23]. While **some roads become impassable during the rainy season**, cutting off villages and rural communities, others are obscured by drifting sand during the dry season [23]. Investments will have to be made to build climate-resilient and safe road networks.

Extreme weather events will also have **devastating effects on human settlements and economic production sites**, especially in urban areas with high population densities like Nouakchott or Nouadhibou. **Informal settlements are particularly vulnerable to extreme weather events:** Makeshift homes are often built in unstable geographical locations including steep slopes or river banks, where flooding can lead to loss of housing, contamination of water, injury or death. Dwellers usually have low adaptive capacity to respond to such events due to high levels of poverty and a lack of risk-reducing infrastructures. For example, **heavy precipitation events during the 2019 rainy season** caused flooding in the region of Guidimakha in southern Mauritania, **affecting 33 600 people** [24]. The city of Sélibaby was hit particularly hard, recording damages to houses, markets and infrastructure as well as disruptions to water and energy supplies. Flooding and droughts will also affect hydropower generation: Together with Senegal and Mali, Mauritania shares the Manantali Dam, which has a total installed capacity of 200 MW and which is located on the Bafing River in Mali, a tributary of the Senegal River [25]. However, variability in precipitation and **climatic conditions could severely disrupt hydropower generation** in the whole region.

Despite the **risk of infrastructure damage being likely to increase**, precise predictions of the location and the extent of exposure are difficult to make. For example, projections of river flood events are subject to substantial modelling uncertainty, largely due to the uncertainty of future projections of precipitation amounts and their spatial distribution, affecting flood occurrence (see also Figure 4). In the case of Mauritania, median projections show **almost no change in national road exposure to river floods** (Figure 13). In the year 2000, 0.4 % of major roads were exposed to river floods at least once a year. By 2080, this value is projected to not change under RCP2.6 and to decrease to 0.3 % under RCP6.0. In a similar way, **exposure of urban land area to river floods is projected to change only marginally** under RCP6.0 from 0.05 % in 2000 to 0.14 % in 2080, with no change under RCP2.6 (Figure 14).

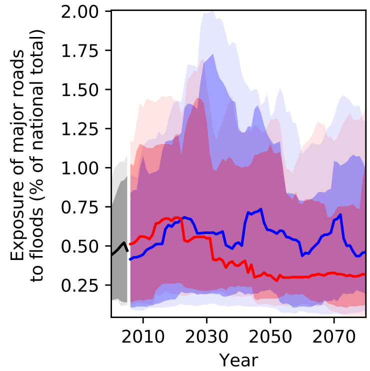

Figure 13: Projections of major roads exposed to river floods at least once a year for Mauritania for different GHG emissions scenarios.

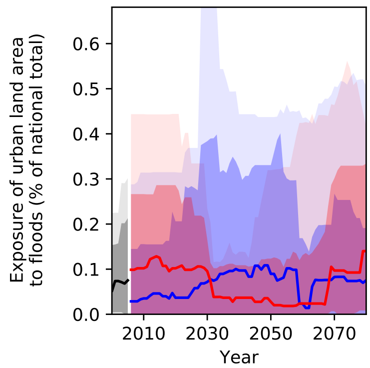

Figure 14: Projections of urban land area exposed to river floods at least once a year for Mauritania for different GHG emissions scenarios.

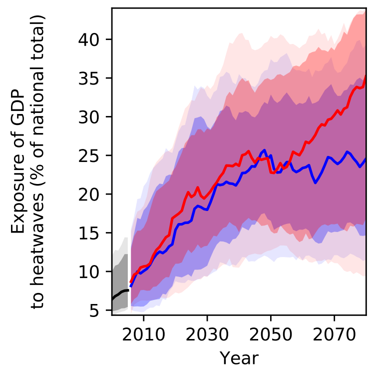

Figure 15: Exposure of GDP in Mauritania to heatwaves for different GHG emissions scenarios.

With the **exposure of the GDP to heatwaves projected to increase dramatically** from around 6 % in 2000 to 25 % (RCP2.6) and 35 % (RCP6.0) by 2080 (Figure 15), it is recommended that policy planners start identifying heat-sensitive economic production sites and activities, and integrating climate adaptation strategies such as improved solar-powered cooling systems, "cool roof" isolation materials or switching the operating hours from day to night [26].

d. Ecosystems

Climate change is expected to have a significant influence on the ecology and distribution of tropical ecosystems, though the magnitude, rate and direction of these changes are uncertain [27]. With rising temperatures and increased frequency and intensity of droughts, **wetlands and riverine systems are increasingly at risk of being converted to other ecosystems,** with plant populations being succeeded and animals losing habitats. Increased temperatures and droughts can also impact succession in forest systems while concurrently increasing the risk of invasive species, all of which affect ecosystems. In addition to these climate drivers, low agricultural productivity and population growth might motivate further agricultural expansion resulting in increased deforestation, land degradation and forest fires, all of which will impact animal and plant biodiversity.

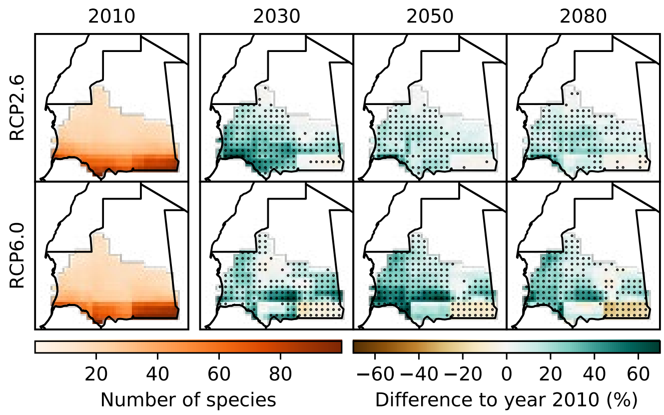

Figure 16: Projections of the aggregate number of amphibian, bird and mammal species for Mauritania for different GHG emissions scenarios.

