ADAPTATION FUND

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT INFORMATION

Title of Project/Programme:	Enhancing climate resilient water, food, and energy systems in Botswana through sustainable natural resources management
Country:	Republic of Botswana
Thematic Focal Area:	Multisector
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	International Fund for Agricultural Development
Executing Entities:	Ministry of Agricultural Development and Food Security (Lead); Ministry of Land Management, Water and Sanitation Services; Ministry of Minerals and Energy (MME); Ministry of Environment, Natural Resources Conservation and Tourism; Ministry of Finance (MoF); Global Water Partnership Southern Africa; Food and Agriculture Organisation of the United Nations
Amount of Financing Requested:	10,000,000 (in U.S Dollars Equivalent)

Project Formulation Grant Request (available to NIEs only): No

Amount of Requested financing for PFG: N/A (in U.S Dollars Equivalent)

Letter of Endorsement (LOE) signed: Yes.

Stage of Submission:

This is the first submission ever of the concept proposal

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In case of a resubmission, please indicate the last submission date: 15 January 2024

Please note that concept note documents should not exceed 50 pages, including annexes.

Project background and context

Socio-economic context

1. Botswana, a landlocked, semi-arid country in Southern Africa, has shown remarkable economic growth since independence, averaging over 8% annually until recent years. As one of the world's fastest-growing economies, it reached an upper-middle-income status in 2011 and has made steady progress in terms of human development. Nevertheless, it's Human Development Index (HDI) which peaked at a value of 0.722 in 2017, regressing to 0.693 in 2021, still falls short of the global average HDI of 0.732.[1]
2.
3. Botswana's economic growth remains heavily reliant on its mineral wealth, particularly diamonds, which account for over 90% of total exports and serve as a crucial source of fiscal revenue. [2] These revenues are primarily channelled into maintaining a large public sector, with public administration and defence making up around 15% of the country's GDP.[3] Accordingly, all societal groups have not benefited equally from Botswana's more recent economic successes.
4. Botswana faces significant challenges related to income disparity and unemployment. The country has a Gini index of 53.3, as of the last measurement in 2015, placing it among the top 10 countries worldwide with the highest income inequality. Additionally, unemployment has been on an upward trajectory, rising from 20.1% in 2019 to 25.4% as of the latest figures in 2022.[4] Within this context, women and youth are particularly vulnerable, experiencing unemployment rates that exceed the national average. Specifically, 26.9% of women and 33.5% of youth are currently unemployed, as opposed to 23.9% of the male population.[5]
5. Of Botswana's population of just over 2 million, 63.9% live in cities, towns and urban villages, while the rest of the population live in rural settings (including rural villages, cattle posts and farms).[6] Rural areas in Botswana are typically characterised by sparse populations, with increased population densities witnessed predominantly around urban centres.[7] Some of these urban areas have experienced rapid growth over the past two decades, placing considerable pressure on local resources.[8] This strain is particularly evident in the areas encircling the capital, Gaborone. Rural regions, while less densely populated, rely heavily on small-scale agriculture that often employs traditional methods. This direct dependence on natural resources, combined with their undiversified economies, renders these rural communities especially susceptible to resource-related threats, such as those posed by climate change.

Gender and youth

6. Botswana has made notable progress over recent years in achieving the Sustainable Development Goals (SDGs). Despite this progress, women and girls still face violence and disparities in areas such

[1] UNDP. 2023. Human Development Index. https://hdr.undp.org/data-center/human-development-index#/indicies/HDI. Date of access: 5 Jul 2023

[2] World Bank. 2023. The World Bank in Botswana: Overview. https://www.worldbank.org/en/country/botswana/overview#1. Date of access: 5 Jul 2023.

[3] Statistics Botswana. 2023. Gross Domestic Product: First Quarter of 2023. Gaborone, Botswana.

[4] World Bank. 2023. Gini index – Botswana. https://data.worldbank.org/indicator/SI.POV.GINI?locations=BW. Date of access: 29 Jun 2023.; UNDP. 2021. Inequality in Botswana: An analysis of the drivers and district-level mapping of select dimensions of inequality.; International Labour Organization. 2023. "Labour Force Statistics database (LFS)". Date of access: 29 Jun 2023. https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS?locations=BW.

[5] Statistics Botswana. 2022. Quarterly Multi-Topic Survey Quarter 4. Gaborone, Botswana

[6] Statistics Botswana. 2018. Botswana Demographic Survey Report 2017. Gaborone, Botswana.

[7] Statistics Botswana. 2022. Population and Housing Census 2022. Gaborone, Botswana.

[8] Gwebu, T.D., Baakile, T., Mphetolang, G. 2011. Population Distribution, Structure, Density and Policy Implications in Botswana. Population & Housing Census 2011 Dissemination Seminar.

as political participation and representation, land tenure, financial inclusion, and employment.[9] In accordance with the 2021 Gender Inequality Index, Botswana ranks 117th out of 170 countries, underlining the need for targeted measures to address these inequalities.[10]

7. In rural areas, where livelihoods primarily depend on agriculture, these disparities are more pronounced. Men dominate the traditional agriculture sector, in terms of persons participating in farming and farm workers respectively standing at 63.1% and 95% male in 2019. Additionally, the participation of youth in farming is low with only 5.3% of persons participating in the sector being between the age of 15 and 35.[11] Nevertheless, in 2010 women owned more arable land in Botswana than men at 58% and 42% respectively and it was found that women taking part in the governmental Integrated Support Programme for Arable Agriculture Development (ISPAAD) invest more time and resources to contribute to food production at the household level as compared to men.[12]

Climate

8. As one of the world's most drought-prone countries, Botswana frequently experiences severe droughts, impacting food and water supply. Drought conditions exacerbate existing water scarcity in a country that already experiences low average annual rainfall (Figure 1) and relies on groundwater for around 49% of its freshwater supply.[13] The recent 2018/19 drought, for example, resulted in significant crop failure and cattle mortality.
9. Climatic trends over the last 30 years show that rainfall has been decreasing on both annual and monthly bases across Botswana.[14] Moreover, the number of rainy days has decreased across the country, especially in the country's drier western areas. These patterns are projected to intensify as climate change, including rising temperatures, heightened rainfall variability, and a greater frequency of extreme weather events such as droughts and floods is poised to have a profound impact on the Southern African region.[15]

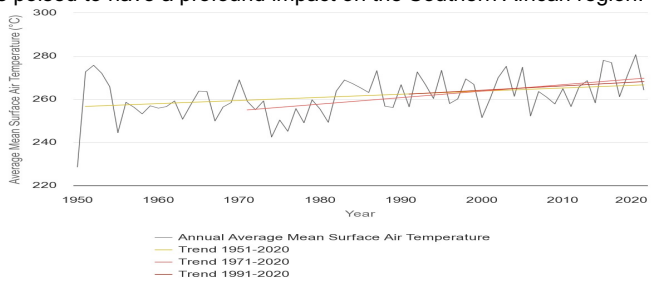


Figure 1: Average Mean Surface Air Temperature Annual Trends in Botswana, 1951-2020. Long-term and medium-term trends are significant, with >98.8% confidence[16].

[9] UNDP Gender Inequality Index (GII). Available at https://hdr.undp.org/data-center/thematic-composite-indices/gender-inequality-index#/indicies/GII. Accessed at: 8 October 2023

[10] Ibid.

[11] Statistics Botswana. 2019. Annual Agricultural Survey Report: Traditional Sector.

[12] National Climate Change Strategy for Botswana, 2018.

[13] Botswana's Third National Communication to the UNFCCC, 2019.

[14] Batisani, N. Yarnal, B. 2010. Rainfall variability and trends in semi-arid Botswana: Implications for climate change adaptation policy. *Applied Geography*. 30:483-489.

[15] Mpandeli S., Naidoo D., Mabhaudhi, T., Nhemachena, C., Nhamo, L., Liphadzi, S., Hlahla, S. Modi, A.T. 2018. Climate Change Adaptation through the Water-Energy-Food Nexus in Southern Africa. *International Journal of Environmental Research and Public Health* 15:2306.

[16] World Bank Group. 2021. World Bank Climate Knowledge Portal. Available at: https://climateknowledgeportal.worldbank.org/country/botswana

10. While Botswana has already been experiencing these impacts to some extent, climate models highlight the country as one of the African nations to experience the most severe temperature increases in the coming decades.[17] Accordingly, the Coupled Model Intercomparison Project (CMIP) Phase 6, Shared Socioeconomic Pathways (SSP) project Botswana's temperature increases as follows:[18]

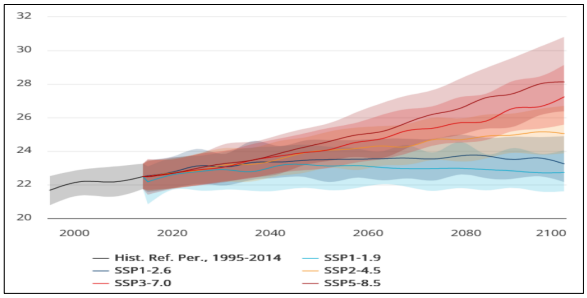
11. 

Figure 2: Multi-model ensemble mean temperature (°C) projections for Botswana.

12. Moderate emissions scenarios (SSP2-4.5) project warming of ~0.5-1.4°C in the near term (2020-2039), 1.0-2.5°C in the medium term (2040-2059) and 1.5-3.3°C in the long term (2060-2079). Warming is expected to be moderately more severe in the West and South of the country.[19]
13. Shorter term projections indicate that local warming and drying will be greater in Botswana than the global average and that the 1.5°C and 2°C temperature increase thresholds could be breached within the next 10 and 20 years respectively.[20] The expected climatic impact of these changes are summarised as follows:

Table 1: Expected climatic impacts of an average temperature increase of 1.5°C and 2°C.

Projected climatic changes[21]	**1.5°C temperature increase**	**2°C temperature increase**
Heat wave (days)	Increase by 43	Increase by 72
Annual rainfall	Decrease by 5%	Decrease by 9%
Dry days	Increase by 10	Increase by 17

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[17] Trisos, C.H., I.O. Adelekan, E. Totin, A. Ayanlade, J. Efitre, A. Gemeda, K. Kalaba, C. Lennard, C. Masao, Y. Mgaya, G. Ngaruiya, D. Olago, N.P. Simpson, and S. Zakieldeen. 2022. *Africa*. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group 11 to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [H.-O. Pörtner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegría, M. Craig, S. Langsdorf, S. Löschke, V. Möller, A. Okem, B. Rama (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 1285–1455.

[18] World Bank. 2023. Climate Change Knowledge Portal. https://climateknowledgeportal.worldbank.org/country/botswana/climate-data-projections. Date of access: 29 Jun 2023.

[19] World Bank Group. 2021. World Bank Climate Knowledge Portal. Available at: https://climateknowledgeportal.worldbank.org/country/botswana

[20] Nkemelang, T. et al. 2018. Determining what global warming of 1.5°C and higher means for the semi-arid regions of Botswana, Namibia, Ghana, Mali, Kenya and Ethiopia: A description of ASSAR's methods of analysis. https://bit.ly/2yHbWPf. Date of access: 29 Jun 2023.

[21] New, M. & Bosworth, B., 2018. What global warming of 1.5 C and higher means for Botswana and Namibia. Climate and Knowledge Development Network. https://africaportal.org/feature/what-global-warming-15c-and-higher-means-botswana-and-namibia/. Date of access: 29 Jun 2023.

14. Multiple future climate change scenarios, point to a decline in average annual rainfall, an increase in the number of dry days and longer heat wave periods as well as greater rainfall variability.[22] These anticipated climatic shifts are likely to exert significant stress on key sectors including biodiversity, agriculture, water, and energy.

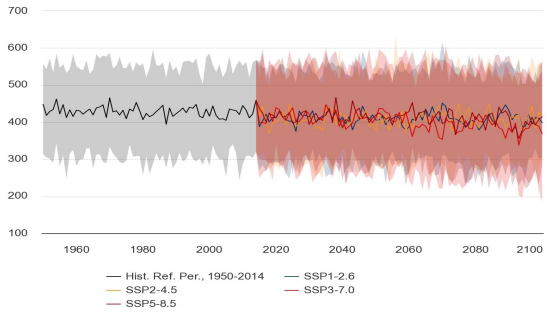

Figure 2: Projected Precipitation Botswana (Ref. Period 1995-2014), Multi-Model Ensemble[23]

Sectoral context and vulnerabilities

The Water, Energy, Food and Ecosystem nexus

15. The WEFE nexus recognizes the inextricable links between human systems of water, energy, and food security and natural systems, including land, water, and energy resources. Actions taken in one area invariably impact the others:[24]

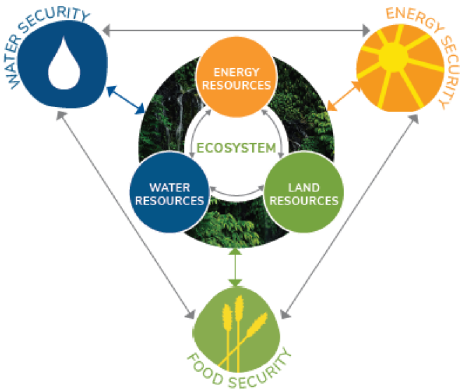

Figure 3: Interlinkages between water-food-energy security[25]

[22] Moseley, W.G. 2016. Agriculture on the Brink: Climate Change, Labour and Smallholder Farming in Botswana. *Land*. 5:21.

[23] World Bank Group. 2021. World Bank Climate Knowledge Portal. Available at: https://climateknowledgeportal.worldbank.org/country/botswana

[24] GWPSA. 2019. Fostering Water, Energy and Food Security Nexus Dialogue and Multi-Sector Investment in the SADC Region: Phase II.

[25] Ibid.

16. Consequently, adverse effects on Botswana's natural systems exacerbate existing challenges within the human systems responsible for ensuring water, energy, and food security. The knowledge, capacity, and efficiency of human systems, encompassing institutions, communities, and individuals in managing these natural systems are critical for the future social, economic, and environmental sustainability of Botswana. With climate change placing additional stress on these systems, the sustainable management of natural systems is becoming increasingly vital.

Biodiversity, land, and associated ecosystems management

17. The overutilisation of rangelands by livestock and wildlife and deforestation pose a threat to the integrity of river catchments with consequences such as increased overland runoff, increased rates of sedimentation of rivers or streams, loss of aquatic habitats and decreased recharge of groundwater basins. In the Chobe enclave where the highest concentrations of livestock are found, year to year availability of fodder dependent on rainfall and edible species of grass have been greatly reduced, creating significant challenges for farmers in the dry season as they are forced to range their beasts into the adjacent conservation areas, leading to human-wildlife conflicts and transmission of zoonotic diseases.
18. The climate change scenarios projected have the potential to affect ecosystems and species ability to adapt affecting species abundance and distribution, community assemblages and functioning, loss of genetic diversity and change in ecosystem structure and functioning. With respect to the free movement of wildlife in the Kavango-Zambezi Trans frontier Conservation Area, the most likely impact of climate change will be on the range and abundance shifts. The changing climate will stimulate species-level changes in range and abundance, life cycle and behaviour and, over time, genetic evolutionary responses. These changes will in turn be linked with changes in natural disturbance patterns and changes in ecosystem structure and function.

Food security and agriculture

19. Botswana is heavily reliant on food imports to supplement its local agricultural supply, with imports meeting as much as 90% of its food requirements in recent years.[26] However, this dependence has rendered the country particularly vulnerable to global food price fluctuations. This vulnerability has been amplified by the Russia-Ukraine war which has sparked trade disruptions and significant price increases in international energy, agricultural commodities, and fertilisers.[27] These increases are especially onerous as they build upon already elevated prices, a consequence of the value chain disruptions caused by the COVID-19 pandemic.
20. Recent statistics show that the national prevalence of moderate and severe food insecurity is on the rise and has increased from 50.8% of the population in 2018 to 53.29 in 2021 and for severe insecurity from 22.2% of the population in 2018 to 26.16% in 2021.[28] The picture looks worse when focusing on the rural population where figures for moderate and severe food insecurity was as high as 65.68% in 2020, declining slightly to 64.35% in 2021.[29]
21. Rural communities are particularly vulnerable, due to the challenges faced by small-scale traditional farming and their inability to offset these challenges with expensive imports. [30] Consequently, as climate change puts additional pressure on an already vulnerable agricultural sector, existing food

[26] Ibid.

[27] IFPRI. 2023. Food Prices: Global Crisis Country Brief Series. https://www.ifpri.org/spotlight/food-prices-war-ukraine. Date of access: 29 Jun 2023.

[28] Statistics Botswana. 2023. Prevalence of Food Insecurity in Botswana 2021/22. Gaborone, Botswana.

[29] Ibid

[30] Moseley, W.G. 2016. Agriculture on the Brink: Climate Change, Labor and Smallholder Farming in Botswana. *Land*. 5:21.

insecurity could further escalate, causing substantial disruption to livelihoods and presenting a serious threat to future sustainability and resilience.

22. Even though the agricultural sector comprises less than 2% of GDP it is vital to the livelihood of a large proportion of the population. Approximately 70% of rural households derive part or all their livelihoods from primarily rainfed, arable agriculture, making them particularly vulnerable to climate-related impacts. These farmers predominantly apply traditional agricultural methods on small farms with an average size of five hectares.[31] The agricultural sector has poor outputs, which can be attributed to various environmental and socio-economic factors.
23. The National Development Plan 11 (NDP11) review of the agricultural sector lists several reasons for low productivity, including pests, disease outbreaks, inadequate infrastructure and underutilisation of land.[32] Furthermore, factors specifically affecting crop production include low and unreliable rainfall, recurrent droughts, very high summer temperatures and relatively poor soils.[33] In addition, other socio-economic factors such as, lack of access to credit, insufficient access to affordable energy and technology and poor land and water management practices also affect crop production and potential for value chain enhancement.[34] Poor market access and inadequate linkages with distribution networks further limit the growth potential of rural agricultural economies.[35]
24. Generally, the challenges faced by the agricultural sector disproportionately affect rural communities and small-scale traditional farmers, intensifying food insecurity and nutrition problems. However, productivity indicators in the commercial sector are significantly higher than in the traditional sector even though commercial farmers cultivate less than 10% of arable agricultural land.[36] This is an indication that with the correct interventions and assistance there is much potential for improving overall sectoral outputs.
25. During dry spells and droughts, the demand for water for livestock often makes it necessary for farmers to deepen boreholes and extend pumping hours, hiking up costs for livestock rearing. Across all of Botswana, at 1.5°C global warming the cost of pumping water is expected to increase by 15%, with further increases of 19% and 24% expected at 2°C and 3°C respectively. Rainfed crop agriculture in Botswana occurs in two main agroclimatic zones, the hard veldt located in the semi-arid south zone with more fertile soil and less harsh climate conditions, and the sand veldt in the rest of the country with deep sand and little surface water. In the sand belts, poor climate and soil conditions result in the region having low cereal yields, which are expected to decrease further as the global climate warms. Average yields across the country are expected to be impacted progressively at each level of global warming with yields projected to decrease by 23-58% for maize and 11-29% for sorghum.[37] Botswana is already heavily reliant on imports to meet its cereal and grain needs, and this dependency could increase further with climate change.
26. At 1.5°C of global warming, yields in the semi-arid sand belts are expected to drop by 22% for maize and 16% for sorghum. Yield losses will increase as the temperature continues to warm with decreases of 35% and 59% for maize, and 26% and 43% for sorghum, at 2°C and 3°C respectively.

