ADAPTATION FUND

CONCEPT NOTE PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme:	Climate Resilience and Adaptation Facility for Technologies (CRAFT): Improving smallholder rural adaptive capacity and resilient livelihoods in Southern, Western and Central provinces of Zambia
Country:	Zambia
Thematic Focal Area:	Rural Development
Type of Implementing Entity:	Multilateral Implementing Entity
Implementing Entity:	United Nations Industrial Development Organization
Executing Entities:	Ministry of Green Economy and Environment, United Nations Industrial Development Organization
Amount of Financing Requested:	USD 25,000,000

Project Formulation Grant Request: Yes ☒ No ☐

Amount of Requested financing for PFG: USD 150,000

Letter of Endorsement (LOE) signed: Yes ☒ No ☐

Stage of Submission:

☒ This concept has been submitted before

☐ This is the first submission ever of the concept proposal

In case of a resubmission, please indicate the last submission date: 3/10/2026

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

Project/Programme Background and Context

A. Zambia National Context

A1. Geographic and Demographic Profile

1. Zambia is a landlocked country in Southern Africa with a population of nearly 21 million (2023), of which 11.1 million (53.7%) live in rural areas[1]. Zambia is one of the youngest countries in the world by median age, and its population is projected to double within 25 years[2]. Most of the country lies on the watershed between the Congo and Zambezi River basins: the north drains toward Congo, while the south drains toward the Zambezi [3]. Zambia's geological endowment is rich in minerals, particularly copper, cobalt, manganese, emeralds, and other gemstones.

Figure 1: Zambia Political Map

2. Zambia is one of the poorest and most unequal countries, with sharp rural-urban and gender disparities. In 2022, 64.3% of the population (12.6 million people) lived on less than US$2.15 per day, the sixth-highest rate globally. Zambia's Gini coefficient[4] was also the sixth highest in the world in 2022 making Zambia one of the most unequal countries in the world[5]. Poverty is predominantly rural, with approximately 80% of the poor living in rural areas and driven by low-productivity subsistence farming[6]. Poverty in Zambia also disproportionately affects women. Zambia's Gender Inequality Index placed the country 138th out of 190 nations[7]. Poverty rates are highest among female-headed households, exceeding 60% in rural areas and 15% in urban areas[8]. Female labor force participation remains lower than men's, with 73.1% women active in the labor market compared to 85.6% men[9]. Traditional norms and legal constraints restrict women's economic agency[10]. These challenges are particularly acute in rural areas, where women rely heavily on subsistence agriculture. Persistent poverty and inequality have also made malnutrition a common challenge. In the 2023, the Human Development Index ranked Zambia as 153rd out of 193 countries, reflecting persistent challenges in meeting basic nutritional needs[11].

A2. Environmental and Climate Overview

A2.1. Historical Climate Trends

3. Zambia's geographic location, topography, and hydrological systems strongly influence its climate and environmental conditions. Situated on a high plateau and straddling the watershed between the Congo and Zambezi River basins, the country experiences a tropical climate moderated by altitude, with two distinct rainy and dry seasons. Zambia is divided into three agro-ecological regions (AERs), classified primarily by annual rainfall and soil characteristics. These zones shape the country's agricultural potential. AER I, located in the southern river valleys of the Southern and Western Provinces, is the driest region, with annual rainfall between 600 and 800 mm and a short growing season of 80 to 120 days, often interrupted by dry spells. Soils

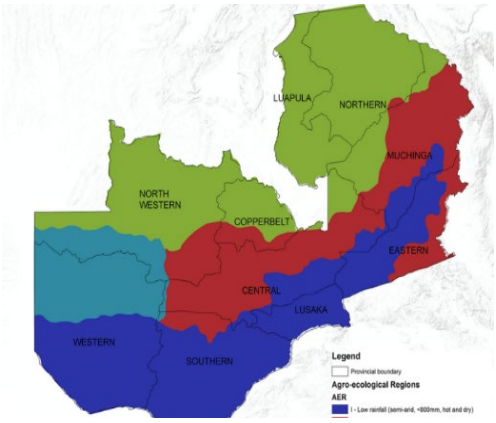

Figure 2: Zambia agro-ecological regions

[1] Macrotrends, "Zambia Rural Population": https://www.macrotrends.net/countries/ZMB/zambia/rural-population-percentage
World Bank (2024). Zambia Country Economic Memorandum: Raising Productivity for Economic Transformation
[2] IMF (2023). Boosting Productivity and Enhancing Climate Resilience in Zambia's Agriculture Sector based on UN Population Division demographic projections
[3] https://www.zambiatourism.com/about-zambia/geography/
[4] The Gini coefficient is a widely used measure of income inequality, ranging from 0 (perfect equality) to 1 (perfect inequality). It is calculated using the Lorenz curve, which compares the cumulative distribution of income across a population.
[5] World Bank (2025). Zambia Poverty and Equity Assessment: Advancing Inclusion and Economic Resilience
[6] World Bank (2025). Zambia Poverty and Equity Assessment: Advancing Inclusion and Economic Resilience
[7] United Nations Development Programme (2022). Human Development Report.
[8] World Bank (2025). Zambia Poverty and Equity Assessment: Advancing Inclusion and Economic Resilience
[9] World Bank. Gender Data Portal – Zambia. ILO Modeled Estimates, 2022.
[10] World Bank (2025). Zambia Poverty and Equity Assessment: Advancing Inclusion and Economic Resilience
[11] https://hdr.undp.org/content/human-development-report-2023-24

here are sandy, shallow, acidic, low in organic matter, degraded due to poor management, and prone to erosion. AER II covers most of Central, Eastern, and Muchinga Provinces and part of the Western Province. It has moderate rainfall (800–1,000 mm), a 100–140 day growing season, and contains Zambia's most fertile soils, though they still face limitations like low water-holding capacity and erosion risk. AER III, in northern Zambia, receives over 1,000 mm of rainfall annually and has a 120–150 day growing season, but agricultural productivity is constrained by acidic, nutrient-poor soils that are prone to compaction and waterlogging.

4. Rainfall in Zambia is highly variable. Zambia has one single rainy season. The climate is marked by three distinct seasons: a rainy season from mid-November to April, with heavier precipitation in the northwest and less in the south and east; a cool, dry season from May to mid-August; and a hot, dry season from mid-August to mid-November. Rainfall variability is influenced by the movement of the Inter-Tropical Convergence Zone (ITCZ), which brings rain between November and April, and by the El Niño–Southern Oscillation (ENSO), which contributes to significant interannual rainfall fluctuations. As a result, the country is exposed to both floods and droughts, and high temperature changes. Maximum daily temperatures often reach 35°C during the hot season, especially in October and November, while minimum temperatures can fall to around 5°C during the cool season.

5. Zambia has a long history of drought, which has periodically affected millions through crop failure, food and water shortages, and broader economic disruption. Major drought events were recorded in 1987/88, 1991/92, 1994/95, 1997/98, 2001/03, 2004/05, 2011/12, 2015/16, 2018/19, and 2023/24. Each episode impacted an estimated 1.4 million people on average (EM-DAT). Additionally, Zambia has experienced a 6% decline in rainfall between 1971 and 2005, with the Central, Western, and Southern Provinces typically facing the highest drought risk. Zambia has also experienced a considerable rise in temperature over recent decades. An analysis of climate data from 1970 to 2015 shows an average increase of approximately 1.3°C, or about 0.29°C per decade.

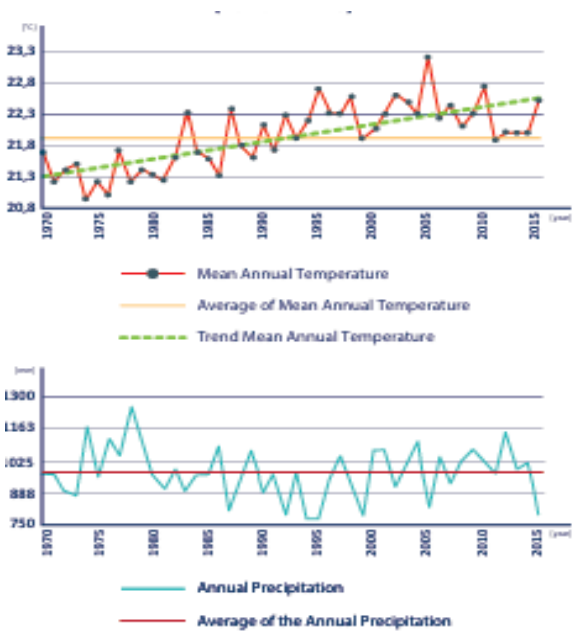

Figure 3: Temperature and precipitation trends (1970-2015)

6. Floods are less widespread than droughts, but can be locally devastating, with especially onerous impacts on agriculture, health, and transport. Floods in Zambia are typically seasonal or flash floods, driven by a combination of rainfall variability (especially in areas with wet-dry climate extremes), topography (e.g., floodplains, riverine overflow), and weak infrastructure (e.g., poor drainage systems in urban areas). Flooding in Zambia is most common in rural areas such as in the Western Province (e.g. Barotse Floodplain) or in the Southern Province (e.g. Kafue Flats and Gwembe Valley), both of which are highly exposed to seasonal riverine floods, and Eastern and Luapula Provinces due to sharp wet–dry seasonal changes.

7. Extreme heat is an increasingly significant climate risk in Zambia, both as an independent hazard and as a driver that amplifies drought impacts. The country's prolonged hot season from September to November often sees maximum temperatures above 35 °C, with heatwaves becoming more frequent and intense since the 1990s. The average number of extremely hot days per year (where daily high was 35°C or more) increased from 5.2 days in 1960 to 9.7 days 2014 and is projected to continue to grow. Geographic and environmental factors such as low elevation, valley topography that trap heat, distance from large water bodies, and heat-retentive soils contribute to thermal build-up. Deforestation and land degradation, especially in the Kalahari sands and Miombo woodlands, have reduced natural cooling from vegetation, while cloudless skies and intense solar radiation during the hot–dry season further drive extreme surface heating.