Model projections of species richness (including amphibians, birds and mammals) and tree cover for Mauritania are shown in Figure 16 and 17, respectively. The models applied for this analysis show particularly strong agreement on the development of species richness: Under RCP2.6, **south-western Mauritania is expected to gain up to 30 % of animal species due to climate change**. This trend will intensify under RCP6.0, in addition to **a decrease of up to 50 % in the south-east of the country** (Figure 16). **With regard to tree cover, model results are very uncertain** and of low magnitude under both RCPs (Figure 17), which could also relate to the fact that tree cover in Mauritania is generally sparse. Overall, no reliable estimations on the development of tree cover can be made.

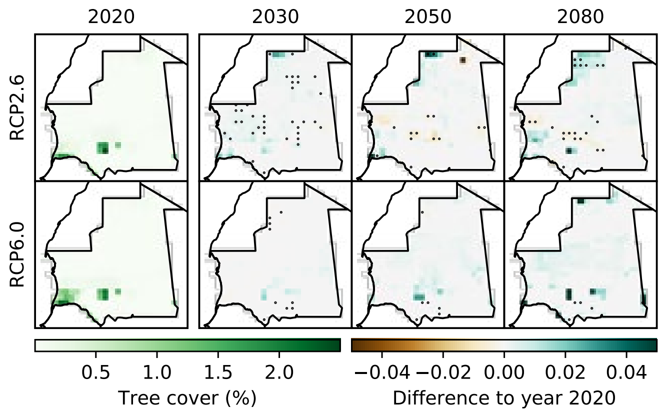

Figure 17: Tree cover projections for Mauritania for different GHG emissions scenarios.

It is important to keep in mind that the **model projections exclude any impacts on biodiversity loss from human activities such as land use**, which have been responsible for significant losses of global biodiversity in the past, and are expected to remain its main driver in the future [28]. In recent years, Mauritania's vegetation has experienced profound disturbances due to population pressure and increasing demand for pastures, agricultural land and firewood, leading to high rates of deforestation [25]. The country has **lost 86 000 ha of forest cover in the period from 2001 to 2016**, which is equivalent to a **28 % decrease** [2].

e. Human health

Climate change threatens the health and sanitation sector through more frequent incidences of heatwaves, floods, droughts and storms. Among the key health challenges in Mauritania are morbidity and mortality through vector-borne diseases such as malaria, waterborne diseases related to extreme weather events (e.g. flooding) such as diarrhoea and cholera, as well as tuberculosis, HIV and respiratory diseases [29]. **Climate change is also likely to impact food and water supply, thereby increasing the risk of malnutrition, hunger and death by famine**. Many of these challenges are expected to become more severe under climate change. According to the World Health Organization (WHO), Mauritania recorded around 174 000 cases of malaria in 2018 [30]. **Climate change is likely to have an impact on malaria transmission periods and the geographic range of vector-borne diseases:** In Mauritania, the general malaria risk is projected to fall due to rising temperatures [31]. However, some regions are likely to become more vulnerable to malaria, for instance, due to more frequent incidences of flooding [32]. Climate change also poses a threat to food security and malnutrition, particularly for subsistence farmers. While chronic malnutrition is generally high at 19.6 %, it could further increase due to the consequences of the COVID-19 pandemic [33]. According to the WHO, more than **900 000 people faced food insecurity** in June 2020, which is an increase of 48 % within six months [33].

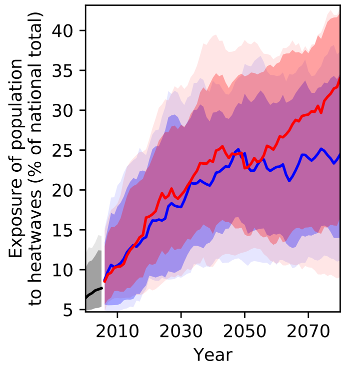

Figure 18: Projections of population exposure to heatwaves at least once a year for Mauritania for different GHG emissions scenarios.

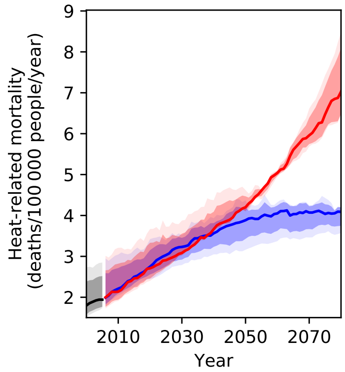

Figure 19: Projections of heat-related mortality for Mauritania for different GHG emissions scenarios assuming no adaptation to increased heat.

Rising temperatures will result in **more frequent heatwaves** in Mauritania, leading to **increased heat-related mortality**. Under RCP6.0, the population affected by at least one heatwave per year is projected to increase from 6 % in 2000 to 34 % in 2080 (Figure 18). Furthermore, under RCP6.0, **heat-related mortality will likely increase from about 2 to about 7 deaths per 100 000 people per year by 2080**, which translates to an **increase by a factor of more than three** towards the end of the century compared to year 2000 levels, provided that no adaptation to hotter conditions will take place (Figure 19). Under RCP2.6, heat-related mortality is projected to increase to about 4 deaths per 100 000 people per year in 2080.

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