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[31] Statistics Botswana. 2015. Botswana Agricultural Census 2015: Analytical Papers. Gaborone, Botswana.

[32] Ministry of Finance and Economic Development. 2017. National Development Plan 11, Volume 1.

[33] Statistics Botswana. 2015. Botswana Agricultural Census 2015: Analytical Papers. Gaborone, Botswana.

[34] Ibid.

[35] National Development Plan 11, 2017.

[36] Statistics Botswana. 2015. Botswana Agricultural Census 2015: Analytical Papers. Gaborone, Botswana.

[37] Adaptation at Scale in Semi-Arid Regions. N.D. What Global Warming of 1.5°C and higher means for Botswana. Available at: https://assar.uct.ac.za/sites/default/files/content_migration/assar_uct_ac_za/2465/files/ASSAR_Botswana_global_warming.pdf

Water security

27. Due to its semi-arid to arid climate, Botswana is naturally water-stressed. The country has high evapotranspiration rates with low and highly erratic rainfall patterns.[38] Annual average rainfall varies from as little as 250 mm in the southwest to around 600 mm in the far northern parts of the country. Surface water resources are therefore limited and account for 45% – 65% of Botswana's total water supply. The scarcity of surface water resources become more pronounced during frequently recurring drought periods. Botswana only has a few perennial rivers in the north-western part of the country (being the Okavango and Chobe rivers) which are supplied by major rivers from neighbouring countries and therefore subject to the limitations imposed by international legislation.[39] Existing dams serve a limited geographic extent and are located mainly within the Limpopo River Basin in the east which is shared between Botswana, Mozambique, Zimbabwe and South Africa and therefore also subject to limitations of international law.
28. Except for rivers, delta, lakes and pans, surface water stock mainly comprises water held in dams where the topography allows.[40] However, due to the country's flat topography, there is limited potential for expanding current capacity or constructing additional dams.[41] Surface water resources are, therefore, situated in the north and eastern parts of the country, whilst most of the population is concentrated in the south-east, mainly around cities and towns such as the capital city, Gaborone. Accordingly, the severity of water pressure for domestic use in the south of Botswana, has necessitated the construction of the North-South Carrier water scheme, which is a pipeline transporting water 360 km southwards from the Central District.[42]
29. Due to the scarcity of surface water, groundwater plays a very important role for Botswana's water supply.[43] Many rural villages are entirely dependent on groundwater and studies suggest that over 80% of Batswana receive their water from underground sources.[44] However, groundwater resources are also limited in terms of both quantity and quality. The country's low rainfall, high evapotranspiration rates and predominantly flat topography result in low surface runoff and minimal groundwater recharge rates. Some aquifers are fossil in nature and therefore receive no recharge, while recharge rates of other aquifers display significant regional variation.[45] Additionally, various studies have markedly different estimations of recharge rates from as high as 1600 million m^3/annum to as low as 96 million m^3/annum and a better understanding of groundwater dynamics is, therefore, needed for proper management.[46] Some of the most important aquifers are also transboundary and the exploitation of these will require the cooperation of neighbouring countries.
30. Groundwater quality issues further compound the problem, with some aquifers exhibiting high salinity. [47] Furthermore, studies suggest indirect correlations between drought, sanitation, and groundwater quality, implying that water scarcity and affordability may push communities towards

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[38] Botswana's Third National Communication to the UNFCCC, 2019.

[39] Protocol on Shared Watercourse Systems in the Southern African Development Community, 2000.

[40] Akinyemi, F.O., Babatunde, J.A. 2019. Potential impacts of global warming levels 1.5 °C and above on climate extremes in Botswana. *Climatic Change*. 154:387-400.

[41] GWPSA. 2022. Fostering a Water, Food and Energy Security Nexus Dialogue and Multi-Sector Investment in the SADC Region: Botswana WEF Nexus National Dialogue Background Paper. Gaborone, Botswana.

[42] Akinyemi, F.O., Babatunde, J.A. 2019. Potential impacts of global warming levels 1.5 °C and above on climate extremes in Botswana. *Climatic Change*. 154:387-400.

[43] Davies, J., Spear, D., Omari, K., Morchain, D., Urquhart, P., Zaramba, J. 2017. Background Paper on Botswana's Draft Drought Management Strategy. *Adaptation at Scale in Semi-Arid Regions*. University of Cape Town. Cape Town, South Africa.

[44] National Climate Change Strategy for Botswana, 2018.

[45] Ibid.

[46] Botswana's Third National Communication to the UNFCCC, 2019.

[47] Ibid.

using pit latrines instead of flush toilets, thereby risking groundwater contamination through leaching. [48] Overexploitation therefore presents a serious risk, while climate change-related contamination also looms as an imminent threat.

31. In terms of climate change impacts, the frequency, intensity, and unpredictability of climate change related disasters such as droughts and flash floods are expected to worsen. Climate change is expected to increase flash flooding in northeast Botswana, and drought in already arid northern- and western Botswana.[49] Generally, it is foreseen that groundwater resources will receive additional pressure due to the increasing scarcity of surface water resources. Accordingly, Botswana's Third National Communication to the UNFCCC, 2019, indicates that climate change will affect groundwater through increased abstraction and reduced recharge rates stemming from a combination of more frequent droughts, reduced inflow into dams, inflow is expected to decline by as much as 16% by 2050, and increases in evapotranspiration which will result in a higher reliance on groundwater resources.
32. Key to adaptation in the water sector will be data-driven demand-side management, characterised by judicious water use and a strategic emphasis on informed and efficient groundwater supply to offset the diminished surface water availability. Given their high dependence on rainfall for agricultural livelihoods, Botswana's rural communities are particularly vulnerable, as they primarily depend on rainfed arable agriculture and on groundwater for livestock watering and domestic needs.[50]

Energy

33. Botswana has made tremendous progress over the last decade in becoming self-sufficient in its electricity needs. In the past, the country imported almost 80% of its electricity from neighbouring countries. After the commissioning of two coal-fired power plants, Botswana's installed generation capacity stands at 732 MW against a peak demand of 678 MW with an additional capacity of 160MW from two diesel-generated peaking plants. However, due to various challenges these power stations haven't been able to operate at full capacity since 2018 and therefore local generation still does not meet the local demand. The country augments these shortfalls through imports which are costly and compromises the country's energy security.
34. Botswana is heavily reliant on fossil fuels for its energy needs. Coal is the main source of electricity generation, followed by diesel. However, access to electricity remains limited, with the grid-connected coverage of urban areas standing at 75% and rural areas at 57%.[51] In the case of farms, which are often in remote settings, only about 17% are grid connected. In addition, even if there is access to electricity, many households' resorts to burning cheaper biomass to avoid paying high electricity prices. [52] Accordingly, wood is predominantly the fuel of choice for cooking (72.6%) and heating (51%) in rural villages. Excessive harvesting of fuel wood has led to a continuing decline in forest growing wood stock, which poses a serious threat to the protection of biodiversity and ecosystem services.[53] In addition, biomass burning contributes to health problems associated with

[48] McGill, B., Altchenko, Y., Hamilton, S.K., Kenabatho, P.K., Sylvester, S.R., Vilholth, K.G. 2019. Complex interactions between climate change, sanitation, and groundwater quality: a case study from Ramotswa, Botswana. *Hydrogeology Journal*. 27:997-1015.

[49] National Climate Change Strategy for Botswana, 2018.

[50] Akinyemi, F.O., Babatunde, J.A. 2019. Potential impacts of global warming levels 1.5 °C and above on climate extremes in Botswana. *Climatic Change*. 154:387-400.

[51] Botswana's Third National Communication to the UNFCCC, 2019.

[52] Sustainable Energy for All. 2010. Botswana: Rapid Assessment and Gap Analysis. https://www.se4all-africa.org/fileadmin/uploads/se4all/Documents/Country_RAGAs/Botswana-Rapid-assessment-Gap-Analysis-Final.pdf. Date of access: 29 Jun 2023.

[53] Forest Conservation Botswana. 2013. Forest management and use in Botswana: brief situation analysis and options for the Forest Conservation Strategy. Background paper Workshop on 'Options for Forest Conservation Strategy Botswana'.

the inhalation of fine particulates. Improving access to electricity is, therefore, a key element for reducing poverty and disease, enhancing food and water security, and protecting biodiversity.

35. The energy sector is poised to face multiple challenges due to climate change. Rising temperatures could compromise the cooling capacities of power stations, potentially affecting both generation and transmission.[54] Moreover, prolonged periods of heightened temperatures will likely drive up the demand for cooling solutions, which could, in turn, increase electricity demand and subsequently raise prices for consumers. Additionally, the anticipated climate trends could elevate maintenance and repair costs for power and energy infrastructure and pose disruptions to the power supply.[55]
36. Effective energy generation, transmission and expanded use is critical to the country's overall development agenda and to build climate resilience. As proposed in Botswana's Vision 2036, this is to be achieved through transforming the energy sector by means of renewable energy and energy efficiency technologies that enhance energy management while minimising greenhouse gas emissions. In terms of renewable energy, Botswana has tremendous potential for solar energy utilisation. Roof Top Solar guidelines have been implemented since 2020 and residential, commercial, and industrial entities can generate power from solar photovoltaic (PV). Other renewable energy resources include biogas and wind.

Problem statement

37. The livelihoods of small-scale, rural farmers and communities in Botswana are growing increasingly vulnerable to the multifaceted impacts of climate change on both human and natural systems. Adverse effects on Botswana's natural systems exacerbate existing challenges within the human systems responsible for ensuring water, energy, and food security.
38. Increased water scarcity, elevated temperatures, and evapotranspiration rates as well as more frequent and intense drought episodes are poised to exacerbate impacts on an already struggling traditional agricultural sector. These impacts compromise farmers' ability to grow crops, rear livestock and feed their communities, leading to increased water and food insecurity.
39. The increasing frequency of droughts, which result from decreasing average annual rainfall and greater rainfall variability leads to a growing need for groundwater for agricultural and domestic use. However, the increasing importance of groundwater exacerbates the issue of access to reliable and affordable electricity. Electricity is not only essential for powering water pumps and irrigation systems but also critical for establishing an efficient agricultural value chain. This includes the processing of agricultural products like solar crop drying and grain milling – and cold storage, which helps to reduce wastage, increases the shelf life of perishable goods, and may improve market access and income potential.
40. However, in Botswana, access to electricity is limited, only about 17% of farms are connected to the national grid. In addition, electricity is relatively expensive which may lead to maladaptive practises. Therefore, even those with access to electricity, often resort to burning biomass to avoid paying high electricity prices. In rural areas, fuel wood is the predominant energy source for cooking and heating. This reliance on wood contributes to forest degradation and the associated biodiversity loss. Moreover, burning biomass releases fine particulates that pose serious health risks, often leading to respiratory problems. Lastly, the impacts of water scarcity and limited electricity access are aggravated by unsustainable land and water resource management practices such as poorly managed tilling, and livestock grazing practices which reduces the ability of production systems to recover and gradually decrease soil nutrient loads. Improving management practises and access to electricity is,

[54] World Bank. 2021. Climate Risk Country Profile: Botswana. https://climateknowledgeportal.worldbank.org/sites/default/files/2021-05/15721-WB_Botswana%20Country%20Profile-WEB%20%281%29.pdf. Date of access: 29 Jun 2023.
[55] Ibid.

therefore, crucial for reducing poverty and disease, enhancing food and water security, and protecting biodiversity.

41. Small-scale, rural farmers and communities in Botswana are particularly vulnerable as they lack the knowledge, technical and technological capacity, and financial resources to implement the necessary adaptation measures. Consequently, urgent intervention measures are required to address these shortcomings, focused on building climate resilient WEFE systems which can ensure that Botswana achieves social, economic, and environmental sustainability. More sustainable concrete adaptive solutions are needed, however there is a limited implementation of a coordination framework that supports financing and implementation of adaptive initiatives.

Alternative solution

42. To effectively address climate change impacts on vulnerable rural livelihoods, strengthened and coordinated human systems that ensure water, energy, food, and ecosystem (WEFE) security are essential, emphasising the importance of harnessing cross-sectoral synergies and interlinkages. Under the proposed project, activities will focus on ensuring that existing water and land resources are adequately managed to ensure food security and economic productivity for Botswana under the impacts of climate change. These activities will seek to enhance the efficiency in the way natural resource inputs in food production (namely water, energy, and land) are used. The vision that the proposed project targets is that local smallholder farmers in Botswana can effectively contribute towards sustainable food security, using climate-smart technologies and practices and renewable energy solutions, while building adequate livelihoods. Importantly, ensuring a coordination national framework for concrete adaptation activities will be critical in achieving cross-sectoral synergies.
43. The proposed project will address four barriers (climatic and non-climatic) to the implementation of the alternative solution.

Barriers to adaptation

44. Barriers to the implementation of the alternative solution include i) Limited technical and technological capacity in rural communities for sustainable, climate resilient land and water resource management and diversification of livelihoods; ii) limited institutional capacity to drive a climate adaptive catalyst framework and for intersectoral and integrated management of land and water resources; iii) limited knowledge and applied research for evidence-based resource management and decision-making; and iv) inadequate access to finance for building climate resilience.

Barrier 1. Limited technical and technological capacity in rural communities for achieving social, economic, and environmental sustainability through climate resilient land and water resource management and diversification of livelihoods.

45. Approximately 70% of rural households rely on dry land arable agriculture for their livelihoods. Small-scale subsistence farming, using conventional farming methods, is the main economic activity of these rural households. However, the agricultural sector faces several challenges that contribute to poor outputs, including disease outbreaks, insufficient infrastructure, and inefficient land use, as highlighted by the National Development Plan 11 (NDP11). These factors have led to a rising prevalence of moderate and severe food insecurity nationwide. Women have been found to invest more time and resources than men to contribute to food production at the household level and are disproportionately affected within this context.
46. In addition to these challenges, insufficient access to electricity limits many rural farmers' capacity to adapt to climate change by using technological solutions like climate-smart irrigation systems. This insufficient access also limits opportunities to improve value chains and livelihood diversification. Another impact of electricity shortage is that it exacerbates ecological strain, as households' resort

to harvesting wood for energy needs.

47. Furthermore, agricultural extension services have insufficient technical capacity, resulting in ineffective training and awareness programmes for climate-resilient agricultural practices in rural communities. Despite various interventions, there is a prevailing challenge with sustained intervention follow-up and fostering a culture of community ownership. Consequently, government assistance has not yet catalysed the transformative change necessary for building resilient rural communities.

Barrier 2. Limited institutional coordination in the human system driving WEFE security.

48. Climate change exerts wide-ranging, cross-sectoral impacts on water, energy, agriculture, and ecosystems in Botswana. However, the country lacks a harmonised policy and legislative framework, hindering intersectoral coordination, integrated planning, and inter- and intra-ministerial collaboration. Consequently, it prevents the identification of potential synergies and trade-offs and poses a risk of duplicating efforts. Uncoordinated strategies undermine the alignment of government priorities, resulting in inefficient resource allocation, which leads to missed opportunities for maximising resource synergy, in development.
49. At the community level, local adaptation and application of national policy and legislation is inadequate. Under-resourced agricultural extension services exacerbate local adaptation efforts, as organisations often have limited expertise to provide adequate adaptive support to rural farmers.

Barrier 3. Limited knowledge and applied research for evidence-based resource management and decision-making.

50. In Botswana, there is no national platform to articulate and align research priorities with on-the-ground challenges. This results in an insufficient knowledge base for adaptive, WEFE-integrated natural resource management and decision-making. This knowledge gap hinders effective management and deters the public and private funding and investment needed for sustainable initiatives. Therefore, there is an urgent need for applied research and monitoring of initiatives, facilitating learning, creating awareness, and demonstrating the benefits of successful WEFE-integrated intervention measures, which could then be upscaled.

Barrier 4. Inadequate financial sustainability for building climate resilience

51. Technological and infrastructural development is typically characterised by high initial costs, which are offset by lower annual expenses. However, many small-scale farmers in Botswana are unable to meet the upfront capital requirements. This challenge is compounded by underdeveloped financial mechanisms, credit facilities and viable investment avenues to secure the necessary funds.
52. Inadequate governmental budgetary prioritisation and a lack of emphasis on allocating public resources for climate change adaptation initiatives amplify these financial constraints. Deficits in financial and resource allocation largely result from the fragmented approaches and knowledge deficits described in barriers 2 and 3. Notably, there is no established system for monitoring government spending directed towards fostering climate resilience. Available funding is frequently allocated to sporadic support initiatives rather than catalysing transformative change by building community resilience to adapt to the effects of climate change.

Project Objectives:

The main aim of the proposal is to promote evidence-based gender-responsive concrete adaptive solutions to address the climate impacts in Botswana. Whilst enhancing a multi-sectoral national climate adaptation coordination framework that facilitates the implementation and financing of the identified initiatives.

This will be achieved through the following objectives:

a) Strong knowledge base built, through a multi-stakeholder process, to provide evidence and support decision-making for concrete actions that promote climate-change adaptation for WEFE security, gender equality and social inclusion in vulnerable rural communities.
b) Enhanced ability to coordinate an integrated systems-based approach strengthening the resilience of WEFE natural resource assets in response to climate change impacts.
c) Enhanced understanding of financing needs and financial sustainability structures to support upscaling of climate change adaptation interventions that strengthen climate resilient WEFE systems in rural communities.
d) Increased awareness and capacity of the human system built to address the current and future impacts of climate change on WEFE systems through the promotion and development of climate-smart products and services targeting rural communities.

The objectives will be implemented through four components:

Component 1: Strengthening the enabling environment to enable coordination in implementing and upscaling concrete adaptation actions promoting climate-resilient land and water resources management.

Component 2: Building gender-responsive climate resilient systems through targeted WEFE security interventions in vulnerable rural communities.

Component 3: Facilitating access to adaptation finance.