A2.2. Climate Projections

8. Zambia's climate trajectory will depend on global emissions pathways. Climate projections for the country are based on global models developed under the IPCC's Coupled Model Intercomparison Project (CMIP). The most recent data is from CMIP6, which informed the IPCC's Sixth Assessment Report (AR6). While CMIP6 offers improved global coverage and updated emissions pathways, detailed projections for Zambia are unavailable, and many national and sectoral analyses are based on outdated CMIP5 data. More refined modelling is expected in the forthcoming Zambia Country Climate and Development Report, currently under development by the World Bank.

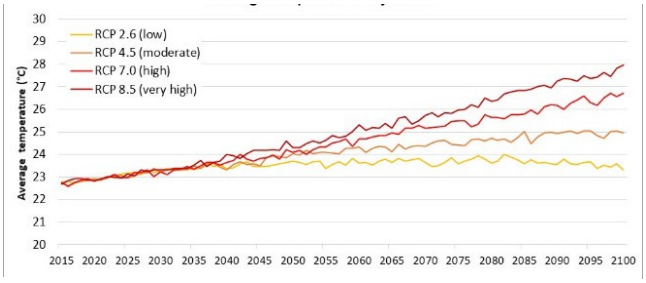

Figure 4: Average temperature projections (2015-2100)

9. Average temperatures in Zambia and the number of extreme heat days will rise under all emissions scenarios. Under RCP 4.5 (moderate emissions scenario), the national mean temperature is expected to increase from a 2014 baseline of 22.6°C to 24.3°C by 2050 and 25°C by 2100. Under RCP 7.0 (high emissions scenario), warming is similar by mid-century but accelerates thereafter, reaching 26.7°C by 2100. RCP 8.5 (very high emissions scenario) projects the most extreme increase, with average temperatures approaching 28°C by century's end. The number of extreme hot days per year (days with maximum temperature above 35 °C) is projected to rise as well. From a baseline of 9.6 days in 2014, the number of days will increase to 29.5 by 2050 and nearly 45 by 2100 under RCP 4.5. Under RCP 7.0, projections show stronger greater warming, with 28.9 days in 2050 and 79.8 days in 2100. Under RCP 8.5, the number of extreme hot days reaches 113 by 2100. These increases are expected across all regions, with the strongest effects in the Southern and Western provinces.

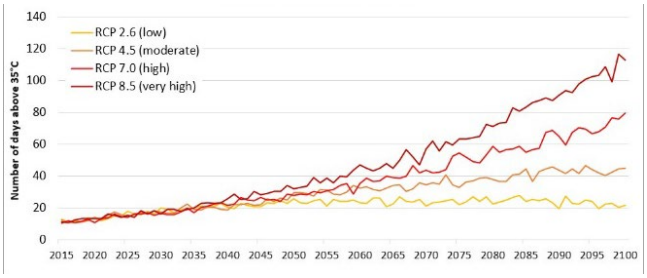

Figure 5: Extreme heat projections (2015-2100)

10. Precipitation patterns in Zambia are projected to shift significantly under all major emissions scenarios as well. Under RCP 4.5, annual rainfall is projected to decrease from a 2014 baseline of 1,124 mm/year to about 1,025 mm/year by 2050 and to 1,073mm/year by 2100. RCP 7.0 shows a smaller decline, reaching 1,076 mm by mid-century. RCP 8.5, despite higher emissions, projects a temporary increase before stabilizing near 1,110 mm by 2050. These national averages conceal important regional trends. Northern provinces may see slight increases in average rainfall, while Southern and Western provinces are expected to experience sustained declines. All provinces are expected to face increased delays in the onset of rains, greater intra-seasonal variability, and possible shifts in the timing of the rainy season.

11. The projected increase in average and maximum temperatures, combined with declining and increasingly erratic rainfall, will raise the likelihood of climate extremes in Zambia. Higher temperatures will result in more days of extreme heat, particularly in the Southern and Western provinces, where daily highs above 35°C may become the norm during the hot season. Drought risk will intensify as temperatures rise and precipitation drops.

12. The combined effect of rising temperatures and declining precipitation is expected to reduce overall water availability in Zambia. The Zambezi, Kafue, and Luangwa River Basins are likely to see reduced water resources due to higher evapotranspiration and lower rainfall. These basins span AERs I and II and cover much of the country's Southern, Western, and Central provinces. National water availability is projected to decline, with some regions facing more severe seasonal shortages. Access to water is also expected to worsen in areas with rapid population growth. By the end of the century, per capita water availability is projected to decline by up to 75 % (Tomalka et al., 2022).

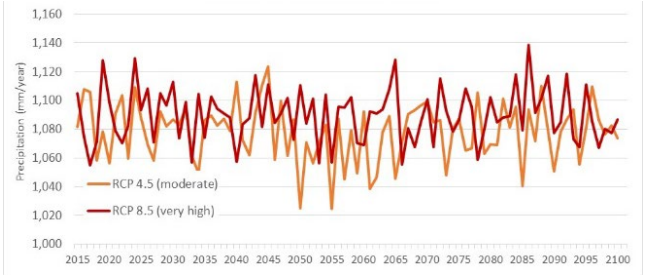

Figure 6: Average precipitation projections (2015-2100)

13. At the same time, extreme rainfall events are expected to intensify, leading to more frequent flash floods. Rising

temperatures under all emission scenarios will increase atmospheric moisture capacity and the potential for short, high-intensity storms. This means that although total annual rainfall may decline, more of the rain that does fall will occur in concentrated bursts. This will heighten the risk of flash floods, particularly in regions with exposed soil. Provinces in the north, where rainfall is projected to remain stable or increase, may face more runoff-related flooding, while degraded Southern, Western and Central provinces may experience both drought and flood within the same season.

14. Zambia's climate shocks will have a negative impact on national GDP and poverty. While no recent national projections tied to climate scenarios were identified, available studies indicate progressively worse economic outcomes depending on global mitigation pathways. Under RCP 7.0 and RCP 8.5 projected losses in annual GDP growth range from 0.29% to 1.31%, with poverty rates potentially rising by up to 7.23%, driven by declining farm rural incomes, higher food prices, and reduced reliability of hydropower (CSAIP, 2019). These impacts are expected to become more severe in the second half of the century. A separate study by UNDRR and CIMA (2019) found that without significant adaptation the number of people in Zambia affected by droughts and flood may increase from an average of 3.3 million people annually to 7 million annually between 2051 and 2100. Additionally, prolonged droughts and floods will increase national spending on food imports and social protection, placing additional strain on already stretched public finances.

B. Economic and Political Overview

B1. Economic Context

15. Zambia's economy rests on three main sectors: services, mining, and agriculture[12]. The service sector contributes approximately 57% of GDP (2022)[13] and is expanding due to urbanization, population growth, and regional trade. The mining sector is smaller and accounts for only 10% of GDP, but is the dominant source of foreign exchange, generating 70% to 75% of public export earnings and 30% to 40% of public revenues[14]. Agriculture is relatively small in size and contributes only about 5% of GDP, but it is crucial to the economy because it supports roughly 85% of the population and employs 52% of the working-age labor force[15], primarily through low-yield smallholder farming (see Section B2.1).

16. Despite Zambia's record of economic growth poverty reduction has been limited, especially in rural areas. Between 2001 and 2010, the country experienced a period of economic growth driven by high copper prices, large-scale debt relief, and infrastructure investments, but growth later slowed as a result of falling copper prices, rising imports, and mounting debt service costs, culminating in the country's 2020 bond default. However, between 1996 and 2015, the number of people living in poverty rose by more than 2.5 million, with over 95% of the increase occurring in rural areas. Inequality also worsened, as the income gains from economic growth accrued largely to the top of the income distribution. Since then, poverty has remained persistently high and overwhelmingly rural. Most rural households remain trapped in low-productivity subsistence farming (see Section B2.1).

17. Zambia faces significant climate risks that threaten its economic stability and development livelihoods. More frequent droughts and floods, extreme heat, erratic rainfall, and prolonged dry spells are already disrupting key sectors[16]. The country ranks 139 out of 181 countries on the ND-GAIN Vulnerability Index (ND-GAIN, 2022)[17]. Agriculture is the most vulnerable sector due to its high dependence on rainfall, low productivity, and low adaptive capacity (see Section B2.1), which makes production highly sensitive to climate variability, leading to frequent crop losses, reduced food security, and weakened rural livelihoods (see Section B2.2). The energy sector is also highly vulnerable, as more than 85% of Zambia's electricity generation relies on hydropower.[18] Transport infrastructure is increasingly vulnerable to extreme weather events as well. Flooding damages rural roads, bridges, and railways, disrupting trade and increasing logistics costs[19]. The increased frequency and severity of weather shocks are likely to exacerbate these pressures, highlighting the need for climate-resilient systems.

[12] African Development Bank Group, "Zambia Economic Outlook": IMF (2023), Boosting Productivity and Enhancing Climate Resilience in Zambia's Agriculture Sector
[13] World Bank (2024). Zambia Country Economic Memorandum
[14] IMF (2023), Boosting Productivity and Enhancing Climate Resilience in Zambia's Agriculture Sector
[15] World Bank (2022). Poverty and Equity Assessment for Zambia
[16] GIZ (2024). Climate Risk Analysis for Adaptation Planning in Zambia's Agricultural Sector
[17] Notre Dame Global Adaptation Initiative. Country Index 2022 – Zambia.
[18] World Bank (2021). Climate Shocks, Vulnerability, Resilience, and Livelihoods in Rural Zambia
[19] CIMA & UNDRR (2019). Disaster Risk Profile: Zambia

18. Given Zambia's demographic structure, poverty profile, and economic exposure to climate shocks, the most strategic entry point for building national resilience lies in strengthening rural economies, with agriculture as the central focus. While urban areas also face climate risks, Zambia's rural population is significantly larger than the urban population (53.7% rural vs. 46.3% urban), and accounts for over 80% of the country's poor[20], who are the most vulnerable to climate change. Agriculture is a key economic activity to support rural livelihoods and is the primary source of food and income for more than half of the working-age population and over 85% of the rural poor[21]. Most rural households depend on rainfed, low-productivity smallholder farming, which is highly vulnerable to drought, floods, and extreme temperatures. Recognizing its economic importance, the Government of the Republic of Zambia (GRZ) has prioritized agriculture development in key strategies such as the Climate-Smart Agriculture Investment Plan (CSAIP, 2019), the Eighth National Development Plan (8NDP, 2022-2026), and its National Adaptation Plan (NAP, 2023)[22]. These plans underscore the central role of agriculture in advancing food security, reducing poverty, and improving climate resilience, especially in rural areas.