Component 4: Strengthening understanding of climate risks and the importance of a climate resilient WEFE nexus approach in Botswana.

Target group: The target group of the project includes smallholder farmers, women, youth, marginalised communities, and vulnerable households. These groups, totalling around 20,000 direct individuals, the project will target 40% women, 30% youth and 5% vulnerable groups , approximately 100,000 households will benefit from tailored interventions designed to enhance climate resilience, improve livelihoods, and promote sustainable development.

Target areas. Field-level interventions will take place in three sites i) Sese village in the southern district, ii) Omawenon village in the Kgalagadi district and Mahalpye in the central district. These areas represent the broad spectrum of Botswana's climatic and ecological diversity, ensuring that the project addresses a wide range of climate impacts and adaptation needs. These areas have been identified as highly vulnerable to climate variability and extremes, such as droughts, floods, and water scarcity, making them priority targets for adaptation interventions. The regions include key agricultural and pastoral areas vital to Botswana's economy and food security. The selected regions are home to marginalized and vulnerable communities, including vulnerable populations, women-headed households, and smallholder farmers, who will benefit significantly from targeted adaptation measures. Successful adaptation strategies implemented in these regions can serve as models for other parts of Botswana, facilitating the scaling up of best practices and lessons learned.

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Project Components and Financing:

Project Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1: Strengthening the enabling environment to strengthen coordination in implementing and upscaling concrete adaptation actions promoting climate-resilient land and water resources management.	Output 1.1: A national multisectoral stakeholder structure (MSS including 200 stakeholders, from government agencies, NGOs, women and youth groups and local communities to coordinate and implement t climate-resilient integrated natural resource plans established.	Outcome 1.1: Enhanced gender responsive intersectoral coordination and integration of inclusive climate resilient practices .	1,500,000
	Output 1.2: A gender responsive policy and legislation review resulting in updated policies and actionable strategies for climate resilient WEFE system conducted benefiting 3000 women and marginalised groups.	Outcome 1.2: Improved policy framework supporting climate adaptation and gender equality.	
	Output 1.3: National and sub-national centres and networks trained and equipped with specific skills and resources to respond to climate change impacts.	Outcome 1.3: Enhanced capacity of national and sub-national centres and networks to effectively address and mitigate the impacts of climate change.	
	Output 1.4: A gender sensitive monitoring and evaluation strategy (MES) and monitoring plan with specific indicators for resource availability, resource use efficiency and climate impacts on land-use water resources developed and implemented and monitored annually.	Outcome 1.4: Effective tracking of adaptation efforts Improved understanding of baseline situation and progress made towards climate-resilient land and water resources management and land-use planning.	
	Output 1.5: A knowledge management and awareness strategy (KMAS) to promote applied research, collect and disseminate information on climate impacts on land-use and water resources and support the adoption of climate resilient management interventions developed and implemented.	Outcome 1.5: Enhanced capacity for knowledge sharing and awareness-building regarding climate impacts on land-use and water resources, as well as the effective implementation of climate-resilient management initiatives.	
	Output 1.6: A knowledge management platform under which to gather and disseminate information on the implementation of climate-resilient land and water management initiatives developed.		
Component 2: Building gender-responsive climate resilient systems through targeted WEFE security interventions in vulnerable rural communities	Output 2.1: Targeted population groups including women and youth participating in appropriate adaptation responses and risk reduction awareness activities through access to climate resilient innovative technology and infrastructure established (200 solar-pumps, wastewater reuse, aquifer recharge, solar desalinisation in 10 villages).	Outcome 2.1: Enhanced resilience of key population groups, especially women and youth, through climate-resilient technologies and strengthened natural resource management, fostering sustainable adaptation to climate change.	4,216,977
	Output 2.2: Natural WEF resources assets improved to withstand conditions resulting from climate change through, sustainable land management (SLM), climate smart agriculture (CSA) and		

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	integrated water resource planning implemented on 3000 hectares at various governance levels.		
Component 3: Facilitating access to adaptation finance	Output 3.1: A catalogue of financing sources developed and access to finance identified through building capacity and raising awareness. Output 3.2: A tool to track public expenditure on climate change adaptation developed or adopted.	Outcome 3.1: Enhanced comprehensive financial framework for climate change adaptation, encompassing a catalogue of financing sources, a tool for tracking climate adaptation expenditure, strategic recommendations for aligning finance with climate priorities, and engagement of potential investors in water-energy-food-ecosystem (WEFE) adaptive measures.	1,200,000
Component 4: Strengthening understanding of climate risks and the importance of a climate resilient WEFE nexus approach in Botswana	Output 4.1: A subnational impact analysis assessing future surface and groundwater resource availability, crop yields and future water demand conducted. Output 4.2: Climate-resilient WEFE nexus scenarios that outline food, water, and energy security under climate change impacts developed. Output 4.3: Awareness-raising to enhance awareness of the future impacts of climate change and the need for climate-smart practicess and technologies conducted.	Outcome 4.1: Improved awareness of the future impacts of climate change and the need for climate-smart products and services enhanced.	1,500,000
5. Project Execution cost			799,613
6. Total Project Cost			9,216,590
7. Project Cycle Management Fee charged by the Implementing Entity (if applicable)			783,410
Amount of Financing Requested			10,000,000

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Projected Calendar:

Milestones	Expected Dates
Start of Project Implementation	01/01/2025
Mid-term Review (if planned)	01/07/2027
Project Closing	01/07/2030
Terminal Evaluation	01/03/2030

PART II: PROJECT JUSTIFICATION

A. Describe the project/programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.

53. The identified barriers to climate adaptation will be addressed through of the identified components. Key in addressing this for the project, will be to ensure climate change impacts on the water, food, and energy systems, addressing both the human and natural systems simultaneously.

54. To achieve Component 1 the project will strengthen a Multisectoral Stakeholder Structure (MSS) that will set the national coordination framework, strengthen the enabling environment and guide implementation of activities for component 2 that will inter alia be based on the AF Environmental and Social Policy as well as the AF Gender Policy. The gender policy will address inequalities and ensure women and marginalised groups are beneficiaries. The national coordinating framework is driving recommendations and strategies for enhanced enforcement of policies and laws, setting technical standards, and ensuring monitoring of concrete adaptive projects. The national coordination framework strengthened through the inclusive MSS will among other things facilitate the development of the knowledge base that will provide the evidence to support decision-making. It will also increase the understanding of the financing needs and limitations through component 3 and enable the tracking of national public expenditure on climate change adaptation. Component 3 will further allow for the identifying of private sector and international donor financing opportunities for upscaling existing activities promoted under component 2 and/or new adaptation initiatives beyond the scope of AF project funding after the end of the AF project cycle. To this end, under component 4 the project will promote climate change research that will help in identifying critical climatic adaptive needs and priorities that will require financing.

55. By partnering with local stakeholders, facilitating both human and institutional capacity building, knowledge generation and learning through dissemination and awareness raising amongst small-scale farmers, including women and youth and other relevant stakeholders, the project will showcase technical success, strengthening the enabling environment and facilitating access to finance which paves the way for future sustainability and upscaling of WEFE integrated adaptation efforts in Botswana and other countries.

Component 1: Strengthening the enabling environment to strengthen coordination in implementing and upscaling concrete adaptation actions promoting climate-resilient land and water resources management.

56. Component 1 aims to strengthen an enabling environment for implementing and upscaling gender-responsive, climate-resilient management of land and water resources. This will be achieved through strengthening the gender-responsiveness, intersectoral coordination, ensuring laws and regulations that enhance land and water resources management are enforced to support concrete adaptive activities. Institutional capacity will be built and monitoring systems enhanced. The following outcomes, outputs and activities support the implementation of Component 1.

Outcome 1:1 Enhanced gender-responsive intersectoral coordination and support.

57. Key to this is enhancing intersectoral coordination and support by establishing or strengthening a inclusive multisectoral stakeholder structure (MSS) from existing government ministries, academic institutions, cooperatives, women and youth groups and other relevant public and private sector stakeholders. The MSS will be the basis of a national coordination framework that will enhance concrete climate change adaptation actions in Botswana. This intersectoral coordination will extend to include transboundary entities, to ensure that transboundary elements are considered. The following outputs and activities will contribute to achieving Outcome 1.1: Enhanced gender responsive intersectoral coordination and support.

Output 1.1: A national multisectoral stakeholder structure (MSS) including 200 stakeholders from

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government agencies, NGOs and local communities to coordinate and implement t climate- resilient integrated natural resource plans established

A 1.1: Strengthen or establish an MSS to coordinate and support the development and upscaling of climate resilient land and water management systems in Botswana.
To strengthen or establish the MSS, a comprehensive approach involving diverse stakeholders will be undertaken. Key stakeholders will include government ministries such as the Ministry of Agricultural Development and Food Security, Ministry of Land Management Water and Sanitation Services, Ministry of Minerals and Energy, Ministry of Environment Natural Resources Conservation and Tourism, Ministry of Finance, along with academic institutions, cooperatives, women and youth groups, private sector stakeholders, NGOs, and community representatives. Initial activities will focus on stakeholder mapping and analysis to identify key participants and roles. Initial stakeholder meetings will be organized to establish the MSS, during which terms of reference (ToR) and operating procedures will be developed. To ensure ongoing coordination, regular MSS meetings will be held, facilitating the integration of climate-resilient land and water management activities across sectors.

Outcome 1:2 Enhanced enforcement of laws and policies for integrated land and water resource management and WEFE integrated land-use planning.

58. The MSS will undertake a rapid review and provide recommendations and strategies for the enhanced enforcement of policies and laws with the potential for intersectoral coordination and alignment towards integrated land and water resource management and WEFE integrated planning. The following Output and activities will be implemented through the project to achieve Outcome 1.2:
Output 1.2: A gender responsive policy and legislation review resulting in updated policies and actionable strategies for climate resilient WEFE system conducted benefiting 3000 women and marginalised groups
A 1.2: Analyse and identify the non-climatic barriers to climate resilient land and water management systems, including regulatory and policy frameworks, land conflicts, incentive systems and investment and financing needs. This will include enhancing the updates are gender-responsive.
A 1.3: Develop recommendations and strategies for enhanced enforcement of policies and laws with the potential for intersectoral coordination and alignment towards the establishment and expansion of gender-responsive climate resilient land and water management systems. The recommendations will result in updating gender-responsive policies and legislation to support climate-resilient WEFE management, resulting in at least 10 policy briefs.
A 1.4: Analyse the existing land-use planning measures on national, district and local governance levels, identifying best practises and potential areas for incorporating a WEFE-integrated approach towards strategic, adaptive management of land and water resources.

59. **Outcome 1.3: Enhanced capacity of national and sub-national centers and networks to effectively address and mitigate climate change impacts.** A capacity needs assessment will be conducted, taking into consideration the gender gaps. The assessment will include investment and finance needs, required technical competencies as well as the technological needs of various stakeholders facilitated through the MSS. The identified capacity needs will be addressed through measures such as linking stakeholders to the knowledge-sharing platform, providing tailored training, and undertaking awareness campaigns and facilitating access to finance as needed. These measures will subsequently inform the Knowledge Management and Awareness system to be established by the MSS under Output 1.5. The following output and activities will be implemented to achieve Outcome 1.3:
Output 1.3: National and sub-national centers and networks trained and equipped with specific skills and resources to respond to climate change impacts. **A 1.5:** Undertake a capacity needs assessment

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which takes into consideration gender gaps to identify the shortcomings and needs of women, youth, and marginalised groups. This will include investment and finance needs, required technical competencies, and technological needs.

A 1.6: Establish a gender-sensitive grievance redress mechanism for all project stages that provides people affected by the project with an accessible, transparent, fair, and effective process for receiving and addressing their complaints about environmental or social harms.

A 1.7: Address capacity requirements of stakeholders through relevant training, targeting at least 50% women and marginalised group, in accordance with the needs identified also as part of the monitoring and learning undertaken under activities in Output 1.4. This includes developing courses and materials for training and awareness informed by the knowledge management strategy and knowledge management platform.

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Outcome 1.4 Improved understanding of baseline situation and progress made towards climate-resilient land and water resources management and land-use planning.

60. Under its mandate, the MSS will develop, implement, and maintain a Monitoring and Evaluation Strategy (MES) and Knowledge Management and Awareness Strategy (KMAS) specific to the proposed project. This will be designed to ensure effective monitoring, evaluation, and knowledge dissemination of the project's activities. the strategies will also contribute to the broader goal of improving land and water resources management and land-use planning in Botswana by generating valuable insights and best practices that can be applied at the national level. The scope of the MES and KMAS will include refining existing systems, or, where necessary, establishing new systems to support monitoring and knowledge management.
61. A gender sensitive MES will be developed, incorporating indicators for assessing resource availability (including financial resources), resource use efficiency and climate impacts on land-use and water resources. Monitoring will be undertaken in accordance with a monitoring plan to be established by the MSS. In accordance with the monitoring plan, the MSS will continually monitor and assess the capacity needs of key stakeholders. Output 1.4 and Output 1.5 will contribute to the achievement of Outcome 1.4:

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Output 1.4: A gender sensitive monitoring and evaluation strategy (MES) and monitoring plan with specific indicators for resource availability, resource use efficiency and climate impacts on land-use and water resources developed implemented and monitored annually.

A 1.8: Develop and implement a monitoring and evaluation strategy that sets a baseline and incorporates indicators for assessing and tracking progress on resource availability, resource use efficiency and climate impacts on land-use and water resources at national, sub-national and project levels.

A 1.9: Establish a monitoring plan in accordance with which monitoring of key indicators will be undertaken continually.

A 1.10: As part of the monitoring plan, continually undertake a stakeholder capacity needs assessment involving agricultural, water, energy and environmental sector actors and public officials, to identify capacity needs to promote the development and upscaling of climate resilient land and water management systems.

62. **Outcome 1.5: Enhanced capacity for knowledge sharing and awareness-building regarding climate impacts on land-use and water resources, as well as the effective implementation of climate-resilient management initiatives.** The KMAS will facilitate the assembling and undertaking of applied, WEFE prioritised research as well as the dissemination of information pertaining to climate impacts

on land-use and water resources and effective intervention measures. In doing so, it will guide stakeholders in adopting and upscaling adaptive management interventions and inform and update capacity building (training and awareness) efforts on the most effective methods and technologies. Outcome 1.5 will be achieved through Output 1.5 and Output 1.6:

Output 1.5: Output 1.5: A knowledge management and awareness strategy (KMAS) to promote applied research, collect and disseminate information on climate impacts on land-use and water resources and support the adoption of climate resilient management interventions developed and implemented

A 1.11: Develop and implement a knowledge management and awareness strategy (KMAS) to facilitate the gathering and dissemination of information on the implementation of climate-resilient land and water management initiatives and results from the monitoring and evaluation platform.

Output 1.6: A knowledge management platform under which to gather and disseminate information on the implementation of climate-resilient land and water management initiatives developed.

A 1.12: Develop a knowledge management platform (KMP) under which to gather and disseminate information on the implementation of climate-resilient land and water management initiatives.

A 1.13: Establish and maintain a legal register to monitor and safeguard human rights, ensure compliance with all applicable domestic and international laws, and adhere to technical, social, and environmental standards and safeguards throughout the project implementation.

Component 2: Building climate resilient systems through targeted WEFE security interventions in priority areas.

Component 2 encompasses targeted interventions aimed at demonstrating the potential of climate-resilient, integrated management of land and water resources management and development to enhance rural livelihoods and resilience.

63. Twelve demonstrations pilots will serve to showcase the strengthening of climate resilient sustainable water and land management and facilitate the integration of renewable energy to support strengthening of the water and food systems. The concrete actions to support climate change adaptation in the water and food systems will be identified through a predefined criteria in compliance with AF Environmental and Social Policy as well as the Gender Policy – at least 50% of the direct beneficiaries in the pilot projects will be women and marginalised groups . A framework and methodology for the multi-criteria selection analysis will be developed by the MSS that will consider - amongst others - climate change vulnerability, potential for locally led adaptation, gender and social inclusion criteria, environmental and social criteria and risks and potential for contributing to future scaling. This will be developed in the Full Proposal development stage. Paragraph 66.The following outcomes, outputs and activities support the delivery of actions under Component 2:

Outcome 2.1: Enhanced awareness and ownership of adaptation and climate risk reduction processes at local level

64. The 12 demonstrations will seek to enhance climate-resilient natural resource-use efficiency through sustainable land and water management (SLWM), climate smart agriculture (CSA) techniques such as drip irrigation and the implementation of integrated land and water resource planning at the community level ensuring women and marginalised groups benefit . The approach extends to fostering access to affordable renewable energy, enabling agricultural value chain improvement, minimising losses, diversifying livelihoods, and boosting income. More detail on potential sites will be provided during the development of a Funding Proposal, and where sites are in transboundary

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settings, the proposed initiatives will be undertaken in line with the relevant river basin organisation to ensure coherence with transboundary agreements and develop the potential for future upscaling within the basin. The following activities under Outputs 2.1 and Output 2.2 will support the implementation of Outcome 2.1.

Output 2.1: Targeted population groups including women and youth participating in appropriate adaptation responses and risk reduction awareness activities through access to climate resilient innovative technology and infrastructure established (solar-pumps, wastewater reuse, aquifer recharge, solar desalinisation).

A 2.1: The MSS (strengthened or established under activity A 1.1), will guide a comprehensive screening and identification of priority areas for the roll-out of demonstration initiatives. Intervention areas will be selected using a multi-criteria analysis that will include screening against environmental and social criteria, prioritising areas demonstrating substantial climate-change vulnerability, targeting vulnerable rural communities, women and marginalised groups. A framework and methodology for the multi-criteria selection analysis will be developed by the MSS that will consider - amongst others - climate change vulnerability, potential for locally-led adaptation, gender and social inclusion criteria, environmental and social criteria and risks and potential for contributing to future scaling.

A 2.2: Release a public call for interested farmers within selected priority areas that will be identified through studies undertaken in Component 4.

A 2.3: Select applicants using predefined selection criteria that prioritise the involvement of those demonstrating a potential for long-term engagement in farming, while ensuring fair and equal access to targeted individuals, including marginalised or vulnerable groups, women, and youth. The selection of the candidates – will be based on a predefined criteria which will be compliance with the AF Environmental and Social Policy as well as the Gender Policy.