B2. Rural Economy Overview

B2.1. Agriculture as the Backbone of the Rural Economy

19. Most rural households in Zambia rely on rain-fed, low-productivity smallholder farming as their primary source of food and income, a livelihood that is highly vulnerable to drought, floods, and extreme temperatures[23]. The country possesses significant natural capital, offering strong potential for agriculture to drive economic growth, reduce poverty, and improve food security. However, Zambia's agricultural productivity remains well below its potential and continues to decline. As a result, Zambia's poverty remains predominantly rural. Although 53.7% of the population resides in rural areas, they account for nearly 80% of the poor and 84% of the extreme poor.[24] Raising the productivity of agriculture is a key pathway for tackling Zambia's development challenges.

20. Rural livelihoods and poverty are closely linked to agricultural production in Zambia is closely linked to rural poverty. As of 2022, the country had an estimated 1.65 million farms. Nearly 80% of those units engaged in small-scale production on plots smaller than 5 hectares, and 90% of these units are under 2 hectares.[25] Medium-scale units (5 to 20 hectares) and large-scale units (more than 20 hectares) each represent approximately 10% of households (approximately 3,000 units in total). Most small-scale units in Zambia are rainfed and depend on manual, non-mechanized tools such as hoes and hand planters.[26] These units typically produce for household self-consumption, grow a limited range of crops (mostly maize), and have poor access to farm inputs. They are frequently unprofitable and highly exposed to economic and climate shocks, which directly impacts household income and food security. As a result, smallholders produce about 90% of Zambia's domestic food supply, but 81% of these households live below the poverty line.[27] In contrast, medium- and large-scale units have significantly higher productivity, their yields are often two to three times greater than those of smallholders[28], and they operate with good profit margins.

21. Producer cooperatives play a significant role in rural economies, especially in supporting smallholders and enhancing food security. Cooperatives have a long-standing presence in Zambia's political and development history. With over 20,000 registered cooperatives and nearly one million smallholder members,[29] they serve as key platforms for accessing subsidized inputs, improving farming practices and connecting to markets. They are central to public rural development strategies, primarily through the GRZ's Farmer Input Support Programme (FISP), which channels inputs only through approved cooperatives or registered producer groups[30] (see Section B2.3). Studies show that cooperative membership in Zambia is positive for rural households and is linked to higher maize yields, greater use of improved seeds and fertilizers, and faster adoption of climate-

[20] World Bank (2025). Zambia Poverty and Equity Assessment
[21] IMF (2023). Boosting Productivity and Enhancing Climate Resilience in Zambia Agriculture Sector
[22] IMF (2023). Boosting Productivity and Enhancing Climate Resilience in Zambia Agriculture Sector
[23] IMF (2023). Boosting Productivity and Enhancing Climate Resilience in Zambia Agriculture Sector
[24] World Bank (2025). Zambia Poverty and Equity Assessment
[25] World Bank (2025). Zambia Poverty and Equity Assessment
[26] World Bank (2025). Zambia Poverty and Equity Assessment
[27] World Bank (2025). Zambia Poverty and Equity Assessment
[28] For example, farmers with small landholdings produce on average less than 2 MT of maize/ha/year, whereas the average maize yields for large-scale farmers (those with >20 ha of land) can exceed 5 MT/ha/year World Bank (2025). Zambia Poverty and Equity Assessment: Unlocking Inclusion for Accelerated Poverty Reduction]
[29] IFPRI & ACF. Unpacking the Economic Impacts of Climate in Zambia. 2023
[30] Ministry of Commerce, Trade and Industry. Cooperatives in Zambia. 2019

smart practices.[31] For example, cooperative members are estimated to adopt improved maize varieties on average 1.6 to 4.3 years earlier than non-members, and are 11 and 24 percentage points more likely to use inorganic fertilizer and maize-legume rotation, respectively. However, cooperatives face persistent structural challenges. Many are undercapitalized and lack basic infrastructure, such as storage facilities and transport.[32] Their governance is often weak, with limited managerial capacity and poor financial oversight. In some cases, political interference has undermined member accountability and shifted the focus away from core cooperative principles. Many cooperatives also struggle to access credit and markets. As a result, some cooperatives have become partially or fully inactive. The poorest rural households are also often unable to join due to registration fees, minimum contributions to purchase inputs in bulk, or the time burden required to participate in cooperative activities. [33]

22. Agriculture has experienced increased employment but declines in farm productivity and GDP contribution have negatively impacted rural livelihoods. Between 2001 and 2019, employment in Zambia's agricultural sector nearly doubled, but this expansion has not led to productivity gains or improvement in rural livelihoods. While employment in the sector remains high, agriculture's contribution to GDP declined from 17.3% in 2004 to approximately 5% in 2022, evidence that most rural households remain locked into low-productivity subsistence activities, with yields below those of comparable sub-Saharan countries. [34] Farm labour productivity declined by almost 50% over the past two decades,[35] contributing to persistently low rural incomes and widespread food insecurity. As most of the rural population relies on agriculture, declining farm productivity has had serious implications for rural livelihoods. Off-farm employment opportunities remain scarce, further limiting rural households' ability to escape poverty[36].

23. The rise in agricultural production in Zambia has been driven primarily by smallholder farmland expansion rather than yield improvements, placing rural livelihoods under increased risk. This trend has placed increasing pressure on forests and biodiversity. Between 2001 and 2020 Zambia lost approximately 2.2 million hectares of tree cover, amounting to a 5% reduction in national forest area. Approximately 60% of the annual forest loss (about 150,000 ha per year) is driven by smallholder cropland expansion, typically through forest clearing for subsistence farming. This trend threatens ecological sustainability, rural livelihoods, and the provision of forest-related ecosystem services that support the rural economy. Many rural households rely directly on natural resources for income and as buffers against floods, droughts, and temperature extremes. Deforestation also increases soil erosion and reduces soil health, leading to further declines in agricultural productivity and undermining the long-term resilience of the agricultural system.

24. The key drivers of low productivity among Zambia's smallholders include overreliance on rainfed agriculture, declining soil quality due to maize monoculture and inappropriate use of agricultural inputs, and weak farming extension services[37]. These challenges are reinforced by customary land tenure systems, which discourage long-term farm investments. Together, these structural constraints contribute to the sector's low adaptive capacity to climate change risks (see Section B2.2) and the need to increase adaptive capacity and livelihoods resilience. Most smallholder farms in Zambia rely entirely on rainfall. Only 1% to 5.6% of smallholders irrigate field crops[38]. However, rainfall patterns in Zambia are highly variable (see Section A2.1) and in the past decade have caused major declines in farm production and productivity[39]. Where irrigation is used, it is often rudimentary, inefficient, and limited to areas near water sources. More than 80% of irrigating smallholders draw water from wells, streams, or rivers, and apply it manually using buckets.[40] These methods result in substantial water and energy loss, particularly for water-thirsty crops such as maize. Building livelihood resilience will require investments in water-efficient, low-cost irrigation technologies, water-harvesting assets, and drought-resistant crop varieties especially where irrigation is not possible due to limited access to water or energy [41] (see Section D1 for a list of proposed climate adaptation solutions).

[31] ScienceDirect. The Benefits and Limitations of Agricultural Input Cooperatives in Zambia. 2021
[32] IFPRI & ACF. Unpacking the Economic Impacts of Climate in Zambia. 2023
[33] ScienceDirect. The Benefits and Limitations of Agricultural Input Cooperatives in Zambia. 2021
[34] World Bank. Zambia Poverty and Equity Assessment. 2025
[35] IMF. Boosting Productivity and Enhancing Climate Resilience in Zambia's Agriculture Sector. 2023
[36] World Bank. Zambia Poverty and Equity Assessment. 2025
[37] GIZ (2024). Climate Risk Analysis for Adaptation Planning in Agriculture: Zambia
[38] Hamududu, B. H., & Ngoma, H. (2018). Smallholder Irrigation in Zambia: Status, Challenges and Opportunities. Presented at the Indaba Agricultural Policy Research Institute (IAPRI) Policy Forum, Lusaka, 2018.
[39] Indaba Agricultural Policy Research Institute (IAPRI) (2021). Zambia Agriculture Status Report 2021: Tracking Progress, Investment, and Climate Impacts
[40] GIZ (2024). Climate Risk Analysis for Adaptation Planning in Agriculture: Zambia
[41] Government of the Republic of Zambia (2023). National Adaptation Plan (NAP) 2023–2030

25. Rural households in Zambia are heavily centered on maize production. Most of these rural households grow food primarily for self-consumption and only sell surplus when available. Maize, the country's primary staple, is cultivated by over 98% of smallholder households and covers approximately 2.7 million hectares.[42] Maize is essential for household food security and income, and it holds deep political and cultural significance. It is consumed widely in the form of 'nshima', a thick porridge that serves as the main component of daily meals for most Zambians. It accounted for nearly 50% of total land planted in 2021, followed by soybeans (10.9%), groundnuts (9.1%), sunflower (5.0%), and cassava (3.8%). About 48% of smallholders cultivate three or more crops while 14% grow maize exclusively. Given this concentration, Zambia exhibits one of the lowest levels of crop diversification in Africa and is a risk for livelihood resilience.[43]

26. Overreliance on maize contributes directly to rural poverty in Zambia and weakens rural livelihoods through several interlinked pathways. First, it lowers rural incomes. Maize is a low-value crop that is highly sensitive to drought and heat. Although maize production has expanded in recent years, this growth has been driven primarily by farmland expansion rather than productivity gains. Yields have fallen from 3 metric tons per hectare in 2014 to 1.8 metric tons per hectare in 2022. At current yield and price levels, a two-person household would require approximately 7.5 hectares of maize to earn income above the poverty line, although 90% of smallholders are under 2 hectares (World Bank, 2024). Second, maize dependence reduces resilience to both climate and economic shocks. Low crop diversity increases the risk of income loss and production failure during adverse events due to increased vulnerability to pests, drought, and market fluctuations. Diversification is essential to enhance both livelihood resilience and broader ecological stability. Third, maize-dominated production systems contribute to Zambia's persistently high rates of malnutrition. The dominance of maize displaces more nutrient-rich crops, limiting access to essential vitamins and minerals. Poor dietary diversity remains a key driver of undernutrition in rural areas. Addressing these challenges requires a dual adaptation strategy: promoting drought-tolerant maize varieties that are better suited to evolving climatic conditions and supporting broader diversification to improve incomes, enhance resilience, and improve nutritional outcomes.