A 2.4: Introduce and demonstrate climate resilient sustainable land and water management approaches in 12 priority areas with small-scale producers (at least 50% being women and youth groups) based on pre-demonstration study results to enhance the water and food systems in Botswana. This may include:

a) implementing improved, water efficient irrigation systems. This will include installation of 50 drip irrigation systems to optimize water use. b) Training on conservation agriculture techniques such as minimum tillage, crop rotation, and mulching and provision of necessary tools and equipment to support adoption.

b) introducing sustainable land-management regimes. This will include training communities including women and youth on conservation agriculture techniques such as minimum tillage, crop rotation, and mulching on 3000 hectares for improved soil health, reduced soil erosion and increased agricultural productivity.

a) Provision of necessary tools and equipment to support adoption.

b) applying solar powered water pumps for irrigation. Installation of 200 solar-powered water pumps for reliable irrigation on 2000 hectares to increase water efficiency and extended irrigation coverage. This will include training of farmers, including women and youth, on the operation and maintenance of these systems.

c) developing a climate resilient water source for irrigation as dictated by the landscape including through the developing water supply points, wastewater reuse, aquifer recharge and desalinisation. Construction of 100 rainwater harvesting systems, 20 small-scale water storage facilities, wastewater reuse systems, aquifer recharge, and desalinization units in 10 villages. Local communities will be engaged in the planning and management of the systems.

d) installing solar-powered cold storage rooms for storing agricultural products. installation of 20 solar-powered cold storage rooms for agricultural products to reduce post-harvest losses and

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improved value addition with a focus on women and youth, on value addition techniques and the use of these technologies.

e) using 50 solar powered processing machines; for value addition. and
f) implementing 100 solar dryers to process agricultural products to enhance product shelf life and facilitate value addition resulting in increased economic resilience and food security.

Outcome 2.2: Increased ecosystem resilience in response to climate change and variability-induced stress

65. The ecosystem is critical to the water, food, and energy system; however, it faces stress from climate change and variability. Concrete actions must be identified and implemented in vulnerable areas to ensure natural resource use efficiency and increase ecosystem resilience. Activities under Output 2.2 contributes to increasing ecosystem resilience.

Output 2.2: Natural WEF resources assets improved to withstand conditions resulting from climate change through, sustainable land management (SLM), climate smart agriculture (CSA) and integrated water resource planning implemented on 3000 hectares at various governance levels.

A 2.5: Identified vulnerable areas incorporate land-use and water resources management planning at the local level by means of Community Based Natural Resources Management (CBNRM) based on existing best practises.

A 2.6: As part of the continual capacity needs assessment conducted under Output 1.3, consult selected farmers including women and youth groups, farmer committees and communities in identified areas to gather perspectives on farmer and community needs and challenges to improve agricultural value chains and diversify livelihoods that promote climate resilient land and water management systems.

A 2.7: Testing and Optimizing Climate-Resilient Land and Water Management Systems. Drawing from the information gathered from the continual capacity needs assessment and the KMP established under Output 1.5, test and optimise the design of various climate-resilient land and water management systems in priority areas focused on value chain improvement and livelihood diversification.

A 2.8: Updating and implementing site-specific Environmental and Social Management Plans (ESMP) which guide all project activities. During the Funding Proposal stage, the prerequisite Environmental and Social Management Framework and Plans will be developed to guide all Environmental and Social Safeguards to be implemented during project implementation. The ESMP will outline project implementation requirements in alignment with mitigation measures devised, specific requirements identified by stakeholders and the obligations outlined in the legal register under Output 1.5. The EMP will ensure adherence to human rights provisions, compliance with all pertinent domestic and international laws and upholding the requisite technical, social, and environmental standards and safeguards throughout the duration of the project in compliance with the AF Environmental and Social Policy as well as the Gender Policy.

A 2.9: Monitoring and Evaluating Ecosystem Resilience, Value Chain Improvement, and Livelihood Diversification in accordance with the monitoring and evaluation strategy and monitoring plan developed under activities from Output 1.4, continually identify capacity needs and monitor progress against key indicators including indicators. Monitoring results will feed into the KMP under activity from Output 1.5.

A 2.10: Addressing stakeholders capacity needs through training and awareness campaigns based on needs identified through ongoing monitoring to ensure stakeholders are equipped implement and sustain adaptation measures .

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Component 3: Facilitating access to adaptation finance.

Component 3 aims to address barriers to financial access faced by farmers, particularly to cover initial investment costs. This component also ensures the future sustainability and upscaling of adaptation interventions.

Outcome 3.1: Enhanced access to funding for the upscaling and future sustainability of adaptation measures.

Accordingly, a comprehensive stakeholder investment and financial needs assessment will be conducted. This assessment is an extension of the capacity needs evaluation conducted under Component 1 and is designed to identify farmers' financial limitations and requirements. These needs are, where possible, to be addressed through training and awareness campaigns undertaken in activities under Output 1.5 and Output 2.2. After this assessment, a centralised catalogue compiling diverse sources of available financing and incentives including public, private, and donor-based options will be developed. This catalogue will serve as a key resource for stakeholders, streamlining the process of identifying and leveraging existing financial streams. Facilitating financing through these sources will be given attention as part of financial capacity building activities.

As part of Output 1.1 the MSS will analyse and identify the non-climatic barriers to climate resilient land and water management systems including incentive systems and investment and financing needs. A tool will be developed or adopted to track public expenditure on climate change adaptation, which will form part of the MES established under Output 1.5. The MSS will provide recommendations with potential for synergies by identifying opportunities for additional funding and the prioritisation of climate change adaptation actions in development planning. Attention will be drawn to the need for national development planning and budgetary alignment with adaptation needs.

66. Furthermore, successful interventions demonstrated under Component 2 will serve to de-risk and thereby encourage investment, particularly from the private sector. It will be important to ensure that sustainable financing mechanisms are developed – to enhance sustainability of the climate resilient interventions. Botswana is also in the process (as of December 2023) of developing under the African Union, Africa Water Investment Programme (AIP) a Water Investment Programme for the country. It identifies funding sources looking at both international and domestic funding an exercise will be conducted to understand how these sources could support sustaining interventions beyond the project. Potential investors and funders will be connected to suitable projects and opportunities through the knowledge management platform established under Component 1.

Two outputs contribute to the achievement of Outcome 3.1:

Output 3.1: A catalogue of financing sources developed and access to finance identified through building capacity and raising awareness.

A 3.1: Undertake a stakeholder investment and inclusive finance needs assessment as part of the capacity needs assessment conducted under activity A 1.9, as well as and assessment of existing investors and funders as already identified in the Botswana Water Investment Programme. This will identify farmers' financial limitations and requirements. 10 workshops across different regions will be conducted to educate stakeholders, including women and youth groups on accessing these financing sources.

A 3.2: Develop a catalogue of sources for financing (public, private and donor) of climate resilient land and water management systems. This catalogue will serve as a key resource for stakeholders,

Deleted: Linked to this the Cubango-Okavango River Basin Fund (CORB Fund) has been identified as one such mechanism that the Botswana government can work with and draw in resources to support resilient around the Okavango Delta. The CORB Fund has been established to distribute resources from an independent fund to support climate resilient interventions designed to conserve and restore biodiversity and ecosystem functions, enhance livelihoods equitably, and ensure the environmentally sound and socially responsible development of the infrastructure and natural resources of the Cubango-Okavango River Basin

streamlining the process of identifying and leveraging existing financial streams.

A 3.3: Analyse and identify barriers to climate investment and financing needs. This will include understanding the non-climatic barriers to climate-resilient land and water management systems, including regulatory and policy frameworks, land conflicts, incentive systems, and investment needs.

Output 3.2: A tool to track public expenditure on climate change adaptation developed or adopted.

A 3.4: Develop or adopt a tool to track public expenditure on climate change adaptation. This tool will form part of the MES established under Output 1.5, ensuring consistent monitoring and reporting on adaptation financing.

A 3.5: Provide recommendations with potential for synergies and the prioritisation of climate change adaptation under development planning. These recommendations will align national development planning and budgetary processes with adaptation needs.

A 3.6: De-risk private sector investment by supporting applied research demonstrating success of adaptation measures developed through pilot studies undertaken as part of Component 2 and sharing climate risk information. The research will provide evidence to encourage private sector investment in adaptation initiatives through the sharing in the knowledge platform in Output 1.6.

Component 4: Strengthening understanding of climate risks and the importance of a climate resilient WEFE nexus approach in Botswana.

67. Under this component, the knowledge and awareness of individuals and communities on future resource scarcity because of climate change will be enhanced. The aim of this component will be to facilitate behavioural change that will facilitate the sustainable use of natural resources and promote practices that are sustainable and climate resilient.

Outcome 4.1: Awareness of the future impacts of climate change and the need for climate-smart products and services enhanced.

68. Sub-national analyses of climate change impacts on the WEFE Nexus will be conducted and they will contribute to knowledge products that will inform smart water and land use (climate-proofing supply, land-use planning, contributing to LDN targets, enhancing water use efficiency and optimising allocative efficiency), climate-smart agriculture and the use of renewable energy.
69. Additionally, existing value chains within the WEFE nexus will be analysed and strengthened for climate resilience. During the development of a full funding proposal, existing value chains will be identified and described to determine the specific needs within the country. Output 4.1, Output 4.2, and Output 4.3 will contribute to Outcome 4.1.

Output 4.1: 6subnational impact analysis assessing future surface and groundwater resource availability, crop yields and future water demand conducted.

A 4.1: Undertake 6 subnational climate impact analyses and 6 climate impact assessments to assess inter alia future resource availability in surface and groundwater, crop yields and future water demand. This will involve collecting and analyzing data on climatic trends and their impact on water resources, agriculture, and energy systems at a subnational level in collaboration with Ministry of Environment, Ministry of Water Resources, local government authorities and academic research insitutions. Baseline data on climate risks and impacts on WEFE systems at the subnational level will be collected and analyzed to identify hotspots and areas of high vulnerability. These assessments will be carried out in key regions representing diverse climatic and 6 ecological zones in Botswana.

Deleted: **A3.4:** Link potential investors and funders to opportunities through the knowledge management platform developed under Output 1.5¶
A3.5: Enhance Botswana's readiness and capacity to engage with the CORB Fund as a sustainable financing mechanism.¶

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Output 4.2: Climate-resilient WEFE nexus scenarios that outline food, water, and energy security under climate change impacts developed.

A 4.2: Based on the sub-national impact assessments develop climate resilient WEFE nexus scenarios for Botswana that outline food, water, and energy security under climate change impacts. These scenarios will inform strategic planning and decision-making to ensure resilience across the WEFE nexus.

Output 4.3: Awareness-raising to enhance awareness of the future impacts of climate change and the need for climate -smart practices and technologies conducted.

A 4.3: Strengthen existing agricultural, water resources and energy value chains to facilitate the uptake of climate-resilient production through inter alia increased value addition for local, climate-resilient production. This includes increasing value addition for local climate-smart products and ensuring that these value chains are robust and adaptable to climate impacts.

A 4.4 Develop and disseminate awareness-raising products based on the KMAS. These products will target various actors in the value chain, including producers, intermediaries, and end-users, to enhance their understanding of the future impacts of climate change and the importance of climate-smart practices and technologies.

A 4.5: Identify future trade-offs within the WEFE Nexus, particularly because of climate extremes or other shocks, and engage with stakeholders on the need for integrated approaches to minimise trade-offs and promote sustainable, climate resilient practices.

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Deleted: to enhance awareness of actors in the value chain (producers, intermediaries, and end users of WEF-Nexus products) of the future impacts of climate change and the need for climate-smart products and services.

Describe how the project/programme provides economic, social, and environmental benefits, with reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project/programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

70. The project is designed to embody a multifaceted approach to address the pressing challenges of climate change, fostering economic, social, and environmental benefits, specifically targeting vulnerable rural communities. Project outputs and outcomes conscientiously align with the Environmental and Social Policy and Gender Policy of the Adaptation Fund, ensuring a sustainable and inclusive approach to adaptation.

Economic benefits

71. **Sustainable livelihoods**: The project aims to enhance the resilience of local economies by promoting climate-smart, sustainable agriculture, water, and energy management practices. Integral to this strategy is the facilitation of improvements in the agricultural value chain, thereby optimizing income potential. Through structured training and support initiatives, community members will be empowered to enhance agricultural yields and minimize wastage. It is expected that household income in project areas will increase by 20% due to improved agricultural productivity and market access.
72. **Skills development and job creation**: By introducing new technologies and practices, the project will create job opportunities in various sectors, including the renewable energy and energy efficiency sector, and the improved agricultural value chain through enhancements in processing, packaging, and cold storage facilities. It is estimated that the project will create around 1,000 direct jobs through the installation and maintenance of solar pumps, wastewater reuse systems, and other

infrastructure. Capacity-building initiatives will be undertaken to equip community members, especially women and youth, to fully capitalize on these opportunities.

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73. **Enhanced access to adaptation finance:** The project will facilitate greater access to financial resources for the vulnerable communities, aiding them to capitalise on climate smart, adaptive technologies. This could leverage an additional USD 5 million in private investment over the project period. By de-risking investment opportunities, collaborating with financial institutions and leveraging additional funding opportunities, the project will create pathways for communities to secure necessary funding. Additionally, capacity-building endeavours will be implemented focusing on financial literacy training and nurturing an entrepreneurial spirit. This is anticipated to facilitate the emergence of new business ventures and expansion of existing enterprises.

Social benefits

74. **Community empowerment and gender equality**: The project is committed to fostering community empowerment by actively promoting community involvement through incorporating Community-Based Natural Resources Management (CBNRM) principles and gathering and building on existing indigenous knowledge. A particular focus will be given to enhancing gender equality, by encouraging the participation of women in leadership roles and project implementation teams. Approximately 8,000 women and 6 400 youth will participate in project activities, promoting gender equality and community ownership. Furthermore, since women constitute a significant proportion of Botswana's arable farmers, they stand to directly benefit from the project. Enhanced access to electricity will serve to streamline their tasks, thus freeing up time for other pursuits such as furthering education. The installation of 100 solar-powered water pumps will reduce diesel usage by 150,000 litres annually, cutting carbon emissions by 405 tons of CO_2 annually. The project will improve soil health across 500 hectares through sustainable land management practices, increasing soil organic matter by 1% annually and reducing soil erosion by 20%. reforesting will involve planting 50,000 native trees, restoring habitats for 10 key wildlife species and enhancing biodiversity conservation.
75. **Capacity building and awareness**: The programme intends to build capacity and raise awareness about climate change and its impacts as well as adaptation strategies. In this way the project aims to develop resilient communities of informed citizens who can actively participate in adaptation and mitigation strategies.

Environmental benefits

76. **Natural resource management**: The programme seeks to promote the sustainable management of natural resources through sustainable land on at least 3,000 hectares, water, and energy management practises, thereby alleviating pressure on the environment and aiding in the conservation of biodiversity. Through increased resource use efficiency and productivity of existing systems the project will reduce the strain on surrounding natural land and habitats. Furthermore, the reliance on natural woodlands for energy will be diminished through access to renewable energy sources.
77. **Climate resilience**: By fostering the adoption of climate-resilient agricultural practices and water conservation strategies, the project seeks to build communities that are more resilient to the adverse effects of climate change.

B. Describe or provide an analysis of the cost-effectiveness of the proposed project.

Component	Benefits Generated	Alternative to Project

Component 1: Strengthening the enabling environment to enable coordination in implementing and upscaling concrete adaptation actions promoting climate-resilient land and water resources management.	The AF project will enhance multi-sectoral coordination of climate adaptation concrete actions that we strengthen the water, energy, food, and environmental systems. A national coordination framework established through a Multi-stakeholder System will benefit the country towards climate resilient development. The knowledge platform will be critical in supporting holistic decision-making that will ensure risk-reduction to vulnerable communities in Botswana. By aligning with existing government structures and services, the project will seek to avoid duplicating efforts and will capitalise on established frameworks and connections. The project underscores the importance of collaborative efforts, forging partnerships with communities, local governmental bodies, and other stakeholders. By fostering partnerships, the project can leverage shared resources, knowledge, and expertise, contributing to a more cost-effective implementation.	The alternate option will be fragmented sector specific approaches without integrated coordination. The current fragmented approaches could lead to redundant projects costing an additional 20-30% due to lack of coordination. Integrated approaches can save approximately USD 500,000 annually by streamlining efforts and reducing redundancy.
Component 2: Building gender-responsive climate resilient systems through targeted WEFE security interventions in vulnerable rural communities	The project will develop concrete actions, aimed at improving livelihoods and contributing to improving the natural resource-use efficiency. The actions will allow IFAD and partners to work with national and local institutions to promote integrated water and land concrete actions addressing climate change adaptation and showcase proof of concepts that attract other potential investors upscaling climate resilient development. The project also has a strong focus on ensuring gender equality and social inclusion. The Community-Based Natural Resources Management (CBNRM) approach that lies at the heart of the project is not just a gateway to inclusivity but also a vital cost-effectiveness strategy. Engaging communities directly not only fosters a deeper understanding and nuanced approach to local issues but can potentially reduce costs by employing community labour and utilising local materials and insights instead of resorting to external contractors and suppliers.	The traditional agricultural practices use high water and chemical inputs. The drip irrigation will reduce water use by 30-50% compared to traditional irrigation methods. This not only conserves water but also reduces energy costs associated with pumping water. The use of drought-resistant crops and agroforestry can increase crop yields by 20-40%, leading to higher income for farmers and improved food security. Traditional practices may lead to crop failures during droughts, costing farmers up to USD1,000 per hectare in lost income. Employing CSA practices can reduce these losses by up to 80%, resulting in savings ofUSD800 per hectare.
Component 3: Facilitating access to adaptation finance	The project will focus on ensuring the interventions implemented by the AF support will be sustained through enhancing the understanding of funding opportunities and building strategies to access these resources. Sustainable financing mechanisms beyond the project, engaging with private sector in implementation of adaptation strategies is a critical area of support in this project. Tracking of the public expenditure will ensure that more awareness is raised around how adaptation can be systemically integrated in development planning and national budgets, withing different sectors. The project is structured to pave the way for future financial independence and upscaling by actively investing in unlocking further financing. This approach will serve to secure the current project's sustainability and lays a foundation for other vulnerable communities to independently enhance their climate resilience.	The proposed activities build on the experience from the 3 supporting partners, IFAD, FAO and GWP. The institutions have been working with different funding opportunities, and bring in experience and knowledge that will assist Botswana to leapfrog. Without this information and support from the partners. the stakeholders in Botswana will not be able to receive the proposed support and linkages to support establishment of a framework that will drive sustainable financing for the concrete actions. Resulting in relying on limited government funding and traditional credit system. By identifying and accessing multiple funding sources, the project can leverage more funds than relying on a single source. This reduces the financial burden on the government and enhances project sustainability. Training on financial literacy and proposal writing can significantly increase the success rate of funding applications, ensuring continuous investment in climate resilience. Without this measure, funding may be limited toUSD2 million annually from government sources. With diversified funding, the project can secure an additionalUSD3 million annually, resulting in a 150% increase in available funds.
Component 4: Strengthening understanding of climate risks and the importance of a climate resilient WEFE nexus	This component is critical to support behavioural change amongst stakeholders and will invest in research to ensure that the people of Botswana have a clear understanding of the impact of a resource scarce country, with depleted water, food and energy resources and dysfunction water and food systems. Future adaptation measures will be facilitated by improving the existing knowledge base through knowledge gathering, learning and dissemination processes and showcasing of successful interventions, capacity building and creating awareness	Without the AF project, the country will continue to use generic national level data and scenarios without local specificity make limited impact in changing behaviours and ensuring that concrete actions for adaptation are integrated into strategies and plans, and implemented as a matter of

Deleted: Integrated approaches to implement climate adaptation actions that will strengthen the water, food and energy systems will remain weak due to lack of capacity and robust coordination. Without knowledge to support decision-making, IFAD and partners will lack the resources to support decision makers with tools to support identification and implementation of concrete actions for vulnerable communities in Botswana who rely on depleting natural resource impacting the water, food, and energy systems.

Deleted: Without the AF project, innovative approaches strengthening livelihoods through enhancing the water, food, and energy systems to adapt to climate change would not be brought at scale to the most vulnerable. Vulnerable women and youth will be the most impacted - as they will not benefit from the training and expertise the project intends to bring to targeted communities and groups. Farmers will lose out on technological advances and sustainable practices that enhance natural resource use efficiency

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approach in Botswana	amongst stakeholders The component will develop water, energy, food nexus scenarios which will allow key stakeholders working with government to identify trade-offs that will enhance responding to the impacts of climate change. This investment will also ensure that women and youth inequalities are considered in developing solutions and identifying solutions.	urgency, Localized data and scenarios allow for more precise and effective interventions, reducing the risk of resource misallocation. Tailored approaches ensure that the specific needs of different regions are met. Understanding local climate risks helps in designing interventions that prevent or mitigate the impacts of extreme weather events, reducing economic losses. National-level data might lead to interventions that are only 50% effective due to lack of specificity. Localized analyses can improve effectiveness to 80-90%, potentially savingUSD1 million annually in avoided damages and improved intervention outcomes.

Deleted: Without the project the forward-thinking approach, prioritizing sustainable and adaptive strategies that nurture resilience and adaptive capacities within communities will be lost. This proactive stance not only helps communities become more self-reliant but also significantly reduces future costs linked to disaster management and reactive responses.

C. Describe how the project/programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national adaptation plan (NAP), national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.

Policy/ Strategy / Plan	Project alignment
National Development Plan 11, 2017-2023	● Resonates with the objectives and targets of the plan to foster sustainable economic diversification and job creation initiatives. ● Aligned with the plan's support of transitioning towards a knowledge-based economy through the infusion of climate-smart technologies and innovative approaches. ● Supports targets for reducing the number of rural households dependent on wood fuel for energy. ● Supports targets for providing access to electricity as well as developing cost effective, environmentally sustainable sources of energy. ● Supports targets for reducing undernourishment. ● Aligned with the plan's support for wastewater re-use for irrigation. ● Supports the improvement of agricultural value chains and establishing partnerships between producers and distribution networks and identifying growth potential towards economic diversification. ● Supports the improvement of agricultural infrastructure, low productivity in the agricultural sector and adapting to the effects of climate change. ● Supports the implementation of the Integrated Water and Energy Resource Management (IWERM) programme which promotes the efficient and optimal utilisation of energy and water resources.
Botswana Draft Climate Change Response Policy, 2016	● Mainstreams sustainability and climate change into development planning, hence, enhancing Botswana's resilience and capacity to respond to existing and anticipated climate change impacts. ● Promotes low carbon development pathways and approaches that significantly contribute to socio economic development, environmental protection, poverty eradication. ● Prioritises research and the use of indigenous knowledge to increase forest cover. ● Facilitates community empowerment and engagement, thereby fostering environmental protection and poverty eradication. ● Promotes alternative livelihoods and climate smart technologies.
National Climate Change Strategy for Botswana, 2018	Includes strategic adaptation interventions with targets for various sectors. Those that resonate with the project include: **Agriculture:** ● Expanding the reach of Botswana's existing Climate Smart Agriculture (CSA) programmes; and ● Providing low-cost credit, rebates, and other financial incentives to farmers for solar-power water pumps and biogas digesters. **Water:** ● Tap into technical and financial support for integrated water resource management projects by taking project ideas to project preparation and financing entities. ● Circulate and seek input to guidelines pertaining to the preparation of annual sectoral budgets to include a climate resilience water conservation, water harvesting and water efficiency line item. ● Provide low-cost credit for enterprises that invest in water harvesting, grey water recycling and re-use systems. **Forest and woodland:**

	● Strengthen the existing Community Based Natural Resources Management Programme (CBNRM) with resources to guide and implement sustainable ecosystem management using both traditional practices and forestry sector best practice. **Human settlements:** ● Introduce updated climate smart agriculture courses. ● Create a support programme to fund or subsidise the adoption of rainwater harvesting in urban and rural settlements. ● Investigate feasibility and design of a model to develop an endowment fund (possibly with contributions from private sector profit-making industries), to provide low-cost finance to climate change adaptation projects in rural settlements, drawing on lessons from established endowment funds.
Botswana's Third National Communication to the UNFCCC, 2019	● Calls to introduce subsidies on solar electricity such as: o Tax exemption on solar investment o Zero interest loans on solar investment o Part payment by the government on solar electricity tariffs
National Adaptation Plan Framework for Botswana, 2020	The project aligns with the following approaches that were established to inform and guide the development and implementation of the NAP process for the country: ● Horizontal and vertical integration ● Promoting an Ecosystem-Based Adaptation (EbA) Approach ● Community-based adaptation (CbA) ● Gender-Responsive and Human Rights Approach ● Rural and Urban Areas Planning Interfacing Approach **Institutional arrangements:** The NAP puts multisectoral institutional arrangements in place which may be harnessed by the project. This includes the National Climate Change Unit (NCCU) and the National Committee on Climate Change (NCCC). It is recommended that the NCCU be strategically placed as a directorate under the Office of the President to ensure coordination across sectoral government business. The NCCU will design an integrated strategy that will ensure horizontal integration across the various ministries and departments. The NCCC has been established as a multisectoral advisory body to the government. The committee comprises members from government departments and ministries, NGOs, academia, and the private sector. Fundamentally, the NCCC must enhance the guiding principles of robust decision-making and implementation and integrate Indigenous and Traditional Knowledge and science into the NAP process. **The project is aligned with the flowing NAP principles:** ● Inclusive participation of all stakeholders in planning and implementation: here the plan stresses the importance of the formation of subnational multisectoral committees (DCCCs) and that existing village structures such as the VDCs play an active role. ● Maximizing co-benefits from adaptation projects and programs ● Pro-poor and vulnerable group focussed: target improving the climate change awareness and knowledge of resources-poor households and vulnerable groups. In addition, there is a need to improve markets and accessibility to markets for the poor to improve their adaptive capacity with an emphasis on agricultural products. ● Improving Markets as an Imperative for Effective Adaptation: For the private sector and communities to adapt to climate change, there is a need to improve market access, especially regarding smallholder farmers and vulnerable groups. Improved accessibility to markets will reduce the vulnerabilities of many sectors and ensure that poor and vulnerable groups can sell commodities and invest in effective adaptation measures. ● Infusion of Indigenous and Traditional Knowledge and science into the NAP process. **Adaptation finance:** One of the main objectives of the project is facilitating access to adaptation finance. This aligns to the following aspects of the NAP: **Public finance:** The plan stresses the importance of mainstreaming climate change adaptation into the National Development Plan and the District Development Plans, and that it is vital that all ministries and corresponding departments, as well as local authorities, include adaptation in their planning and budgets. The plan maintains that this strategy will internally raise sufficient funding for the NAP implementation. **Private finance:** it is expected that the private sector will also play an active role in financing adaptation projects and programs through commercial banks and lending institutions. This should be done by creating an enabling environment through appropriate financial incentives. **Access to markets:** Additionally, improving access to markets will ensure that the private sector can raise resources and implement individual adaptation measures. **Donor finance:** International and South–South Funding: International funding from multilateral sources includes the Adaptation Fund, the Green Climate Fund (GCF), and the Global Environment Facility, which can be leveraged to finance the NAP process in Botswana.

National Food Security Policy (2016)	The project enhances food security by promoting sustainable land and water management practices that increase agricultural productivity and resilience to climate impacts. This will be achieved through. • Increasing crop yields through improved irrigation and soil management practices. • Diversifying crops to reduce dependency on single crops and improve dietary diversity. • Strengthening agricultural value chains to reduce post-harvest losses and improve market access.
Botswana Renewable Energy Strategy (2017)	The project promotes the use of renewable energy technologies such as solar pumps and solar-powered cold storage, aligning with the strategy's goal of increasing the adoption of renewable energy solutions mainly as a result of . • Installing solar-powered water pumps for irrigation and livestock watering. • Implementing solar energy solutions for cold storage and processing facilities. • Training communities on the benefits and maintenance of renewable energy technologies.
National Agricultural Development Policy (1991)	Sustainable agricultural practices, including CSA to be promoted, which is a key focus of the policy aims to improve agricultural productivity and resilience to climate change. The activities to support CSA will include. • Introducing CSA techniques such as drought-resistant crop varieties and conservation tillage. • Providing training to farmers on sustainable farming practices and resource management. • Establishing demonstration plots to showcase effective agricultural practices.
National Water Policy (2012)	Integrated water resource management practices will be prompted including water conservation, efficient irrigation systems, and rainwater harvesting. These practices align with the policy's objectives of sustainable water use and management and achieved through the following activities: • Implementing water-efficient irrigation systems like drip irrigation to optimize water use. • Promoting rainwater harvesting and wastewater reuse to enhance water availability. • Conducting awareness campaigns on water conservation practices.
Nationally Determined Contributions (NDC)	The Botswana NDC has a commitment to mitigating climate change and increasing climate resilience. Mitigation will be supported through promotion of solar energy. This supports the NDC to increase renewable energy use. The adaptations activities of the project aligning with the NDC includes, increasing water resources management, promotion of CSA, and strengthening community resilience. The proposed activities support the NDC to improve water security, and resilience, reducing vulnerability of the agricultural sector and empowering communities to adapt to changing climatic conditions.

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D. Describe how the project/programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

78. The project is aligned to the national laws and regulations of Botswana as summarised in the table below and will ensure that any permits or licences that are required to comply with the law are obtained. Screening of proposed activities will ensure that there is compliance with Adaptation Fund's requirements in accordance with the Fund's Environmental and Social Policy, Gender Policy as well as IFADs Environmental and Social Standards. Systems are in place to ensure that the project aligns with the relevant domestic and international laws and national technical standards as well as the Environmental and Social Policy of the Adaptation Fund. The project will develop and implement an ESMP, which will include all necessary measures to comply with the technical standards and regulations mentioned below. This plan will guide project activities, monitor compliance, and ensure that any potential negative impacts are mitigate.

79. An ESMP plan will be developed and implemented to continuously assess compliance with the technical standards. Indicators related to environmental impact, water quality, waste management, and public health will be monitored regularly. Capacity building and training on ESMP monitoring will

be undertaken to ensure that all stakeholders, including local communities and project staff, are aware of and can comply with the relevant technical standards.

National Technical Standards	Description and Project Alignments	Compliance
Environmental Assessment Act (Act 10 of 2011); Environmental Assessment Regulations, 2012	The Act sets out the list of activities, locations, and thresholds for which an environmental statement is required. It stipulates the environmental sensitive areas, and the different projects ranging from transboundary projects, waste management, energy industry, infrastructure development, processing industry, tourisms, agriculture etc. Has a direct impact on the project under Component 2.	Project activities, especially those under Component 2, wi environmental assessments to ensure compliance with the regulations. The project will work closely with the Department of Environmental Affairs to obtain the necessary approvals and adhere to mitigation measures.
Botswana Bureau of Standards	Establishes and promotes national standards to enhance trade, benefit business and protect consumers and the environment, these standards will be critical in determining technologies to be deployed.	All technologies and methodologies used in the implementation, such as solar pumps, wastewater reuse systems, and climate-smart agriculture practices, comply with the Botswana Bureau of Standards.
Waste Management Act, 1998	The Act regulates the establishment of the Department of Waste Management and Pollution Control; to make provisions for the planning, facilitation and implementation to set up systems to manage waste from being harmful; and regulates disposal of harmful waste on land. This will be critical influencing water resources and land use planning decisions.	Waste management plans, will be developed particularly in activities involving land and water use under Component 2, ensuring proper waste disposal and recycling practices are in place.
Agriculture Resources Act, 1974	The Act provides for the conservation and improvement of the agricultural resources of Botswana. Agriculture resources refer to water, soils, plant life and vegetation, animal life and fauna. Linked to proposed activities under Component 2.	Training will be done for farmers on sustainable land mana practices, demonstration plots to showcase best practices continuous monitoring to ensure adherence to these prac
Forestry Act, 1968	The Act provides for the better regulation and protection of forests and forest produce – it lists prohibited acts in forest reserves like felling, cutting, burning, removing of any forest produce. Critical for managing the natural system critical for WEFE security.	sustainable land management practices promoted by the p comply with the Forestry Act, ensuring no illegal deforesta promoting reforestation.
Public Health Act, 1981	Act is designed to maintain a good environment for the protection of human health – the act provides for the prevention of introduction of disease into Botswana.	the project will follow public health guidelines, in areas rel water and sanitation, ensuring that activities do not compr public health.
Aquatic Weed Act, 1962	Act provides for the control of aquatic weeds – it provides regulations for eradication. It aims to ensure sustainability of life especially fish in water bodies in Botswana.	
Water Act, 1968	Act defines water rights, including water servitude. It provides for governing the use of water and stipulates the provisions on every water right granted.	Necessary water rights for irrigation and other uses. The p also implement water conservation and management prac compliance with the Act.
Tribal Land Act,1968 and the Tribal Land (Amendment) Act, 1983	Act, 1968 transferred all the powers previously vested in Chiefs to allocate land to Land Boards. The Amendment in 1983 allows Land Boards after consultation to determine land zones.	Community consultations will be done o seek input and ap project activities that impact tribal land
National Policy on Natural Resources Conservation and Development	Primary goal of the policy is to increase the effectiveness with which natural resources are used and managed – so that benefits are optimised, and harmful environmental effects minimised.	The project will implement integrated water resource man practices, sustainable land management techniques, and conservation agriculture methods. Training programs and will be conducted to build capacity among local communiti stakeholders on sustainable practices.

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Deleted: Herbage Perseveration Act, 1977

Deleted: Act to prevent and control bush and other fires prevent unlawful setting of fires which by spreading can destroy lands and property.

Deleted: Atmospheric Pollution Control Act, 1971

Deleted: Empowers the government of Botswana to monitor and regulate atmospheric contaminants – the Department of Waste Management and Pollution Control has developed air quality standards.

Deleted: National Parks and Game Reserve Regulations, 2000

Deleted: Regulations provide for the conservation and of Botswana wildlife resources by giving powers to declare national parks and game reserves and manage them.

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Deleted: Fencing Act, 1962

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E. Describe if there is duplication of project/programme with other funding sources, if any.

80. While avoiding duplication of efforts, the project will leverage and build on the achievements of other past and ongoing projects and programmes implemented in Botswana. The identified projects include the following:

Projects	**Summary of project**	**Synergies with proposed project**
AfDB Programme for Integrated Development and Adaptation to Climate Change (PIDACC-Zambezi)	The overall objective was to strengthen the resilience of local communities in the Zambezi Basin to climate and economic shocks – the project is currently under development in Botswana.	This project is still under development and will approach GCF and GEF, and other windows. Botswana being a middle-income country doesn't benefit from ADF funding. Follow-up will be made during project design to see progress and ensure no duplication in same geographical areas.
GEF International Waters Integrated Transboundary River Basin Management in the Limpopo River Basin	The objective of the project is to strengthen transboundary cooperation in the Limpopo River Basin, and is implementing in four countries (Botswana, Mozambique, South Africa, and Zimbabwe)	Project covers the Limpopo Basin – there is a focus on SLM interventions however, this is confined to a single site – risk of duplication is minimum.
Green Climate Fund (GCF) funded project: *Ecosystem-Based Adaptation and Mitigation in Botswana's Communal Rangelands*	The project interventions are designed to increase the adaptive capacity of the people of Botswana to respond to the impacts of climate change in the country's communal lands.	This project does not incorporate an integrated WEFE approach and is focussed specifically on rangelands, while the proposed project will focus on arable agriculture. Further consultations will be held during project design to ensure that there is no risk of duplication.
Global Environment Facility (GEF) funded project: *Promoting Production and Utilization of Biomethane from Agro-Waste in South-Eastern Botswana.*	The project aimed to facilitate low-carbon investments and public-private partnerships in the production and utilisation of biogas from agro-waste in the districts of South-Eastern Botswana.	This project did not incorporate an integrated WEFE approach and is focussed specifically on providing renewable energy in the form of biomethane
GEF funded project: *Mainstreaming SLM in Rangeland Areas of Ngamiland District Productive Landscapes for Improved Livelihoods*	The project aimed to build institutions, policies & markets for mainstreaming SLM in managing rangelands in Ngamiland.	This project does not incorporate an integrated WEFE approach and is focussed specifically on rangelands, while the proposed project will also focus on arable agriculture
GCF funded project: *Sustainable Renewables Risk Mitigation Initiative (SRMI) Facility.*	The objective is to support countries to shift to low-emission sustainable development pathways and increase access to affordable, reliable, sustainable, and modern energy.	This project specifically focuses on supporting the uptake of renewable energy. Both projects can collaborate on promoting sustainable land management practices and building resilience to climate change. Shared focus on improving rural livelihoods through climate adaptation.
USAID's Resilient Waters Program (2019-2023)	Aims at strengthening institutions for water management, implementing water-saving technologies, and promoting community-based natural resource management.	Collaboration on water-saving technologies and community-based natural resource management could enhance the resilience of water systems. The proposed project can build on institutional capacity strengthened by Resilient Waters. There is no overlap because USAID focuses specifically on transboundary water management and biodiversity conservation, distinct from the integrated WEFE approach of the proposed project..
IFAD's Agricultural Services Support Project (2010-2018)	Supported training farmers in modern farming techniques, providing agricultural inputs, and improving access to agricultural markets.	Lessons learned from capacity-building efforts and market access strategies from Agricultural services support project can inform similar activities in the proposed project. There is no overlap with proposed project in the sense that focused on agricultural services rather than the integrated WEFE nexus approach, ensuring distinct interventions and geographic locations.