27. Despite widespread and growing use of agricultural inputs, crop yields in Zambia have continued to decline due to input misuse. An estimated 72% of smallholders apply fertilizer, and 79% use certified seeds, partially due to public sector subsidies under the FISP program (see Section B2.3). However, the effectiveness of these inputs is reduced by inappropriate application practices, which further aggravate the already poor soil quality. Zambia's soils are naturally fragile and increasingly acidic. Improper fertilizer use has contributed to soil nutrient depletion and intensified soil acidification. The prevalence of maize crops, discussed above, has further depleted soil health and reduced long-term productivity. Addressing these issues will require a holistic soil management approach to reverse soil degradation and restoring productivity. This includes expanding smallholder access to a wider range of fertilizers and soil supplements, such as lime, compost, and livestock-based organic matter, increased use of soil testing, and support for diversification and other sustainable production methods.

28. Additionally, there are limited effective extension services and technical capacity among service providers. Public extension services are severely underfunded and inadequately staffed, constraining outreach and limiting support to households. Private extension services offered by local micro, small, and medium enterprises (MSMEs), such as agro-dealers and inputs suppliers, are also typically limited in coverage and technical scope. As a result, unsustainable land use practices, such as slash-and-burn cultivation (known locally as 'chitemene'), remain widespread, and contribute to land degradation, declining productivity, and increased deforestation. Where extension services are available, they are often poorly coordinated and disconnected from climate adaptation needs. Training and support from research institutions and universities remains limited and inconsistent, leaving households without access to relevant farming techniques or innovations.

29. Customary land tenure systems in Zambia create disincentives for adopting climate-smart practices and improving rural livelihoods. In rural areas, customary tenure is the dominant form of landholding, with an estimated 65 % to 95 % of land governed under such arrangements. Under this system, land is administered by traditional authorities, such as chiefs or headmen, and cannot be legally transferred to individual households. These arrangements offer limited tenure security, as traditional leaders retain broad discretion over land use and allocation. The lack of enforceable property rights, particularly rights to use, manage, and transfer land, reduces incentives for rural households to adopt practices that may involve higher costs in the short term and

[42] Government of the Republic of Zambia (2023). National Adaptation Plan (NAP) 2023–2030
[43] World Bank (2024). Zambia Country Economic Memorandum: Creating Jobs and Expanding Inclusion

returns in the long term, such as soil health restoration, water-saving technologies, or purchasing irrigation assets (Ngoma et al., 2017).

30. Many rural households depend on livestock as a form of insurance against crop failure. Livestock production in Zambia is dominated by smallholder-owned herds and plays a central role in mixed crop–livestock and free-range grazing systems, in which livestock are integrated into broader farming activities. As of 2015, 64% of smallholders raised chickens, while 27% owned goats, and 24% owned cattle. This high rate of livestock ownership highlights their role in providing a range of economic and social benefits, from sale income and household consumption (i.e., meat and milk), to more indirect benefits such as manure, animal traction, and insurance against crop loss. However, productivity is low because most livestock are managed under low-input, free-range systems with minimal supplementation or health services. Animals are often affected by disease, limited access to veterinary care, and poor-quality feed.

31. Rural livelihoods in Zambia also face severe infrastructure and service deficits, particularly in their access to electricity, water, markets, and finance. Only 5.7% of rural households are connected to the national electricity grid. When including off-grid sources such as solar and biofuel, access rises to 34%, still well below urban coverage of nearly 50%, and often with frequent blackouts. Limited and unreliable access to power further restricts uptake of production equipment, including irrigation solutions. Access to reliable water for productive use, such as irrigation and livestock, is extremely limited, with most rural communities depending on seasonal streams or shallow wells that are vulnerable to climate variability. Rural households also face weak linkages to markets beyond their immediate communities, limiting opportunities for commercialization. Access to credit in rural areas is extremely limited and costly. Most rural loans are short-term and carry high interest rates. In 2020, only 8.4% of total credit disbursements reached rural districts (up from 6.5% in 2016), overwhelmingly supplied by non-bank financial institutions. As a result, many households cannot afford essential farm investments, such as climate-resilient seeds, fertilizer, or equipment. Land tenure constraints further compound access barriers.

32. Gender is a critical dimension of rural development due to the central role women play in rural communities. Women make up 64% of the rural population, and 80% of them are engaged in agriculture (Sitko et al., 2011). Despite their central role, women face systematic disadvantages that constrain their productivity and income. They tend to own smaller, less fertile plots than men, and receive less extension support. Fewer than 1% of women smallholders have access to basic cultivation tools, such as seeders or weeders (FAO, 2018b). Land access is also shaped by social norms. Zambia's rural land under customary tenure is administered by local chiefs, who typically allocate land to men and less frequently to women (Burke et al., 2018). Widowed women often face tenure insecurity, as continued use of land depends on the decisions of the deceased's relatives. These constraints contribute to deeper poverty among women. Poverty rates among female-headed households exceed 60% in rural areas and 15% in urban areas, compared with 54% and 10%, respectively, for male-headed households (UNDP and GRZ, 2023).[44] Structural barriers also limit the adoption of improved agricultural practices. Research shows that male-headed households are significantly more likely to adopt conservation agriculture than female-headed households, due to men's greater access to land, finance, and farming inputs (Milder et al., 2011).

33. Zambia's rural savings-group landscape is large and serves as a key vehicle for rural financial inclusion, particularly for women. Approximately 13.5% of adults (~1.2 million people) belong to a savings group, most of them in rural areas. The most common forms are Rotating Savings and Credit Associations (locally known as 'Chilimba') and Village Banks, alongside Village and Savings Loans Associations, Savings and Internal Lending Communities, and Accumulating Savings and Credit Associations. Women comprise nearly 68% of members, creating a strong entry point to expand their access to finance. Most rural savings groups are well organized and operate with a management committee and constitution. Almost all provide savings services and small loans to their members, reflecting their central role in providing access to finance in rural areas. The Savings-led Microfinance Network of Zambia (SaveNet) functions as the country's industry network for savings groups and is often treated as the de facto coordinating platform. It provides capacity building to savings groups in governance, leadership, group regulation through constitutions, financial education, entrepreneurship, and intermediation with formal financial institutions to expand access to additional services. Despite these strengths, savings groups have substantial room for improvement. Risk management practices remain largely trust-based rather than formalized. Knowledge of insurance and climate change is generally low. Groups often

[44] 2022 Poverty Assessment in Zambia, UNDP and Government of Zambia, 2023. Available at: https://www.undp.org/sites/g/files/zskgke326/files/2023-10/highlights-of-the-2022-poverty-assessment-in-zambia-2023.pdf

require targeted training in proposal development, and delivery of business development services to their members. Relationships with formal financial institutions are limited: only 13% of groups have opened a bank or microfinance account and just 11% hold mobile money accounts, due to insufficient knowledge and high transaction costs.

B2.2. Projected Impact of Climate Change in the Rural Economy

34. Zambia's rural economy is highly exposed to climate risks, with models and national assessments projecting severe impacts on farm yields and household incomes, thus weakening rural livelihoods (NAP, 2023). By 2043, climate-related losses in the agricultural sector due to extreme weather events such as drought, flooding and extreme heat, are expected to be between $2.2 and 31 billion under a business-as-usual scenario, roughly consistent with RCP 8.5 (World Bank, 2018b; Irish Aid, 2018[45]). Drought will reduce yields by delaying planting, shortening growing seasons, and increasing crop failure due to prolonged dry spells and insufficient soil moisture. Prolonged dry spells also limit soil moisture availability, hinder germination and flowering, and increase the risk of widespread crop failure, particularly in rainfed systems. Flooding, including both seasonal and flash floods, damages especially standing crops through waterlogging, particularly in low-lying areas. It also erodes topsoil, washes away seeds and nutrients, and damages rural infrastructure such as irrigation furrows and storage facilities, all of which delay recovery and reduce yields. Extreme heat reduces crop yields by disrupting key physiological processes during critical growth stages such as flowering and pollination, especially for heat-sensitive crops like maize. It also accelerates evapotranspiration and shortens growing cycles, leading to lower biomass accumulation, diminished grain formation, and overall reduced productivity. This will result in increased food insecurity and poverty levels in rural areas.

35. Average yields in Zambia are projected to decrease steadily across all emissions scenarios. National models estimate average yield reductions of between 5.8% and 12.2% by 2050, and by 2090, they may reach up to 28.0%, depending on the emissions pathway (GIZ, 2024). The area of land exposed to at least one drought per year is expected to rise from 1.5% in 2000 to 4.5% (RCP 6.0) by 2080[46].

36. The most significant climate risk to food security and rural livelihoods is the projected decline in maize yields. Maize is highly sensitive to heat and drought. By 2050, maize yields are projected to decline by 15% to 25%, reflecting the substantial threat posed by shifting rainfall patterns, rising temperatures, and increased droughts and floods (CSAIP, 2019). A separate analysis by GIZ (2024) estimates even greater losses, ranging from 21% to 35%, though scenario details are not specified. These projected declines are strongest in the Southern and Western provinces, where temperature increases and rainfall reductions are most pronounced. The decline is further compounded by smallholder adaptive behaviour in high-risk areas, who have been observed to reduce fertilizer use by an average of 13% compared to typical application rates to limit potential financial losses in seasons of anticipated failure (Okamura, 2025).

37. In addition to their high climate exposure, the adaptive capacity of rural households is very limited. As evidenced by declining farm productivity, rural households face significant constraints in their capacity to adapt to climate change. As mentioned in Section B2.1, this is driven by a heavy reliance on maize production, dependence on rainfed agriculture, declining soil fertility driven by input overuse and maize monoculture, and weak extension services. Insecure land tenure further reduces incentives to invest. Many rural households also lack alternative sources of income beyond farming thus increasing their vulnerability to climate shocks.

38. Certain crop species, such as groundnuts (9% of Zambia's total land planted), cassava (4%), beans (3%), millet (1.7%), sorghum (1%), and cowpeas (0.8%), are expected to be less affected by climate change and may serve as climate-resilient alternatives to increase livelihood resilience in Zambia (Hunter et al., 2020). Groundnuts are grown as a subsistence crop across all provinces. Climate change is expected to reduce groundnut yields by 0.1–0.2% in Eastern and Central provinces and by 5–15% in Lusaka, Western, and Southern provinces (IFAD, 2020). This decline is due to the crop's lower suitability for the relatively arid conditions of Agro-Ecological Zone I, but better than maize under the same conditions. Cassava yields are projected to increase in most provinces. Its flexibility in planting and harvesting windows allows it to perform well under variable seasonal conditions, making it a viable option of future climate-resilient farming systems. Similar drought- and

[45] The US$2.2–3.1 billion figure comes from earlier studies such as World Bank (2018) and Irish Aid (2018) and use CMIP5 framework. The original statement reads: "The government estimates losses between $4.3 billion–$5.4 billion over 10–20 years as a result of climate change, of which the agricultural sector alone is expected to lose $2.2 billion–$3.1 billion." As the source was published in 2018, the projected period is understood to extend through approximately 2028–2038, though the document does not specify exact years.

[46] No estimates available for RCP 7.0 or RCP 8.5.

flood-tolerant crops such as millet, sorghum, and cowpeas are also projected to be more resilient than maize, with less severe projected yield declines (IFAD, 2022).

39. Rising temperatures, droughts, and floods are projected to reduce the size of climatically suitable production zones for key national crops and reduce rural adaptive capacity. For maize, suitability is projected to decline by 28% to 37% by mid-century, with production zones shifting northward. Southern and Western Provinces are projected to become largely unsuitable for maize production throughout the 21st century. Certain crops, including sorghum, cassava, millet, and other climate-resilient staples will remain viable under unfavourable conditions and support food security and livelihood resilience. Promoting alternative sources of income will be essential to strengthen rural resilience under changing climate conditions.

40. Recurring droughts, floods, and extreme heat are also expected to increase the vulnerability of livestock. Drought, extreme heat, and flooding will increase livestock mortality and morbidity, and degrade herd productivity. As a result from projected climate changes, the share of livestock exposed to climate-related risks is projected to reach 54% of the national herd by 2100, with the greatest impact expected in Zambia's arid and semi-arid regions. In response to these risks, shifting toward more resilient livestock species, such as donkeys, pigs, rabbits, poultry, and small ruminants, may enhance adaptive capacity and support continuity in meat and milk production, particularly in regions facing chronic water and feed shortages.

41. Women are more vulnerable than men to the impacts of climate change, and the potential impact of physical shocks is likely to deepen existing gender inequalities. This vulnerability stems from women's persistent economic disadvantages relative to men (see Sections A1 and B2.1). Women are more likely to be poor, have lower labour force participation, and more obstacles in accessing and controlling productive assets such as land. Despite their central role in rural economies, women's productivity and income remain constrained by traditional norms, limited legal protections, and restricted opportunities for entrepreneurship. Additionally, women-led households have lower adaptive capacity, as they often lack assets or savings, making them less resilient to climate shocks and more exposed to losses in agricultural production.

B2.3. Climate Adaptation Public Policy in Rural Economies

42. Zambia has developed a robust framework for climate change adaptation, anchored in three core policy instruments: the National Policy on Climate Change (2017), the updated NDC (2021) and, most importantly, the NAP (2023)**.** The National Policy on Climate Change (NPCC) sets the overarching strategic direction for climate action, covering both mitigation and adaptation. Zambia's revised 2021 NDC expands the original 2016 NDC submission and prioritizes climate-smart practices in rural areas. Since October 2023, the NAP has served as the primary framework for adaptation planning. The NAP integrates climate resilience into national development planning and systematically identifies vulnerabilities across key rural sectors, including agriculture, livestock, and fisheries. Key adaptation priorities for these sectors include scaling up climate-smart agriculture, expanding irrigation and efficient water use, strengthening agricultural extension services, and developing climate information systems and early warning services. The NAP also outlines key institutional priorities to strengthen rural adaptation planning and delivery. These include improving coordination and collaboration across institutions, for which there are persistent gaps in subnational coordination, and the mainstreaming of climate change adaptation into provincial and district development plans and budgets, supported by improved planning guidelines and clearer operational processes.

43. Approximately 80% of Zambia's agriculture budget spending has traditionally been spent in two programs: the Farmer Input Support Program (FISP) and the Food Reserve Agency (FRA). FISP distributes subsidized inputs (typically a 10 kg bag of maize seed, six bags of fertilizer, and 25 kg of soya bean seed or 20 kg of groundnut seed to support diversification) directly to smallholders through cooperatives and associations. Smallholders are required to contribute 5% of the cost before receiving the inputs. Smallholders outside registered cooperatives or associations are generally not able to receive support. The FRA then buys farm produce (roughly 96% of which is maize[47]) at a pre-set price to stabilize their income and will sell the crops to domestic and international markets.

44. Despite heavy investment, FISP and FRA have not led to sustained improvements in poverty reduction in rural economies and have had a limited impact in rural livelihoods and their resilience to climate change. FISP suffers from several persistent inefficiencies. Input delivery is often delayed, and input packs are standardized without

[47] https://www.theigc.org/sites/default/files/2024-07/Hadunka%20and%20Teschemacher%20Final%20report%20June%202024.pdf

regard for soil type, agro-ecological zone, or climate risks. In 2012, 21.5% of subsidy recipients were estimated to have received inputs late, resulting in an estimated 4.2% decline in maize yields (Namonje et al., 2015). Some inputs can fail to reach its intended beneficiaries, with leakage rates estimated at 30% to 35% (World Bank, 2021). Delivery costs are high, and actual spending frequently exceeds budgeted amounts. FRA, which is the main national maize buyer and dominates the market, has contributed to market distortion in rural economies. Its price stabilization function tends to crowd out private actors and discourages private investment across the value chain. Together, FISP and FRA limit diversification, and have not raised household incomes above the poverty line and improve rural livelihoods. The combined fiscal burden of FISP and FRA has also crowded out other necessary public rural investments to support additional rural infrastructure, extension services, and research and development of improved inputs.

45. GRZ's Comprehensive Agriculture Support Program (CASP) aims to correct longstanding inefficiencies in FISP through an e-voucher system that expands the range of eligible farm inputs to households and increases rural adaptive capacity to climate change. Launched in 2022 under the 8NDP, CASP aims to raise agricultural growth to at least 10% annually. One of its core reforms is the phased rollout of an e-voucher system designed to reduce FISP administrative and logistical costs, expand coverage to more smallholders, and improve the timeliness and range of potential farm inputs. Smallholder beneficiaries can select inputs based on local agro-ecological needs, including preferred fertilizer blends and crop seeds. The e-voucher system also encourages competition among agro-dealers. GRZ has announced plans to fully migrate FISP to 100% e -voucher by the 2025/2026 season[48]. There is an opportunity to strengthen climate adaptation in rural economies by supporting the uptake of e-vouchers and guiding their use toward inputs that enhance livelihood resilience.

46. Zambia implements climate development policies through a decentralized, multi-tiered administrative structure, with districts serving as the primary delivery unit. The country is divided into ten provinces, which coordinate between national ministries and district administrations and oversee district-level implementation. Districts act as the primary units for local service delivery and program execution in rural economies. They are responsible for services such as agricultural extension, infrastructure development, and local planning for adaptation. Each district is further divided into wards, which represent the lowest administrative level and form the basis for community-level planning and political representation.

47. Integrated Development Plans (IDPs) are Zambia's primary sub-national climate planning instruments. IDPs provide a structured mechanism to translate and operationalize agriculture and climate national objectives articulated in the 8NDP and NAP at the district level, tailor them to local agro-ecological conditions and community needs and integrate them into district budgets and sector plans. IDPs are developed and implemented by District Development Coordinating Committees (DDCCs), in collaboration with Ward Development Committees (WDCs), traditional leaders, and local communities. District Agricultural Coordinators and public extension officers serve as key delivery agents, providing technical guidance to households and ensuring that IDP priorities are implemented in the field.

48. The integration of climate adaptation into IDPs is relatively recent and many IDPs have not been updated with adaptation solutions. IDPs are increasingly incorporating agricultural adaptation solutions tailored to rural livelihoods' vulnerabilities and aligned with NAP priorities, including the identification of the most suitable crops, livestock, or infrastructure investments for each agro-ecological zone. The process of integrating NAP priorities into IDPs is led by DDCCs, in coordination with WDCs. Many IDPs now include dedicated sections on adaptation and mainstream climate adaptation principles across sectors. To support the integration of NAP priorities into IDPs at the district and sub-district levels, the NAP suggests the following activities:
    - Conduct a comprehensive assessment of the district's climate risks, vulnerabilities, and adaptation needs. This should account for geographic location, topography, socio-economic conditions, natural resources, and existing development plans.
    - Encourage local stakeholders to review the NAP to identify relevant priorities and actions aligned with local needs, which can then be implemented at the district level.
    - Develop a district-level plan that outlines specific strategies, actions, and targets for building resilience, based on the distinct adaptation needs of key sectors such as agriculture and livestock.