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EU's Project: Fostering Water, Energy and Food Security Nexus Dialogue and Multi-Sector Investment in the SADC Region	facilitating dialogues between water, energy, and agricultural sectors, supporting the development of integrated investment plans, and providing technical assistance to member states.	The proposed project can leverage the policy coherence and multi-sectoral investment strategies developed by the EU project. There is no overlap considering that the EU project focuses on high-level policy and investment facilitation, while the proposed project implements on-the-ground demonstrations and community-level interventions.
World Bank's Botswana Integrated Water Resources Management Project (2015-2021)	Focused on developing integrated water management plans, constructing water infrastructure, and strengthening water management institutions.	The proposed project can align with the water management plans and infrastructure developed by the World Bank project. The difference is that the World Bank project. Focused on water management infrastructure and institutional strengthening, while the proposed project integrates renewable energy and agricultural components.
FAO's Sustainable Land Management Project (2017-2022)	Trained farmers in sustainable land management techniques, implementing soil and water conservation measures, and supporting policy development for sustainable land use.	The proposed project can incorporate best practices from FAO's land management training and conservation measures. However, the FAO project's focused on land management techniques is complementary but distinct from the integrated WEFE approach of the proposed project.

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F. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

81. Improving the knowledge base for investment, upscaling and mainstreaming of integrated, climate-resilient land and water resources management and land-use planning is a central objective of the project. While this is listed as one of the direct outcomes of component 1, it is integrated throughout the project by various activities forming part of each component.
82. Central to these activities are the MES and the KMAS developed under Component 1. These strategies will serve to steer knowledge management, dissemination and awareness raising as well as capacity building initiatives undertaken as part of the project.
83. Monitoring and evaluation forms an important input to the KMP which is strengthened or developed under Output 1.4. Continual monitoring of key indicators, in accordance with a Monitoring Plan established will be undertaken for assessing and tracking progress on resource availability, resource use efficiency and climate impacts on land-use and water resources at national, sub-national and project levels. This will feed into the KMP and forms the foundation of the learning aspect of the project, which will serve to inform the local, national, and global knowledge on climate-change adaptation about effective intervention methods.
84. On a project level, the KMS and KMP will play a central role in building the adaptive capacity of various stakeholders. In accordance with the monitoring plan, the Multi-sectoral Stakeholder Structure (MSS) will continually undertake a capacity needs assessment of key stakeholders. This will include an assessment of investment and finance needs, technical competencies required as well as technological needs across various stakeholders. Based on the findings of the assessment, identified capacity needs will continually be addressed through measures such as linking stakeholders to the knowledge-sharing platform, providing tailored training, and undertaking awareness campaigns and facilitating access to finance.

85. Climate-change adaptation demonstrations undertaken as part of Component 2 is integral to the knowledge gathering, learning and dissemination process through monitoring and showcasing of successful interventions, capacity building and creating awareness amongst stakeholders. Since these demonstrations will both be informed by and feed into the KMP, they will serve an important part in laying the foundation for a regional knowledge base, essential for the upscaling and broader adoption of effective adaptation strategies.
86. Component 3 aims to gather knowledge on and address barriers to accessing adaptation finance which has been identified as one of the most pertinent challenges to the future sustainability and upscaling of adaptation interventions in Botswana. The activities under this component are designed to continually identify farmers' financial limitations and requirements and feed into the KMP via the MES. This will enable these needs to be addressed through capacity building initiatives as mentioned. Additionally, a centralised catalogue including diverse sources of available financing and incentives, including public, private, and donor-based options, will be compiled. Access to this catalogue will be given to stakeholders by means of the KMP and will serve as a key resource to streamline the process of identifying and leveraging existing financial streams.
87. On a national scale, the MSS and KMS will play a pivotal role in creating awareness and facilitating a coordinated approach to public climate-change adaptation related funding and expenditure needs. Accordingly, a tool will be adopted or developed to scrutinise public expenditure on climate change adaptation initiatives.
88. Using insights from the indicators monitored under the MES, an analysis will be undertaken by the MSS to provide recommendations on potential synergies and opportunities for additional financing to upscale the project interventions towards the prioritisation of climate change adaptation under development planning.
89. Furthermore, the KMAS also intends to address the current lack of a national research entity prioritising applied research on climate change adaptation. By identifying research needs and augmenting some of these needs through the planned demonstration interventions planned under Component 2, vital data will be contributed to the KMP. Consequently, the KMP will serve as a conduit, informing stakeholders, including private-sector investors, of the benefits and investment potential of WEFE integrated adaptation measures, thereby de-risking investment needed for future upscaling and sustainability.

G. Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy and Gender Policy of the Adaptation Fund.

90. Facilitated by the Global Water Partnership Southern Africa (GWPSA), alongside partners from the International Fund for Agricultural Development (IFAD) and Food and Agriculture Organisation of the United Nations (FAO), the project commenced its concept development phase with a series of extensive stakeholder consultation workshops. These sessions were hosted by the Global Water Partnership Botswana (GWPB) and the Ministry of Land Management, Water and Sanitation Services.
91. The initiative emerged as a continuation of the Southern Africa Development Community (SADC) Nexus Dialogue Programme, titled “Fostering Water, Energy and Food Security Nexus Dialogue and Multi-Sector Investment in the SADC Region” which is supported by the European Union. The programme is implemented by GWPSA on behalf of the SADC Secretariat.
92. Marking the inception, the inaugural Botswana WEFE nexus dialogue workshop convened on the 29th of July 2022 in Gaborone, initiating discussions for the national implementation of

this programme through a climate change adaptation project. Aiming to foster transformative change in response to the escalating demands of water, energy, and food security in the context of climate change within the SADC region, the project advocates for an integrated nexus approach. Stakeholders from various sectors in Botswana including water, energy, agriculture, and environment actively contributed to the discussions. Community engagements were gender balanced, with 46% of participants being female and 54% male.

93. The initial national dialogue workshop focused on the following key aspects:

    a) Mainstreaming an integrated WEFE nexus approach within governance and investment opportunities at both the regional and national level.
    b) Formulating concrete policy recommendations and governance frameworks that embody the integrated natural resources management approach.
    c) Identifying potential investment opportunities for multi sectoral projects at the country level.
    d) Developing innovative training tools and guidelines, alongside discussing best practices to transition the WEFE nexus approach from theory to practice.
    e) Following the initiation of the project conception, extensive dialogues were held over a period of 13 months with representatives from key ministries, GWPSA, GWPB, FAO and IFAD. A technical working group was formed between these partners to facilitate the development of this Concept Note and will continue to operate into Funding Proposal development and project implementation.

94. During this time, two workshops and site visits were held on 28 – 29 July 2023 and 29 – 30 August 2023 which were well represented by stakeholders including government departments, parastatals, financial institutions, RBO's, CSO's, Research/Academia, technical experts, and the private sector. A complete list of stakeholder engagements has been submitted as an Annex to this Concept Note

95. Engagements with government representatives from the Department of Meteorological Services, the Department of Water and Sanitation, and the Department of Energy, along with key officials from the Ministry of Agricultural Development and Food Security, played a pivotal role in shaping the national context and project design. Facilitating first-hand insights, these dialogues were supplemented with site visits to the Glen Valley Wastewater Treatment Works and with the community at the Matsoetlane Pilot Site. Women were consulted, and they expressed the need for improving food security at household level through cluster gardens cooperatives and highlighted that the use of greywater harvested from households would be a sustainable option for horticultural activities in Metsimotlhabe Village.

96. The are San, Balala and Nama peoples in Botswana[56], however there are no IPs present in the targeted areas of: "i) Sese village in the southern district, ii) Omawenon village in the Kgalagadi district and Mahalpye in the central district".

[56] IWGIA 2024

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H. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

Baseline Scenario	Alternative benefits of the Adaptation Fund Project
Impact of climate change on water, energy and food systems: Botswana frequently experiences severe droughts, impacting food and water supply. Drought conditions exacerbate existing water scarcity in a country that already experiences low average annual rainfall and relies on groundwater for around 49% of its freshwater supply. The recent 2018/19 drought, for example, resulted in significant crop failure and cattle mortality. Moreover, the number of rainy days has decreased across the country, especially in the country's drier western areas. These patterns are projected to intensify as climate change including rising temperatures, heightened rainfall variability, and a greater frequency of extreme weather events such as droughts and floods is poised to have a profound impact on the Southern African region. During dry spells and droughts, the demand for water for livestock often makes it necessary for farmers to deepen boreholes and extend pumping hours, hiking up costs for livestock rearing. Across all of Botswana, at 1.5°C global warming the cost of pumping water is expected to increase by 15%, with further increases of 19% and 24% expected at 2°C and 3°C respectively. The scarcity of surface water resources become more pronounced during frequently recurring drought periods. Botswana only has a few perennial rivers in the north-western part of the country (being the Okavango and Chobe rivers) which are supplied by major rivers from neighbouring countries	To effectively address climate change impacts on vulnerable rural livelihoods, strengthened and coordinated human systems that ensure water, energy, food, and ecosystem (WEFE) security are essential, emphasising the importance of harnessing cross-sectoral synergies and interlinkages. Under the proposed project, activities will focus on ensuring that existing water and land resources are adequately managed to ensure food security and economic productivity for Botswana under the impacts of climate change. A multi-sectoral approach under supported under Component 1 of the project will be critical in ensuring a national coordination framework that drives evidence-based decision-making and monitoring and learning is promoted. Through understanding the capacity needs required within the multi-stakeholder group, institutional capacity development will be a crucial element of the response aimed at empowering stakeholders to identify and implement concrete adaption actions. These activities will seek to enhance the efficiency in the way natural resource inputs in food production (namely water, energy, and land) are used. Component 4 of AF Project focuses on raising awareness and understanding of the impact of climate change on the water, food and energy systems, and ensuring that key stakeholders integrate climate change adaptation into their plan. This system change will require behavioural change, and the project goes a long way into building an understanding of these impacts and identifying the trade-offs that can be considered in the water and food systems.
Impact on livelihoods. Given their high dependence on rainfall for agricultural livelihoods, Botswana's rural communities are particularly vulnerable, as they primarily depend on rainfed arable agriculture and on groundwater for livestock watering and domestic needs. As climate change puts additional pressure on an already vulnerable agricultural sector, existing food insecurity could further escalate, causing substantial disruption to livelihoods and presenting a serious threat to future sustainability and resilience. Even though the agricultural sector comprises less than 2% of GDP it is vital to the livelihood of a large proportion of the population. Approximately 70% of rural households derive part or all their livelihoods from primarily rainfed, arable agriculture, making them particularly vulnerable to climate-related impacts. Small-scale, rural farmers and communities in are vulnerable as they lack the knowledge, technical and technological capacity, and financial resources to implement the necessary adaptation measures.	Consequently, urgent intervention measures are required to address these climate change impacts on livelihoods the AF project focuses on building climate resilient WEFE systems which can ensure that Botswana achieves social, economic, and environmental sustainability. Through Component 2 the project will focus on implement concrete adaptation measures that act will showcase resilience building, these actions will work towards building the resilience of communities to ensure that impacts of climate on water and food systems ae managed. Output 2.2 focuses on ensuring that the natural resources driving the water and food systems are adequately managed to build resilience against climate change impacts. The vision that the proposed project targets is that local smallholder farmers in Botswana can effectively contribute towards sustainable food security, using climate-smart technologies and practices and renewable energy solutions, while building adequate livelihoods, and are more resilient to climatic shocks. Component 3 focuses on ensuring sustainability of the interventions, and this will be through facilitating access to additional financial resources to upscale the project interventions.

I. Describe how the sustainability of the project/programme outcomes has been considered when designing the project/programme.

97. The project was conceived with a focus on economic, social, environmental, and institutional sustainability, thus fostering a long-lasting impact that extends beyond the project's lifespan. This will be realised through the following avenues:

98. Economic sustainability

- **Capacity building:** The project aims to enhance the capacity of small-scale rural farmers to adapt to climate change impacts through technical and technological innovations for sustainable land and water management. This is expected to improve resource use efficiency, yields and general agricultural viability.
- **Value chain enhancement and access to markets:** By enhancing value chains and facilitating access to markets, the project aims to increase income potential through diversified livelihoods in the involved communities.
- **Climate-resilient, independent communities:** Through proactive initiatives, the project aspires to cultivate communities that are resilient to climate changes, thus minimizing the need for reactive and costly interventions from the government in the future.
- **Mainstreaming of climate change adaptation in sectoral budgeting:** This will facilitate the inclusion of climate change adaptation strategies in national development planning, promoting the prioritisation in the allocation of government funding for adaptation.
- **Access to finance:** The project foresees the creation of funding mechanisms that would enable the continuous flow of financial resources for the maintenance and scaling up of project initiatives. The additional finance the project aims to develop is with a focus on project sustainability to a) help finance and upscale initiatives developed because of this project; and b) to help put structures in place to develop a sustainable framework for the future development and financing of climate change adaptation projects beyond this AF project-cycle.
- **Partnerships and opportunities for collaboration**: By fostering partnerships and collaborations, the project aims to attract additional funding and support for its continuity and expansion.

99. Social sustainability

- **Community engagement and ownership**: Through its CBNRM approach and continuous consultation the project will foster community ownership, encouraging participation at every stage and ensuring that the outcomes are socially accepted and embraced. This community ownership is anticipated to be a critical driver for the project's sustainability.
- **Knowledge sharing**: The project envisages establishing knowledge-sharing platforms seeking out and applying indigenous knowledge where feasible. These knowledge sharing platforms will allow for the continuous exchange of information and experiences, fostering social cohesion and communal learning.

100. Environmental sustainability

Improved resilience through resource use efficiency: The project has been designed to optimise land, water and energy resource use and minimising waste by means of climate-smart, sustainable management practises and technologies.

Conservation: By improving yields, food security and income potential for existing farmers the project will help to alleviate pressure on and reduce human encroachment into surrounding natural habitats. By providing an alternative renewable energy source pressure on natural woodlands will also be lessened.

101. Institutional sustainability

- **Capacity building**: Institutional capacity building forms a core component of the project, ensuring that institutions have the necessary skills and knowledge to continue the project's initiatives into the future.

- **Intersectoral coordination and mainstreaming:** Governance structures and platforms enhanced or established for intersectoral coordination, mainstreaming and prioritisation of climate change adaptation.
- **Policy frameworks**: The project aims to strengthen policy frameworks that promote an integrated WEFE approach to climate change adaptation, ensuring that the gains achieved are institutionalised and integrated into existing systems.
- **Knowledge management and dissemination:** The project will establish or enhance platforms for knowledge gathering and dissemination, promoting learning and future replication of effective intervention measures.

102. Through the synergistic integration of these elements, the project aims to create a blueprint for sustainability, unlocking future finance and enabling replication, upscaling, and improvement.

J. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project/programme.

103. The environment and social risk category of the project is rated as a Moderate risk (Category B) according to the Adaptation Fund's Environmental and Social Policy. The project faces several potential risks associated with its activities. Key risks include potential non-compliance with national and international laws during the implementation of integrated natural resource management practices, and unequal access to project benefits, potentially excluding marginalized and vulnerable groups during the rollout of climate-smart technologies and infrastructure. Activities promoting gender-responsive planning may encounter gender disparities, while engagements with minority groups could risk infringing on their rights and traditional practices. Implementing sustainable land and water management activities could lead to involuntary resettlement, soil degradation, and damage to natural habitats if not carefully managed. Furthermore, activities involving renewable energy installations may inadvertently increase greenhouse gas emissions and pollution. The project's health and safety initiatives may impact public health, and efforts to conserve natural resources might affect cultural heritage sites.

104.

105. To mitigate these risks, the proposed project aligns with both domestic and international legal standards, IFAD's Social Environment and Climate assessment Procedures (SECAP) guaranteeing to the principles outlined by the Adaptation Fund's Environmental and Social Policy which emphasise compliance with the law, the inclusion and protection of marginalised and vulnerable groups, and fostering gender equity and women's empowerment. This alignment extends to a focus on environmental sustainability, with dedicated efforts towards land and soil conservation, climate change mitigation, and the prevention of pollution.

106. Initiated through a national consultation process, the project will continue to be meticulously implemented and monitored in compliance with prevailing national standards and legislation, fostering a concerted approach towards environmental and social sustainability. The project intricately integrates strategies to safeguard the interests of vulnerable communities and ensures equal opportunities across genders, particularly targeting the upliftment of women in rural arable agriculture sectors.