    However, the extent and quality of this integration varies across districts, many of which are often constrained by limited local knowledge, capacity, and available resources. Districts with stronger institutional and financial capacity tend to integrate adaptation planning in their IDPs more effectively, while poorer and often more climate-vulnerable districts face greater constraints. Even where adaptation priorities have been integrated into

[48] https://www.zambiamonitor.com/govt-urges-agro-dealers-to-uphold-integrity-as-it-rolls-out-100-e-voucher-fisp/

planning documents, actual implementation on the ground remains inconsistent, and many proposed measures have not moved beyond planning stages due to resource and capacity limitations.

C. Overview of Project Target Regions

C1. Geographic and Demographic Profile

49. Southern, Western, and Central Provinces are in aggregate more rural and poorer than Zambia's national average. Nationally, 53.7% of the population lives in rural areas, while in these three provinces the rural share is substantially higher. Southern Province has a population of about 2.5 million (12% of Zambia's total), with 75.3% residing in rural areas. Western Province is home to nearly 1.4 million people (6.5% of the national population) and is the most rural of the three, with 86.7% of its residents living in rural areas. Central Province has a population of roughly 2.1 million (nearly 10% of the national total), with 74.8% in rural areas. Poverty levels mirror this rural concentration. Against a national poverty rate of 64.3%, poverty in Southern stands at 63.5% (slightly below the national average), in Central at 67.5%, and in Western at 78.6%, the highest of the three.[49]

50. The project's geographic focus spans AERs I and II. Southern Province (85,283 km²) lies mainly within AER I, Zambia's driest region, where annual rainfall averages 600–800 mm/year and the growing season lasts 80–120 days. Its semi-arid plateaus and valleys (notably the Gwembe Valley and Kafue Flats) have shallow, degraded soils with low water retention. These conditions heighten vulnerability to late-onset rains and prolonged dry spells. Low-lying areas often trap heat, with frequent daily maximums above 35 °C, while sparse vegetation increases exposure to extreme heat. The same terrain also creates high susceptibility to flash flooding and riverine flooding driven by upstream rainfall.

51. Western Province (126,386 km²), Zambia's largest province, straddles AER I and II, and has rainfall of 800–1,000 mm/year and a 100–140 day growing season. Its dominant feature is the Barotse Floodplain, one of Africa's largest seasonal wetlands, which covers nearly one-third of the province and is inundated annually during February to April. The floodplain's flat terrain and sandy soils also limit drainage, causing prolonged waterlogging. In contrast, the surrounding upland plateaus are drought-prone due to nutrient-poor sandy soils with low moisture retention. This creates spatial contrasts between flood-dependent lowlands and recurrent drought in the uplands. Despite slightly lower average temperatures than the Southern Province, Western's floodplain records frequent heat extremes due to exposed flat terrain, limited vegetation, and high surface evapotranspiration.

52. Central Province (94,394 km²) is more geographically diverse than the Western and Southern Provinces, spanning plateaus, valleys, and swamps. Most of its land lies within AER II. Its plateau elevations of 1,100-1,300 meters moderate temperature extremes compared with the lower lying Southern and Western Provinces. The province's remaining miombo woodlands and mixed savannas provide localized cooling, though clearance for farming has progressively reduced this buffer. Soils are more varied than in the other two provinces, but extensive sandy pockets are drought-prone and act as heat sinks. Flood risk is concentrated in the Kafue River Basin, where poor drainage and upstream storm events cause seasonal flooding and waterlogging.

C2. Historical Climate Trends

53. Zambia's key climate risks (drought, flooding, and extreme heat) are especially severe in Southern, Western, and Central Provinces, with sub-province variations in intensity and frequency shaped by topography. All three provinces rely on a single rainy season from November to March, which is becoming shorter, less reliable, and lower in volume.

[49] ZamStats (2022 Census).

54. Drought is a key concern for all three provinces. Southern Province is consistently identified as Zambia's most drought-prone region, with erratic rainfall and frequent prolonged dry spells. Between 1950 and 2024, precipitation in the province declined by 8.9% compared with a national decline of 2.9%. The rainy season increasingly starts late and ends early, further reducing growing days. Western Province faces recurrent upland droughts due to sandy soils with low water retention, especially in the province's uplands. Central Province receives higher rainfall than Southern Province, but it has also decreased and become increasingly erratic, resulting in shorter planting windows and mid-season dry spells that undermine yields.

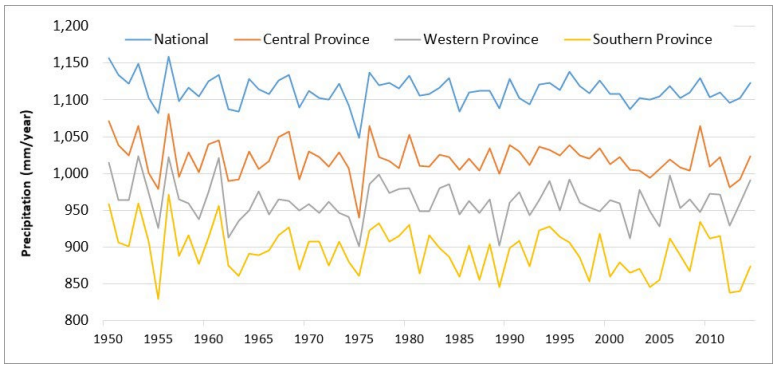

Figure 7: Historical average precipitation per province (1950-2015)

55. Flooding is also a major concern across the three provinces, peaking between February and April depending on upstream catchments. Although annual rainfall totals have declined, rainfall intensity has continued to increase, increasing the number of flash floods and basin-wide inundation. The combination of longer dry spells and heavier rainfall bursts has also exposed communities to alternating drought and flood cycles, often within the same season. In Southern Province, flooding is localized and flash-based, affecting the Gwembe Valley and tributaries of the Zambezi. In Western Province, flooding is widespread and recurrent in the Barotse Floodplain, covering up to one-third of the province during seasonal inundation. In Central Province, floods are concentrated in the Kafue River Basin, where upstream storms and poorly drained wetlands cause overbank flooding and seasonal waterlogging.

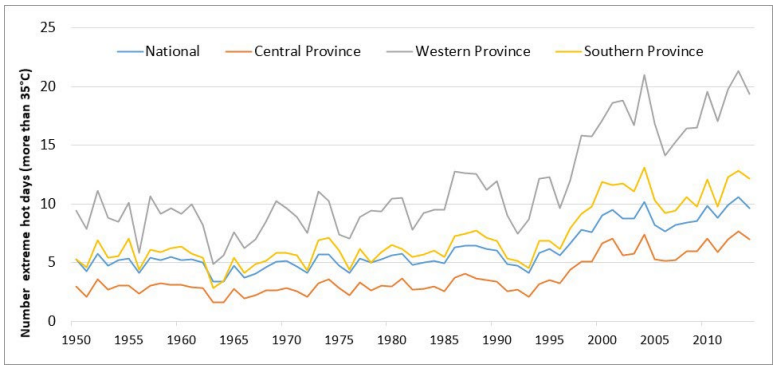

Figure 8: Historical extreme heat days per province (1950-2015)

56. The three provinces have suffered a growing number of extreme heat days, especially Western Province. Western Province has seen extreme hot days (>35 °C) more than double from 9.5 days in 1950 to 19.3 days in 2014, twice the national average (from 5.3 days in 1950 to 9.7 days in 2014). The Barotse Floodplain often records more days above 35 °C and experiences higher humidity and heat stress in peak months. Southern Province, already among the hottest and driest, also frequently records daily maximums above 35 °C in the Gwembe Valley and Kafue Flats and extreme hot days have more than doubled, from 5.3 days in 1950 to 12.1 days in 2014. Central Province is less exposed thanks to its plateau elevation, which moderates temperature extremes. Miombo woodlands and mixed vegetation also provide some localized surface cooling, unlike Western's sandy plains or Southern's semi-arid savannas. Even so, extreme hot days rose from nearly 3 days in 1950 to 7 days in 2014, a sharper relative increase than the national average, though still below national totals.

C3. Climate Projections

57. There are limited provincial-level climate projections for Zambia. CMIP6 datasets available through the World Bank Climate Change Knowledge Portal provide downscaled insights on rainfall and temperature trends for the province, but without detailed estimates on extreme climate events. Provincial climate projections indicate that all three provinces will face less precipitation, higher intra-seasonal variability, and shifts in the timing of the rainy season.

58. Southern Province is Zambia's most drought-prone region and projections show conditions will worsen. Under RCP 4.5, rainfall volume is projected to fall by 8.5% between 2014 and 2050, while mean temperatures are estimated to rise by 1.6°C, as compared with an average national increase of 1.43°C in the same scenario. Higher evapotranspiration will amplify the effect of rainfall deficits. Western Province is projected to experience even greater reductions, with rainfall declining by nearly 11.5% by 2050 under RCP 4.5 and temperatures increasing by 1.6 °C. Shorter rain seasons and higher variability will result in longer dry spells between rainfall events. Central Province is comparatively less drought exposed. Rainfall is projected to decline by about 10% (still higher than national average decrease of 8.8%) and temperatures to rise by 1.4 °C by mid-century under RCP 4.5. The province's soils have higher water retention and a longer rainfall distribution which are projected to reduce, but not eliminate, drought risk.