107. During its execution, the project will uphold the highest standards in various sectors including agriculture, forestry, and water resources management. It will be characterised by a participatory and consultative process that not only heeds the concerns of local communities and authorities but is also devoted to preventing any adverse impact on priority biodiversity areas, local communities, or any identified vulnerable groups. The project will employ continuous monitoring and adaptive

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management to ensure compliance with the Adaptation Fund's Environmental and Social Policy

108. An overview of the environmental and social impacts and risks identified as being relevant to the project/programme is outlined below:

Environmental and social impacts and risks identified as being relevant to the project

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	Further assessment will be conducted for the full proposal.	Risk: Potential non-compliance with national and international legal requirements during project implementation Mitigation: The project will ensure regular consultations with legal experts and adherence to all relevant laws, obtaining necessary permits and clearances.
Access and Equity		Risk: There is potential for inequitable access to project benefits, potential exclusion of vulnerable groups. Mitigation: The project will take several transparent steps in inclusive planning that will help ensure that the benefits of the project are being distributed fairly with no discrimination nor favouritism. Project targeting will comprise targeting criteria based on gender and age quotas with targeted support for marginalised. The project will advertise broadly for the implementation of an outreach/ mobilisation strategy.
Marginalised and Vulnerable Groups		Risk: There could be potential adverse impacts on marginalised and vulnerable groups Mitigation: The project is specifically designed to cater for the needs of marginalised, vulnerable groups through social impact assessments implementing targeted measures to supports these groups and continuous monitoring. The targeted geographic areas will be determined by a comprehensive screening and identification process. Based on predefined environmental and social criteria, intervention areas demonstrating substantial climate-change vulnerability will be selected, specifically targeting vulnerable rural communities and marginalised groups. As detailed above, following the selection of intervention areas, participant selection will also be subject to meticulous screening. This process particularly aims to guarantee fair and equal access to target demographics, including marginalized or vulnerable groups, along with women and youth. To further ensure the protection and consideration of these groups, a grievance redress mechanism will be established. This will provide those affected by the project with an accessible, transparent, fair and effective process for receiving and addressing complaints about environmental or social harms which may occur during all project stages. As a result of the transparent and inclusive outreach programme including gender and youth quotas as well as the FPIC process (see indigenous peoples below), marginalised and vulnerable peoples will not be discriminated against and be given equal opportunities.
Human Rights		Risk: There is potential for human rights violation during project activities. Mitigation: The project commits to adhering to, and where feasible, advancing international human rights standard ensuring that all activities respect and promote human right. A legal register will be instituted, encapsulating rights articulated within the Universal Declaration of Human Rights. Continuous assessment of compliance will be undertaken throughout the project's lifespan. Additionally, the grievance redress mechanism initiated will facilitate procedure for lodging and resolving complaints concerning social harms or potential human rights violations that might arise at any stage of the project. The project will ensure no damage to/or loss of access to indigenous land, assets, resources, and/or cultural heritage is suffered facilitate the project will support recent Office of the High Commissioner on Human rights (OHCHR) Special Procedures and work towards helping Botswana comply with UNCHR Special Procedures, inter alia including on rights to water and sanitation. The project will conduct regular training and awareness programmes for the project staff.
Gender Equality and Women's Empowerment		Risk; There could be a risk on Gender disparities in project benefits and decision-making processes. Mitigation: Through the execution of the planned activities, both men and women will be afforded equal opportunities to participate in various facets of the project. The arrangements for targeting marginalised and vulnerable groups are clearly delineated in the intervention area selection process (as well as participant selection process. Given that the project demonstration is centred on advancing climate-resilient arable agriculture, vulnerable women and communities are particularly expected to benefit, as they constitute most farmers in these areas. Therefore, the enhancement of skills and the

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		introduction of technology to boost the resilience of rural arable agriculture is poised to significantly benefit these groups. To mitigate against deeply rooted culturally induced gender dynamics, a project Gender, and Social Inclusion (GESI) Action Plan will be developed during the project design and implemented. The project will also implement gender-responsive planning and execution, ensuring women's participation and leadership, and addressing specific needs of women.
Core Labour Rights		Risk: potential risk could be violations of labour rights, unsafe working conditions. Mitigation: The project commits to meet the core labour standards as identified by the International Labour Organization (ILO). Botswana joined the ILO in 1978 – to date it has ratified 15 Conventions of which 8 are fundamental/core, 1 is for Governance and 6 are Technical Conventions. The 8 Core Conventions are on forced labour, freedom of association, right to organise, equal renumeration, abolition of forced labour, discrimination, minimum age convention and worst forms of child labour. A legal register will be instituted, encapsulating the labour standards of the ILO as well as those prescribed by domestic legislation. Labour contracts will be drafted to ensure compliance with these laws and standards. Continuous assessment of compliance and audits will be undertaken throughout the project's lifespan. Additionally, the grievance redress mechanism will facilitate a procedure for lodging and resolving complaints concerning violations that might arise at any stage of the project.
Indigenous Peoples		Risk: Adverse impacts on indigenous communities and their rights. Mitigation: The are San, Balala and Nama peoples in Botswana, however there are no IPs present in the targeted areas of: "i) Sese village in the southern district, ii) Omawenon village in the Kgalagadi district and Mahalpye in the central district"
Involuntary Resettlement		Risk: Risk of displacement of communities Mitigation: The project will avoid involuntary resettlement wherever possible, implementing comprehensive resettlement plans when necessary, and ensuring fair compensation and support.
Protection of Natural Habitats		Risk: Damage to natural habitats and biodiversity loss.. Mitigation: This ES principle will following the AF Environmental and Social Policy in the full proposal and specifically also in the ESMP of the project document to be approved by the AF as well as the ESP risk assessment in said document. Risk assessment measures will need to be in place to ensure that each proposed project will be assessed to ensure compliance with said policy and that no project activity will take place in or near protected areas, if this is unavoidable, that appropriate measures will be taken (in compliance with AF ESP policy) to ensure that the proposed activities will not adversely impact protected areas and biodiversity conservation. An Environmental and Social Management Plan (ESMP) will be developed as part of the full project design to ensure that appropriate mitigation measures can be taken. If project activities cannot be identified and appropriately risk-assessed, then these will be considered Unidentified Sub-Projects (USPs) and will need to comply with AF USP guidance. To further ensure environmental protection, the project's legal register will catalogue pertinent protected areas or species and the relevant legislation pertaining to these will be Environmental Impact Assessment, as per the relevant legislation, these will rigorously adhere to the prescribed legal requirements.
Conservation of Biological Diversity		Risk: The project activities could impact the biodiversity Mitigation: . The project will promote conservation activities, preventing activities that harm biodiversity, and integrating biodiversity considerations into project planning
Climate Change		Risk: Contribution to greenhouse gas emissions. Mitigation: Prioritizing low-emission technologies and practices, conducting carbon footprint assessments, and implementing mitigation measures.
Pollution Prevention and Resource Efficiency		Risk: Pollution and inefficient use of resource Mitigation: Implementing pollution control measures, promoting resource-efficient technologies, and regular monitoring. The project will bring environmental benefits such as sustainable water use, sustainable land management practices.

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Deleted: The proposed project activities will not pose any significant pollution risks and no further assessments will be required.

Public Health		Risk: Adverse impacts on public health. Mitigation: The project is expected to have positive impact on public health as a result from sustainable environmental management, improves access to water, strengthened food systems. Like the ESPs on Protected Habitats and Conservation of Biological Diversity above, this risk cannot currently be assessed until project sites are identified. Please note that at full proposal measures need to be identified in the ESMP on how the project risk assessment will be compliant with AF Environmental and Social Policy when screening grant proposals to ensure that they will not take place in or near internationally or nationally protected cultural sites renewable energy, water-efficient irrigation systems etc.
Physical and Cultural Heritage		Risk: Damage to cultural and historical sites. Mitigation: Identifying and protecting cultural heritage sites, involving local communities in heritage conservation efforts.
Lands and Soil Conservation		Risk: Soil degradation, loss of productive lands Mitigation: Implementing sustainable land management practices, promoting soil conservation measures, regular monitoring and adaptive management.

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Deleted: Project area will be assessed for fragile soils and the proposed project grant categories to be identified for approval in the full proposal will not result in the loss of otherwise non-fragile soil. As the project area cannot be identified at this time further assessment will be conducted at full proposal stage and appropriate risk mitigations included in the ESMP to ensure that the AF Environmental and Social Policy will be complied with during implementation….

ART III: IMPLEMENTATION ARRANGEMENTS

109. The **Implementing Entity** for the proposed project will be the International Fund for Agricultural Development through an international implementation modality. IFAD will be responsible for the receipt and disbursement of Adaptation Fund funds to the executing entity and executing partners, as well as all monitoring and evaluation of the proposed project deliverables. Moreover, IFAD will oversee project implementation against the Environmental and Social Management Plan that will be developed during the Funding Proposal development stage and oversee the effective operation of a grievance redress mechanism. As the Implementing Entity, IFAD will be responsible for all financial and narrative reporting to the Adaptation Fund.
110. The lead **Executing Entity** for the proposed project will be the Ministry of Agricultural Development and Food Security. This ministry will host the Project Management Unity (PMU) that will be responsible for the day-to-day supervision of project activities. They will be supported by other ministries from the WEF TWG including Ministry of Land Management, Water and Sanitation Services, Ministry of Mineral Resources, Green Technology and Energy Security (MMGE), Ministry of Environment, Natural Resources Conservation and Tourism and the Ministry of Finance. Further support will be provided by technical partners that include GWPSA and FAO. Final implementation arrangements and the structure of the PMU will be determined during the development of an Adaptation Fund Funding Proposal.

A. Demonstrate how the project aligns with the Results Framework of the Adaptation Fund

Project Objective(s)[57]	***Project Objective Indicator(s)***	***Fund Outcome***	***Fund Outcome Indicator***	***Grant Amount (USD)***
Increase a strong knowledge base built, through a multi-stakeholder process, to provide evidence and support decision-making for concrete actions that promote climate-change adaptation for WEFE security, gender equality and social inclusion in vulnerable rural communities.	Number of staff trained on improved information and access to support decision-making	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses.	Indicator 2.1: Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased.	1,500,000
Increased ability to coordinate an integrated systems-based approach strengthening the resilience of WEFE natural resource assets in response to climate change impacts.	Number of stakeholders engaged and trained on understanding climate risks	Outcome 5: "Increased ecosystem resilience in response to climate change and variability-induced stress Outcome 7: Improved policies and regulations that promote and enforce resilience measures	Indicator 5: Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress. Indicator 7: Climate change priorities are integrated	

[57] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology, but the overall principle should still apply.

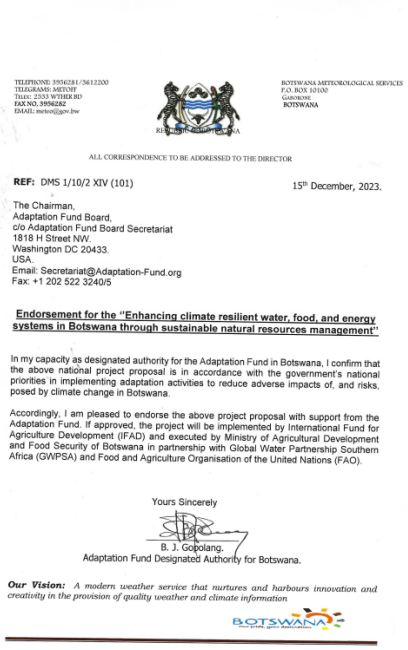
			into national development strategy	
Enhance understanding of financing needs and financial sustainability structures to support upscaling of climate change adaptation interventions that strengthen climate resilient WEFE systems in rural communities.	Number of households/populations receiving finance (gender disaggregated data)	Outcome 6: "Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	Indicator 6.1 Percentage of households and communities having more secure access to livelihood assets. Indicator 6.2: Percentage of targeted population with sustained climate-resilient alternative livelihoods	1,200,000
Increase awareness and capacity of the human system built to address the current and future impacts of climate change on WEFE systems through the promotion and development of climate-smart products and services targeting rural communities.	Number of stakeholders engaged and trained on understanding climate risks	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Indicator 3.1: Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses. Indicator 3.2: Percentage of targeted population applying appropriate adaptation responses	4,216,977
Project Outcome(s)	***Project Outcome Indicator(s)***	***Fund Output***	***Fund Output Indicator***	***Grant Amount (USD)***
Outcome 1.1: Enhanced intersectoral coordination and support	Number of staff trained to reduce risks and manage associated with climate induced socio-economic and environmental losses in WEF systems	Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	Indicator 2.1.1: Number of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) Indicator 2.1.2: Number of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector, and scale)	1,500,000
Outcome 1.2: The enforcement of laws and policies enhanced towards integrated land and water resource management and WEFE integrated land-use planning. .	Number of policies and laws enhanced	Output 7: Improved integration of climate-resilience strategies into country development plans	Indicator 7.1: Number of policies introduced or adjusted to address climate change risks (by sector) Indicator 7.2: Number of targeted development strategies with incorporated climate change priorities enforced	
Outcome 1.3: Enhanced capacity of national and sub-national centers and networks to effectively address and mitigate the impacts of climate change.	Number of staff trained to mitigate impacts of climate change. (Gender disaggregated data)	Output 2.1: Strengthened capacity of national and sub-national centres and networks to respond rapidly to extreme weather events	Indicator 2.1.1: Number of staff trained to respond to, and mitigate impacts of, climate-related events (by gender) Indicator 2.1.2: Number of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	
Outcome 1.4: Improved understanding of	Number of targeted (including women and vulnerable	Output 5: Vulnerable ecosystem services and	Indicator 5.1: Number of natural resource assets	

baseline situation and progress made towards climate-resilient land and water resources management and land-use planning. Outcome 1.5: Enhanced capacity for knowledge sharing and awareness-building regarding climate impacts on land-use and water resources, as well as the effective implementation of climate-resilient management initiatives.	groups) population with improved understanding of climate resilience	natural resource assets strengthened in response to climate change impacts including variability	created, maintained, or improved to withstand conditions resulting from climate variability and change (by type and scale)	
Outcome 2.1: Enhanced resilience of key population groups, especially women and youth, through climate-resilient technologies and strengthened natural resource management, fostering sustainable adaptation to climate change	Number of people with increased resilience	Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities.	Indicator 3.1: Number of news outlets in the local press and media that have covered the topic	4,216,977
Outcome 3.1: A comprehensive financial framework for climate change adaptation, encompassing a catalog of financing sources, a tool for tracking climate adaptation expenditure, strategic recommendations for aligning finance with climate priorities, and engagement of potential investors in water-energy-food-ecosystem (WEFE) adaptive measures	Number of beneficiaries reporting having access to finance	Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts including variability	Indicator 6.1.1: Number and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies. Indicator 6.2.1: Type of income sources for households generated under climate change scenario	1,200,000
Outcome 4.1: Awareness of the future impacts of climate change and the need for climate-smart products and services enhanced.	Number of targeted population/groups participating in climate change adaptation and risk reduction awareness activities	Output 3.1: Targeted population groups participating in adaptation and risk reduction awareness activities	Indicator 3.1: Number of news outlets in the local press and media that have covered the topic	1,500,000

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING

A. Record of endorsement on behalf of the government[2]

B.J Gopolong Senior Climatologist Department of Meteorological Services	Date: 15 December 2023



TELEPHONE: 3956281 / 3612200
TELEGRAMS: METOFF
TELEX: 2533 WTHER BD
FAX NO. 3956282
EMAIL: metod@gov.bw

BOTSWANA METEOROLOGICAL SERVICES
P.O. BOX 10100
GABORONE
BOTSWANA

ALL CORRESPONDENCE TO BE ADDRESSED TO THE DIRECTOR

REF: DMS 1/10/2 XIV (101)

15th December, 2023.

The Chairman,
Adaptation Fund Board,
c/o Adaptation Fund Board Secretariat
1818 H Street NW.
Washington DC 20433.
USA.
Email: Secretariat@Adaptation-Fund.org
Fax: +1 202 522 3240/5

Endorsement for the "Enhancing climate resilient water, food, and energy systems in Botswana through sustainable natural resources management"

In my capacity as designated authority for the Adaptation Fund in Botswana, I confirm that the above national project proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Botswana.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by International Fund for Agriculture Development (IFAD) and executed by Ministry of Agricultural Development and Food Security of Botswana in partnership with Global Water Partnership Southern Africa (GWPSA) and Food and Agriculture Organisation of the United Nations (FAO).

Yours Sincerely

B. J. Gopolang.
Adaptation Fund Designated Authority for Botswana.

Our Vision: *A modern weather service that nurtures and harbours innovation and creativity in the provision of quality weather and climate information*

BOTSWANA

B. Implementing Entity certification

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy and the Gender Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.
Implementing Entity coordinator: Mr Juan Carlos Mendoza Casadiegos, Director, Environment, Climate, Gender and Social Inclusion Division Ms Janie Rioux Senior Technical Specialist – Climate Change, and AF coordinator ECG division
Date: 2024 e-mail: j.rioux@ifad.org
Project contact person: Claus Reiner, Regional Lead Environment and Climate Specialist e-mail: c.reiner@ifad.org Ms Edith Kirumba, Country Director for Botswana e-mail: e.kirumba@ifad.org

Annex 1: Summary of stakeholder consultations and lists

29th July 2022 – WEF Nexus National Dialogue											
	Name	**Surname**	**Position**	**Organization**	**Gender**		**Name**	**Surname**	**Position**	**Organization**	**Gender**
1	Nsuku	Nxumalo	Ater Policy consultant	Pegasys	F	**2**	Larry	Swatuk	Professor-Water and Environment	University of Waterloo	M
3	Londiwe	Dlamini	Consultant	Pegasys	F	**4**	Thato	Morule	Field Implémentation Director	Conservation International	F
5	Jackson	Aliwa	Agriculture Lecturer	Botswana University of Agriculture and Natural Resources	M	**6**	Piet	Kenabatho	Chairman	GWP - Botswana	M
7	Laura	Danga	Country programme coordinator	Global Water Partnership - Botswana	F	**8**	Blessing	Mudzingwa	Hydrogeologist	Groundwater and Mineral Services (Pty)	M

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9	Leticia	Mlambwaza	Finance and Admin Officer	GWPSA	F	**10**	Alba	Orapeleng	Technical Officer	Kalahari Conservation Society	M
11	Annah	Ndeketeya	Programme Coordinator	GWPSA	F	**12**	Randall	Tseleng	Chief Executive officer	Kalahari Conservation Society	M
13	Thabile	Mgwebi		Pegasys	F	**14**	Botlhe	Matlodi	Researcher	University of Botswana	F
15	Andrew	Takawira	Senior Technical Advisor	GWPSA	M	**16**	Ditiro	Moalafhi	Professor	Botswana University of Agriculture and Natural Resources	M
17	Oteng	Mamparanyane	Contracts Director	Engineering Partners International	M	**18**	Bogadi	Mathangwane	Director	Department of Water and Sanitation	F
19	Chandapiwa	Molefe	Researcher-Gender Mainstreaming	University of Botswana	F	**20**	Nchidzi	Mmolawa	Deputy Permanent Secretary	Department of Water and Sanitation	M
21	Tafadzwanashe	Mabhaudhi	Professor-Agriculture and Climate Change	University of KwaZulu-Natal,	M	**22**	Shamiso	Kumbirai	Investments Specialist	GWPSA	F
23	Dumisani	Mndzebele	Programme Officer	SADC Secretariat	M	**24**	Thabo	Baoleki	Water Resources Engineer	Department of Water and Sanitation	M
25	Maryna	Storie	Technical Specialist	Pegasys	F	**26**	Sachin	Maskey	Senior Engineer	Water Resources Consultants	M
27	Simon	Johnson	Hydrologist	JG Afrika	F	**28**	Ikanyeng	Gaodirilwe		BIDPA	F
29	Tsaone	Mokwatso	Youth Representative	Department of Environmental Affairs	M	**30**	Ingrid	Otukile	Chief Natural Resources Officer	Department of Forestry and Fisheries	F
31	David	Parry	Policy Analist	SADC Climate Services and Related Application programme	M	**32**	Ezra	Muchibwa	GIS Specialist	EN Geomatics (Pty)	M
33	Bernice	Mutelo	Programme Officer	SASSCAL	F	**34**	Michael	Flyman	Head of Environment	FAO	M
35	Ntsiuoa Evelyn	Phakisa	Youth Representative	Department of Water Affairs	F	**36**	David	Molefha	Chief Water Engineer	Department of Water and Sanitation	M
37	Moses	NTLAMELLE	Senior Programme officer	SADC Secretariat-Energy	M	**38**	Lettie	Pitlagano	Country Manager	Digby Wells	F

39	Patrice	Kabeya	Senior Programme Officer	SADC Secretariat-Water	M	**40**	Alex	Carrasco	Programme Manager	European Union Botswana	M
41	Lapologang	Magole	Reseaecher	University of Botswana	F	**42**	Jackson	Aliwa	Lecturer	University of Botswana	M
43	Felix	Monggae		Private	M	**44**	Dineo	Gaborekwe	National Project Coordinator	FAO	F
45	Jose	Becerra	Deputy Head of Cooperation	European Union Delegation to Botswana	M	**46**	Frans	Bale	Principal Civil Engineer	Water Utilities Cooperation	M
47	Fortune	Motlhodila		Department of Water and Sanitation	M	**48**	Alex	Thaga	Agronomist	Ministry of Agriculture	M
49	Bogadi	Segole	National Chairperson	Association of Environmental Clubs Botswana	F	**50**	William	Kapele	Agricultural Engineer	Ministry of Agriculture	M
51	Joanna	Fatch	Technical Programme Coordinator	GIZ Botswana	F	**52**	Motlhalepula	Tabona	Energy Engineer	Ministry of Energy	F

28th July 2023 – 1st Adaptation Fund Concept Note Development Consultative Workshop

	Name	**Surname**	**Position**	**Organization**	**Gender**		**Name**	**Surname**	**Position**	**Organization**	**Gender**
1	Kene	Dick	Principal Water Chemist	Department of Water and Sanitation	F	**2**	Piet	Kenabatho	Chairman	GWP-Botswana	**M**
3	Saniso	Sakuringwa	Gender Focal Point	Gender Focal Point Department of Water and Sanitation	F	**4**	Debbie	Taylor	Gender Specialist	Botswana Community Based Organisations	**F**
5	Lorato	Musindo	Hydrologist	Groundwater and Mineral Services (Pty)	F	**6**	John	Molefe	Scientific Officer	Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL)	**M**
7	Ivonald	Da Cruz		IFAD	M	**8**	Thato	Morule	Independent Consultant	Private	**M**
9	Boitumelo	Mokiya	Programmes and	FAO	F	**10**	Balisi	Gopolang	Adaptation Fund Focal Point	Ministry of Environment	**M**

			Communications Assistant								
11	Mahlalele	Setlhako	Coordinator	GIZ Botswana	F	**12**	Ajit Peter	Williams	Corporate Counsel	Water Utility Cooperation	**M**
13	Keitumetse	Tsumane	Advisor	GIZ Botswana	F	**14**	Joana	Fatch	Technical Programme Coordinator	GIZ - Botswana	**F**
15	Oratile	Maswe	Principal Technical Officer	Department of Meteorological Services	F	**16**	Bernice	Mutelo	Programme Officer	SASSCAL	**F**
17	Michael	Flyman	Head of Environment	FAO	M	**18**	James	Molenga	Energy Engineer	Department of Energy	**M**
19	Neil	Fitt	Conservationist	GWP-Botswana	M	**20**	Lapologang	Magole	Researcher	University of Botswana	**F**
21	Khemoitsaletse	Phakala		Association of Environmental Clubs in Botswana	M	**22**	Dorcas	Masisi	UNFCCC Focal Point	Ministry of Environment	**F**
23	Daniel	During	Researcher	GWPSA	M	**24**	Ireen	Madilola	Principal Water Resources Engineer	Department of Water and Sanitation	**F**
25	Botlhe	Matlodi	Programme Coordinator	SASSCAL	F	**26**	Mukendoyi	Mutelo	Decision Support System Specialist	OKACOM	**M**
27	Dineo	Gaborekwe	National Project Officer	FAO	F	**28**	Maitio	Setlhake	Sector Coordinator	Botswana Watch	**M**
29	Barthlomew	Chataika	Programme Coordinator	Centre for Coordination of Agricultural Research and Development for Southern Africa (CCARDESA)	M	**30**	William	Kapele	Principal Agricultural Engineer	Ministry of Agriculture	**M**
31	Alba	Orapaleng	C.E. O	Kalahari Conservation Society	M	**32**	Annah	Ndeketeya	Programme Coordinator	GWPSA	**F**
33	Mogi	Moreki		Ministry of Agriculture	M	**34**	Laura	Danga-Kuzora	Country Programme Coordinator	GWP-Botswana	**F**
35	Orapaleng	Nareetsile	Community and Youth representative	Metsimotlhabe Community Trust	M						**F**
29th –30th August 2023 – 2nd Adaptation Fund Concept Note Development Consultative Workshop											
	Name	**Surname**	**Position**	**Organization**	**Gender**		**Name**	**Surname**	**Position**	**Organization**	**Gender**

1	Gokgakiso	Modikele	Administrative Assistant	Kalahari Conservation Society	F	**2**	Nayang	Gaobope			F
3	Oratile	Maswe	Principal Technical Officer	Department of Meteorological Services	F	**4**	Khemoitsaletse	Phakala	Public Relations Officer	Association of Environmental Clubs in Botswana	M
5	Alex	Thaga	Agricultural Engineer	Ministry of Agriculture	M	**6**	Ofentse	Lesego	Teaching Assistant	University of Botswana	M
7	Mahlalele	Setlhako	Coordinator	GIZ Botswana	F	**8**	Michelle	Bagoleng	Environmental Science student	University of Botswana	F
9	Daniel	During	Researcher	C4EcoSolutions	M	**10**	Tshepo	Sethlogile			F
11	Rene	Schieritz	Programme Development Specialist	GWPSA	M	**12**	Mogi	Moreki		Ministry of Agriculture	M
13	Piet	Kenabatho	Chairman	GWP-Botswana	M	**14**	William	Kapele	Principal Agricultural Engineer	Ministry of Agriculture	M
15	Reuben	Setlokwane	Community Representative	Metsimotlhabe Development Trust	M	**16**	Atang	Masilomangwe	Renewable Energy Engineeer	Ministry of Agriculture	M
17	Charles	Mazeruku	Biosafety Officer	Ministry of Agriculture	M	**18**	Thomas	Mogome	Chief Agronomist	Ministry of Agriculture	M
19	Ireen	Madilola	Principal Water Resources Engineer	Department of Water and Sanitation	F	**20**	James	Molenga	Energy Engineer	Ministry of Energy	M
21	David	Molefha	Chief Water Engineer	Department of Water and Sanitation	M	**22**	Laura	Danga-Kuzora	Country Programme Coordinator	GWP-Botswana	F
23	Wendy	Seone	Chief Sanitation Engineer	Department of Water and Sanitation	F	**24**	Mukendoyi	Mutelo	Decision Support System Specialist	SASSCAL	M

31 October 2023 Adaptation Fund Concept Note Validation Workshop

	Name	**Surname**	**Position**	**Organization**	**Gender**		**Name**	**Surname**	**Position**	**Organization**	**Gender**
1	Laura	Danga	Country Programme Coordinator	GWP-Botswana	F	**11**	William	Kapele	Principal Agricultural Engineer	Ministry of Agriculture	M
2	Tirelo	Ditshipi	Programme coordinator and Gender advisor	IFAD	F	**12**	Keneilwe	Semetsamere	Soil and Water Engineer	Ministry of Agriculture	F
3	Kelebeman	Maswe		Department of Meteorology	F	**13**	Alex	Taga	Agronomist	Ministry of Agriculture	M
4	Simasiku	Mukwaso	Engineer	Department of Energy	M	**14**	Annah	Ndeketeya	Programme Coordinator	GWPSA	F

5	Kene	Dick	Principal Water Chemist	Department of Water and Sanitation	F	**15**	Rene	Schieritz	Programme Development Specialist	GWPSA	M
6	Charles	Mazereku	Biosafety officer	Ministry of Agriculture	M	**16**	Andrew	Takawira	Senior Technical advisor	GWPSA	M
7	Wendy	Seone	Chief Sanitation Engineer	DWS	F	**17**	Zira	Mavunganidze	Climate and Environment Specialist	IFAD	F
8	Ireen	Madilola	Principal Water Resources Engineer	Department of Water and Sanitation	F	**18**	Phera	Ramoeli	Executive Secretary	Okavango River Basin Commission	M
9	Michael	Flyman	Head of Environment	FAO	M	**19**	Tracy	Molefi	Programme Coordinator	Okavango River Basin Commission	F
10	Edith	Kirumba	Country Director	IFAD	F						

Summary of stakeholder consultations

1

Botswana WEF Nexus National Dialogue
29 July 2022-Woodlane Hotel, Gaborone
Objectives:

- Identify existing sectoral governance challenges and barriers that hinder the progression of WEF Nexus investments at the national level.
- Showcase examples of how improved sectoral coordination can work at the national level to drive investment projects.
- Identify priority WEF nexus national investment projects and/or opportunities to pilot and showcase the WEF Nexus approach at a national and regional level

Key Outcomes

- Key barriers identified and defined.
- Formulation of the Technical Working Group (TWG) to support funding proposals development. TWG has representation from Ministries responsible for Water, Agriculture, Energy, Environment and Finance and representation from CSOs and international organisations such as FAO.
- Key investment opportunities/areas identified as below.

Water	Energy	Food
Wastewater re-use for irrigation of horticultural produce Plants	Biogas production from wastewater treatment plants for heating and lighting in agro-processing	Climate-Smart-Agriculture initiatives such as hydroponics for horticulture
Use of saline water for irrigation	Solar energy for abstracting groundwater for irrigation	




A total of 40 physical participants (17 female and 23 male) from government representatives drawn from water, energy, agriculture and environment sectors, CSOs, Academia, private sector, SADC, EU, FAO, GWPSA

2

Stakeholder Consultation Workshop: Preparation of an Adaptation Fund Concept Note on enhancing the resilience of water, energy, food, and environmental security systems in Botswana.
Hilton Gardens Inn, Gaborone, Botswana
28th July 2023
Objectives:

- To discuss and understand the key climate and water, food, energy, and environmental security related issues in Botswana.
- To validate and identify priority issues and relevant national strategies and policies to be implemented to address these.
- To increase the understanding of how climate change is impacting water, food and energy security in Botswana.
- To share information on the Adaptation Fund and how it can assist Botswana in addressing climate change issues impacting water, energy, food and environmental security.

Key Outcomes

- Identification of key climate issues and challenges for water, energy, food and environmental security issues
- Actions to address key issues proposed.
- Clear understanding of the Adaptation Fund application process
- Inputs and guidance for concept idea to enhance water, energy, food, and environmental security received.

Barriers	Proposed solutions
Lack of knowledge and awareness Lack of public awareness and education; knowledge generation Poor data availability for decision-making Lack of demonstration projects	Creating awareness through campaigns, education and stakeholder engagement Establish or strengthen existing research and knowledge management programme/platform




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To discuss and seek stakeholder guidance on the key challenges, how to respond to these and the key stakeholders.
To identify on-going projects that the project is building on.

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<tr><td></td><td>Conduct pilot studies which feed into research and knowledge management programme or platform</td></tr>
<tr><td>Cultural/behavioural barriers
Customs and traditions e.g., challenge to convince traditional pastoralists of the value of planting crops or to adopt alternative farming methods such as rotational grazing
Social behavioural (mindset) e.g., use of treated wastewater, waste management</td><td>Stakeholder engagement and consultation.
Creating awareness.
Showcasing through pilot studies.
Capacity building.</td></tr>
<tr><td>Governance issues
Lack of coordination between institutions, differing institutional priorities/sectoral priorities not harmonized,
Fragmented policies
Lack of data and information supported decision-making</td><td>Integrated resource management and intersectoral harmonisation.
Communication strategy, awareness, and stakeholder engagement.
Incorporation of science in policy formulation and decision-making</td></tr>
<tr><td>Financial barriers
Misallocation of finance/budget improperly prioritised</td><td>Integrated and strategic planning and budgeting</td></tr>
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Second Botswana Adaptation Fund stakeholder consultation workshop
Main conference room, Department of Water & Sanitation Gaborone
29-30 August 2023

To validate identified barriers to climate change adaptations and
To present updated draft of the concept note and suggested project/programme components
To conduct field visit to ongoing WEFE Nexus Demonstration sites that could be proposed to be upscaled and replicated from the Adaptation Fund
To seek further guidance towards finalization of the concept note

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Key Outcomes

Confirmation of national context, problem statement and barriers
Inputs into the proposed components, activities and geographic areas received.
Improved understanding of the practical application of WEFE Nexus

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4	**WEFE Technical Working Group Validation Workshop for the Adaptation Fund Concept Note on "Strengthening climate resilient water, food and energy systems in Botswana through promoting natural resource use efficiency."** • To recap and share information on the Adaptation Fund and how it can assist Botswana in addressing climate change issues impacting water, energy, food and environmental security; • To update on the progress made in the development of the Adaptation Fund Concept Note; • To discuss and validate the draft Adaptation Fund Concept note with key stakeholders and the NDA • To agree on timelines and submission process	Key Outcomes ● Agreement on process and timelines to obtain endorsement letter. ● Validation and endorsement of the concept note. ● Final inputs to finalise concept note received. ● Agreed on proposed implementing arrangements – Ministry of Agriculture to lead	

Annex 3: Initial Gender Assessment

Demography: Botswana has a relatively balanced gender distribution, with slightly more females than males in the population. According to the World Bank data from 2020, the sex ratio is approximately 0.99 males to 1 female[58]. However, it is essential to examine how gender intersects with age and location to understand demographic disparities fully.

Health and Education:
Health: Women in Botswana have made significant progress in accessing healthcare services, including maternal and reproductive health services. The maternal mortality rate has decreased in recent years, reflecting improved access to healthcare[59]. However, gender disparities may persist in health outcomes, such as the prevalence of HIV/AIDS among women, highlighting the need for targeted interventions[60].

Education: Botswana has made substantial progress in achieving gender parity in education. Girls' enrolment rates in primary and secondary education are nearly on par with those of boys[61]. Nevertheless, attention must be given to factors like retention and quality of education to ensure that girls and boys have equal opportunities and outcomes.
Women in Agriculture: Women in Botswana play a significant role in agriculture, particularly in subsistence farming. They are responsible for household food security and contribute to rural livelihoods[62] . Empowering women in agriculture with access to resources and knowledge can enhance their productivity and income. Women in Botswana play a vital role in agriculture, particularly in subsistence farming. Their contributions to food production and household income are substantial. However, women often face challenges related to land ownership and access to agricultural resources[63].

Gender-Based Violence: Gender-based violence remains a critical issue in Botswana. Despite legal frameworks and policies in place, challenges persist in addressing and preventing violence against women. Challenges related to reporting, prosecution, and cultural norms persist, impacting women's safety and well-being (UNFPA, 2020). Cultural norms and stigma may deter reporting and seeking help, and the government must continue efforts to combat this issue (UN Women, 2020). GBV is a critical issue in Botswana. Shockingly, almost 70% of women have experienced GBV at least once in their lifetime, with about 30% experiencing it in the last year. Only a small fraction (1.2%) of these cases is reported to the police, indicating a significant gap between occurrence and reporting. The Botswana government has implemented policies to combat GBV, including the establishment of GBV courts and training for legal and health professionals. However, societal stigmatization and a culture of silence remain significant barriers to effectively addressing GBV.

Differentiated Climate Change Impacts on Gender: Climate change poses specific challenges to women in Botswana. Women are often more vulnerable due to their roles in resource management

[58] World Bank. (2019). *Botswana - Gender Data*. Retrieved from https://data.worldbank.org/country/botswana?view=chart

[59] UNFPA. (2020). *Botswana Country Programme Document 2020-2024*. Retrieved from https://botswana.unfpa.org/sites/default/files/pub-pdf/UNFPA%20CPD%20Botswana%202020-2024.pdf.

[60] UNAIDS. (2020). Botswana. Retrieved from https://www.unaids.org/en/regionscountries/countries/botswana.

[61] UNESCO. (2021). Education for All Global Monitoring Report 2020. Gender Report: Building bridges for gender equality. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000374615.

[62] FAO. (2020). Gender and Agriculture in Botswana. Retrieved from http://www.fao.org/3/cb0613en/cb0613en.pdf.

[63] FAO. (2018). *The State of Food and Agriculture: Women in Agriculture*. Retrieved from http://www.fao.org/3/I9542EN/i9542en.pdf.

and household responsibilities. Changes in rainfall patterns and water availability can have a disproportionate impact on women's livelihoods and well-being. They are often more vulnerable due to their roles in agriculture and their reliance on natural resources. Women may also face increased responsibilities, such as fetching water over longer distances in drought-prone areas[64]. Policies and strategies should consider these differentiated impacts. Climate change has differential impacts on men and women in Botswana.

Responses to Climate Change Gender Inequalities in the concept note.

a) **Strengthening Gender-Responsive Systems**: The project aims to build gender-responsive climate-resilient systems in rural communities, focusing on women and youth participation in adaptation and risk reduction activities. This involves enhancing access to climate-resilient water supply, renewable energy, and improving food systems value chains.
b) **Involving Women in Agricultural Practices**: Women, who are significant in Botswana's arable farming, will be empowered through access to improved agricultural practices, technologies, and renewable energy sources. This is designed to streamline their tasks, freeing up time for other pursuits and contributing to food production at the household level.
c) **Capacity Building and Awareness**: There is a focus on building capacity and raising awareness among community members, especially women and youth, about climate change and its impacts. This includes training in climate-resilient agricultural practices and water conservation strategies.
d) **Promoting Gender Equality**: The project emphasizes promoting gender equality by encouraging women's participation in leadership roles and implementation teams. This also includes direct benefits to women from improved access to electricity and climate-smart technologies.
e) **Addressing Financial Barriers**: A key aspect is facilitating access to finance, especially for women and marginalized groups, to enable them to capitalize on climate-smart adaptive technologies.
f) **Ensuring Inclusivity in Decision Making**: The project seeks to ensure inclusive decision-making and implementation, considering the specific needs and contributions of women in adapting to climate change impacts.
g)

Gender dynamics in relation to WEFE

Women play a critical role in agriculture and water, energy, food, and ecosystems (WEFE) in Botswana, owning 58% of arable land but often lacking access to resources and decision-making power. Women are primarily responsible for household water management and food production but face challenges such as limited access to credit and agricultural inputs, high workloads due to domestic responsibilities, and lower participation in formal agricultural training programs. The project responds to these challenges by providing targeted training in climate-smart agriculture, renewable energy technologies, and water management, specifically for women. Women's groups will be established to facilitate peer learning and support, and the project will ensure women's representation in community management committees and decision-making bodies. Additionally, the project will facilitate access to credit and agricultural inputs and distribute time-saving technologies to alleviate women's workload. By promoting gender-sensitive policies and practices, the project aims to

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[64] UNDP. (2019). *Gender-Responsive Climate Change Adaptation and Mitigation in Botswana.* Retrieved from https://www.undp.org/content/undp/en/home/librarypage/environment-energy/climate_change/Gender-Responsive-Climate-Change-Adaptation-and-Mitigation-in-Botswana.html.

empower women, enhance their participation, and improve their socioeconomic situation in relation to WEFE.