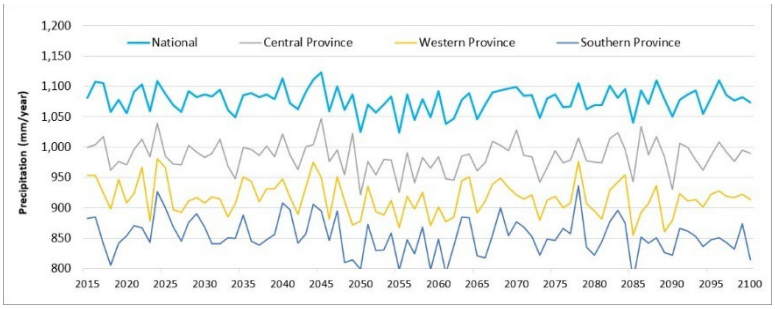

Figure 9: Projected precipitation per province under RCP 4.5 (2015-2100)

59. Flooding risks are projected to intensify across Southern, Western, and Central Provinces, even as overall rainfall declines. Shorter, more intense rainy seasons will heighten flash flood risk, especially where soils are exposed and drainage is poor. Southern Province will face rising intra-seasonal variability, with rainfall increasingly concentrated in shorter, more intense episodes, especially in in low-lying areas near the Zambezi and Kafue rivers. Western Province is projected to experience similar shocks, with extreme rainfall events becoming more abrupt, destructive, and less predictable. Flood risk will be greatest across the Zambezi Floodplain, where sandy soils and flat topography limit infiltration and drainage. The Barotse Floodplain, which normally buffers seasonal floods, is expected to experience more severe inundations in extreme years as well. Central Province is projected to suffer fewer flooding because it will benefit from better vegetative cover and more clay-rich soils than the sandy landscapes of the Southern and Western Provinces, which provide partial buffering capacity. However, this protection is limited. The Kafue Basin remains highly vulnerable to sudden high-intensity downpours that can overwhelm river systems and cause seasonal overbank flooding.

60. Extreme heat is projected to rise sharply across Zambia, with Southern and Western Provinces showing the highest number of total extreme hot days in the country. Nationally, the number of extreme hot days is projected to rise from 9.7 days in 2014 to 29.5 days in 2050 under RCP 4.5. Southern Province and Western Province will suffer significantly higher increases. Under RCP 4.5, the number of very hot days in Southern Province is projected to more than triple, from 12.1 in 2014 to 36.4 by 2050. Combined with rising mean temperatures, this will make Southern the epicenter of extreme heat stress in Zambia, undermining rural livelihoods. Western Province will record the highest number of extreme hot days of any province. RCP 4.5 indicates an increase from 19.3 days in 2014 to 51.5 by 2050, more than 1.5 times higher. Although average baseline temperatures are lower than in the south, the flat Barotse Floodplain and sandy uplands already experience frequent >35 °C spikes, a pattern that will intensify. These conditions, combined with fragile sandy soils and limited vegetation cover, will accelerate evapotranspiration, soil moisture loss, and land degradation, further reducing rural resilience. Central Province starts from a lower baseline but faces the sharpest relative increase of extremely hot days. The number of hot days is projected to rise nearly fourfold, from 7 in 2014 to 27.4 by 2050. Heat is expected to cluster in shorter, more intense spells with greater intra-seasonal variability. While plateau elevation and remaining woodland cover moderate extremes compared with the Southern and Western Provinces, the rapid rate of increase still poses significant risks for farming systems and rural livelihoods.

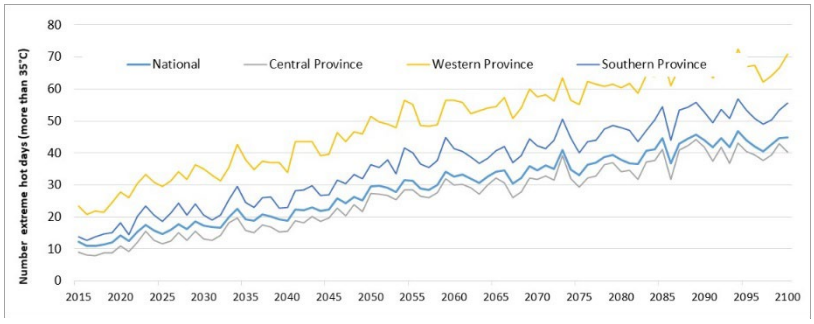

Figure 10: Projected extreme heat days per province under RCP 4.5 (2015-2100)

C4. Impact on Rural Economy

61. Southern, Western, and Central Provinces have broadly similar economic structures, with trade, construction,

real estate, and agriculture playing central roles in rural livelihoods. Southern Province relies heavily on wholesale and retail trade, which accounts for 18% of provincial GDP, while construction and real estate contribute 8.4% and 5.4% respectively. Its location as a cross-border hub with Zimbabwe and Botswana further supports commerce and services. Western Province has a similar profile, though trade plays an even more dominant role, contributing 33.1% of provincial GDP. Much of this reflects cross-border commerce with Angola. Central Province also depends on wholesale and retail trade, which makes up 32.4% of GDP. This reflects the role of Kabwe, the provincial capital, as a key trade node linking Zambia with Tanzania and the Democratic Republic of Congo, as well as serving long-haul trucking routes and local markets. Construction and real estate account for 8.9% and 7.1% of the province's GDP respectively, driven by urban expansion along with the development of transport corridors, health centres, feeder roads, and housing.

62. Like in most of Zambia, agriculture is central to rural livelihoods in Southern, Western, and Central Provinces and provides employment and food security to the majority of households, even though its share of provincial GDP is relatively modest. Across all three provinces, smallholder farming faces the same challenges which impact livelihood resilience: low productivity due to reliance on rainfed systems, declining soil quality, limited access to climate resilient inputs, and weak extension services. Central Province has the most diversified and commercially oriented agricultural sector. Agriculture contributes 14.6% of provincial GDP, combining mechanized large-scale maize and soybean farms with diversified smallholder production. Often referred to as Zambia's "breadbasket," the province benefits from relatively fertile plateau soils and proximity to Lusaka and large mining towns. The province's commercial farms are nationally important hubs for maize and soybean. Small- and medium-holder farming[50] is also more diversified than in the Southern and Western provinces, with 42% of land under maize, 35% under soybeans, and 8% under groundnuts. Livestock, including cattle, poultry, and pigs, is also significant. Southern Province agriculture contributes 6.8% of GDP. Among small- and medium-holders maize dominates and covers 58% of planted land, supplemented by sunflower (14%), groundnuts (10%), soybeans (4%), and sorghum (4%). Southern remains one of Zambia's top maize producers, accounting for 23% of national planted maize area. Livestock is especially important in the province and it holds Zambia's largest cattle herd, concentrated in the Kafue Flats, where beef and dairy production are key local income sources. The province's agro-industry is also notable, with sugar estates in Mazabuka serving as one of the country's largest sugar producers. Western Province has the smallest agricultural GDP share of the three, at 6.2%. Small- and medium-holders devote 60% of land to maize, followed by rice (18%), groundnuts (7%), millet (5%), and sorghum (3%). The Barotse Floodplain is Zambia's main rice-growing area, producing about 70% of national output (FAO, 2018). Cassava also plays an important role, although it is often not captured in official statistics. Cattle rearing in the Barotse Plains accounts for more than 20% of Zambia's national herd (MAAIF Livestock Survey, 2019), though productivity is also limited by diseases such as foot-and-mouth disease and inadequate veterinary services.

Table 1: Percentage hectares planted by small and medium sized farmers in Central, Western, and Southern Provinces.[51]

Crop	Southern	Western	Central	National[52]
Maize	57.9%	60.4%	41.8%	50.6%
Soybeans	4.3%	1.3%	35.2%	17.3%
Sunflower	14.3%	0.2%	4.4%	6.9%
Groundnuts	10.0%	7.4%	8.1%	9.9%
Sorghum	4.1%	3.1%	0.0%	1.5%
Millet	0.7%	5.2%	0.1%	2.3%
Rice	0.0%	17.5%	0.2%	1.1%
Other	8.7%	5.0%	10.1%	10.5%

63. Small and medium-sized farm yields in Zambia are low by Sub-Saharan African standards resulting in high rural poverty rates (see Section B2.1). Southern and Western Provinces have yields that fall below these already low national levels, especially for maize, driven by poorer soils, higher climate variability, and weaker access to inputs and extension services. Central Province outperforms national averages for most key crops, especially maize, which reflects its more fertile plateau soils and relatively reliable rainfall compared with the south and west.

[50] No disaggregated provincial data only for smallholders was identified.
[51] Zambia Early Warning and Statistics Unit, 2022/2023
[52] The national data presented here reflects area planted, which differs from the figures in Section B1 that refer to area harvested.

Table 2: Total yields (MT/ha) by small and medium sized farmers in Central, Western, and Southern Provinces.[53]

Crop	Central Province Yields (MT/Ha)	Southern Province Yields (MT/Ha)	Western Province Yields (MT/Ha)	National Avg Yields (MT/Ha)
Maize	1.84	1.02	0.57	1.67
Soybeans	0.51	0.24	0.51	0.34
Groundnuts	0.52	0.54	0.61	0.64
Millet	0.71	0.18	0.14	0.87
Sorghum	0.49	0.11	0.13	0.16
Cowpeas	0.51	0.24	0.51	0.34

C5. Projected Impact of Climate Change in the Rural Economy

64. Rural economies in Southern, Western, and Central Provinces is highly exposed to climate change. According to Zambia's Climate-Smart Agriculture Investment Plan (2022), the risk of crop failure is highest in Southern and Western Provinces, driven by recurrent dry spells, heat stress, localized flooding, and low adaptive capacity. Central Province is also vulnerable given its role as the country's primary maize producer. Provincial-level projections of climate impacts on agriculture and the broader rural economy are limited, particularly regarding the effects on women, youth, and other marginalized groups, so estimates may rely on past events to indicate potential impact locally.

65. Overall, rising temperatures, droughts, and floods are projected to reduce the extent of climatically suitable production zones and worse rural livelihoods. For maize, suitability is projected to decline by 28% to 37% by mid-century, with growing zones shifting northward. Southern and Western Provinces are expected to become largely unsuitable for maize production throughout the century. Central Province will remain somewhat more favorable but also faces declining suitability. These trends highlight the need to offer economic alternatives to rural households diversify beyond maize. Southern and Western Provinces, and to a lesser extent Central Province, should prioritize adoption of more climate-resilient crops such as cassava, beans, millet, sorghum, and cowpeas, already cultivated by some households. Water resources are also at risk. The Zambezi, Kafue, and Luangwa River Basins, which span AERs I and II and cover much of Southern, Western, and Central Zambia, are likely to experience reduced flows due to higher evapotranspiration and lower rainfall. This will increase competition for water across sectors and further reduce local adaptive capacity.

66. Drought and extreme heat are the most common climate shocks for rural households in Southern and Western Provinces where projected temperature increases and rainfall declines will translate into lower rural incomes and decreased food security (World Bank, 2021). Maize, highly sensitive to drought and heat especially during flowering and grain-filling, is particularly affected. Adoption of drought-tolerant maize varieties remains uneven across these provinces: Western has the lowest adoption rate (38% of smallholders), Southern is within the national average (69%), and Central has the highest rate (87%). Intercropping, another key strategy to diversify farm income and reduce climate risk, is very limited in Central (0.8%) and Southern (1.6%) but higher in Western (8.7%). More specifically, the Southern Province is especially exposed where recurrent drought and heat stress have repeatedly caused maize failures and food insecurity. Livestock is also at risk: reduced rainfall on the Kafue Flats shortens the grazing season, concentrates cattle on shrinking pastures, and raises disease risks. Livestock health surveys confirm that over 54% of herds in the province experienced weight loss or higher mortality during drought years (CIMA and UNDRR, 2019). Western Province faces similar pressures, compounded by very high projected numbers of extreme heat days. Upland plateaus are projected to experience prolonged dry spells, with field reports showing up to 70% maize harvest losses in El Niño years (FEWS NET, 2019). Livestock systems are equally vulnerable, with mortality spikes during prolonged dry seasons. Central Province is better prepared to drought and heat shocks due its higher yields and more favorable topography, but it remains vulnerable. Rising temperatures, fewer rainy days, and increasing rainfall variability are likely to impose severe stress on its agriculture even with better soils and higher adoption of drought-tolerant maize.

67. Flooding is a recurrent hazard across Southern, Western, and Central Provinces rural economies. Southern Province faces localized flash floods, particularly in the Gwembe Valley. In 2022, heavy rains submerged about 8,000 hectares of cropland, equal to roughly 10% of the province's cultivated area and disrupted grazing, damaged infrastructure, and cut off market access. About 30% of the provincial cattle herd was exposed to

[53] Zambia Early Warning and Statistics Unit, 2022/2023

flood-related hazards during this event. Western Province is dominated by the Barotse Floodplain, which is the province's most flood-exposed landscape. Seasonal inundation spans 5,500–10,750 km² in high water years, equal to between 4% and 8% of the provincial land area. Central Province experiences flood risk concentrated in the Kafue Flats and associated wetlands, where upstream storms and river–reservoir dynamics are projected to cause overbank flooding and waterlogging. Given the province's national importance as a source of maize for the country, flooding in the area may directly impact provincial and national food security.

C.6. District Climate Adaptation Public Policy

68. Zambia's Central, Southern, and Western Provinces together comprise 34 districts. In recent years, many districts have begun incorporating climate risk assessments into their IDPs and aligning proposed agricultural adaptation measures with Zambia's NAP priorities. However, the depth and quality of the climate risk analysis varies considerably. In some cases, climate vulnerability assessments are detailed and linked to concrete adaptation solutions, while in others they remain superficial and propose only generic adaptation solutions that are not tailored to local conditions. This reflects district-level chronic resource constraints for climate data, capacity building, and extension support to update their IDPs, including support from national institutions.

69. The adaptation solutions proposed at the district level are limited, sometimes generic, and often insufficiently tailored to local conditions to support rural livelihoods. Many IDPs emphasize preventing deforestation and supporting tree planting or agroforestry, alongside small-scale alternative income-generating activities such as beekeeping, eco-tourism, or crafts. Conservation agriculture and the promotion of drought-resistant crops are also commonly supported, though initiatives on improved soil management and community-based water management remain limited. Irrigation is a strong focus even in areas where future water scarcity may worsen, raising questions of long-term viability. Initiatives to expand access to improved climate information, early warning systems, and disaster risk management frameworks are rare, with only a few districts actively pursuing them despite their importance for livelihood resilience. Strengthening these areas represents a critical opportunity to make district-level adaptation planning more comprehensive, balanced, and aligned with evolving climate risks.

70. Integrated Development Plans (IDPs) in the three provinces also exhibit recurring gaps that limit their effectiveness in guiding climate-resilient planning and investment in rural areas. Climate risk analysis is often underdeveloped. Very few make use of Climate Risk and Vulnerability Assessments (CRVAs), climate risk rankings, or vulnerability mapping to estimate drought- and flood-prone areas. The climate data that is included is rarely translated into actionable vulnerability indices or localized risk prioritization frameworks, such as ward-level assessments based on exposure to extreme events like droughts and floods. Emergency early warning systems are also seldom integrated. IDPs also focus on drought and flooding as key climate risks, while often overlooking the potential impact of increased average temperatures and extreme heat, are is becoming an equally critical risk to rural households. Financially, most IDPs lack detailed costing estimates for proposed adaptation measures, including capital expenditures, operational costs, and long-term maintenance needs. Additionally, monitoring and evaluation sections frequently omit adaptation-specific indicators across key sectors, undermining the ability to track progress and adjust interventions over time.

D. Climate Adaptation Barriers and Solutions

D1. Proposed Climate Adaptation Solutions for Resilient Livelihoods

71. Zambia's rural economy faces three major climate risks: drought, flooding, and extreme heat. This exposure is aggravated by rural livelihoods' low adaptive capacity, because of rural economies' low productivity, driven by overreliance on rainfed production, declining soil quality, and weak extension services (see Section B2.1). Climate change is expected to further reduce rural incomes, deepening food insecurity and undermining already fragile rural livelihoods (see Section B2.2). Zambia's development policies have been ineffective in increasing productivity. Climate adaptation solutions have been progressively integrated into district-level IDPs. Integration has been uneven, as poorer and often more climate-vulnerable districts face greater constraints due to limited institutional and financial capacity. Even where adaptation priorities have been included in planning documents, implementation on the ground has been inconsistent (see Section B2.3).

72. Droughts, flooding and increased temperatures will reduce labour productivity and impact rural economies across Southern, Western, and Central Provinces, requiring tailored local adaptation solutions for adaptation (see Section C). Southern Province is projected to face the sharpest increases in temperature and sustained declines in rainfall, with hot days expected to triple by mid-century and rainfall declining by 8.5% under RCP

4.5. Adaptation solutions will need to emphasize diversification toward drought- and heat-tolerant crops such as millet, sorghum, and groundnuts, while also seeking to protect livestock systems on the Kafue Flats, where both grazing and water access are projected to deteriorate, and exploring alternative sources of income. Western Province requires a strategy that combines adaptation solutions to both drought and extreme heat, and flooding due to its sharp spatial contrasts between the drought-prone uplands and the flood-dependent Barotse Floodplain. Projections show rainfall declines of up to 11.5% and an increase to over 50 extreme heat days per year by 2050 under RCP 4.5, the highest extreme heat incidence in Zambia. In the uplands, sandy soils with low water retention will magnify drought and land degradation, necessitating investment in adaptation solutions similar to those in Southern Province. In the floodplain, however, recurrent inundations and erratic rainfall impact will require adaptations solutions that foster resilience against drought. Central Province's adaptation priorities will need to account for its role as Zambia's breadbasket. Although rainfall declines are projected to be less severe than the other two provinces (10% by 2050 under RCP 4.5) and plateau elevation moderates heat, the province is still projected to see a fourfold rise in extreme heat days, posing significant risks to rural productivity and national food security. Even with fertile soils and higher adoption of drought-tolerant maize, the province remains highly exposed, and the potential impact of climate shocks for rural livelihoods and the country's food security are severe. Its reliance on the Kafue Basin also creates vulnerability to both flooding and waterlogging during high-intensity storms. Tailored adaptation here should emphasize intercropping and diversification, while investing in improved soil conservation and water management solutions to sustain productivity.

73. Adaptation solutions to these climate risks are well established and included nationally in the GRZ's 8NDP (2022) and NAP (2023), and already integrated in some IDPs. These include a range of technologies, products, and services that help rural households reduce their exposure and vulnerability to climate hazards and improve their food security. Climate-smart adaptation solutions fall into three categories:
    - Technologies: Tools and equipment that apply scientific or technical methods to increase resilience, such as drip irrigation systems, and weather monitoring devices.
    - Products: Physical inputs used to manage climate risks, including drought-tolerant seeds, fertilizers, , and shade nets.
    - Services: Advisory, informational, or financial services that support household adaptive decision-making, such as weather forecasts, soil testing, and climate advisory services.

74. The Project will prioritize solutions that combine adaptation solutions specific to local climate risks with indigenous and community-based practices, and generate quick returns at low-costs. Based on initial analysis from the World Bank, IFAD, and GIZ[54] and on-the-ground experience of proposed implementing partners, the following climate adaptation solutions are tentatively proposed, subject to further validation with implementing partners, consultation with rural households and other local stakeholders, and more detailed agro-ecological and social analysis.[55]

Table 3: Key Climate Risks and Corresponding Climate Adaptation Solutions for Smallholder Farming Systems

Key Climate Risk	Potential Climate Adaptation Solutions
Drought: Reduced and increasingly variable rainfall, delayed onset of the rainy season, and shorter growing periods disrupt planting schedules, lower yields, and increase the risk of crop failure. **Extreme heat:** High temperatures reduce crop yields, accelerate evapotranspiration,	Promote the adoption of drought- and heat-tolerant varieties: - For maize, which remains the preferred staple crop for most smallholders, encourage adoption of better-suited varieties (e.g., early-maturing seeds, short-stem hybrids, and germplasm selected for stress tolerance) to reduce vulnerability without requiring a complete shift in cropping systems. - Introduce alternative crops such as groundnuts, cassava, beans, millet, sorghum, and cowpeas that are more resilient to drought and heat than maize. - Identify and promote other drought- and heat-tolerant indigenous crop varieties.
	Integrate soil and water conservation agronomic practices to help retain soil moisture, improve soil structure, reduce evaporation, and enhance water infiltration: - Introduce minimum or reduced tillage practices. - Explore the use of cover crops and crop residue retention.

[54] See, for example, GIZ (2023). Climate risk analysis for adaptation planning in Zambia's agricultural sector (available in https://publications.pik-potsdam.de/rest/items/item_28868_3/component/file_28874/content); IFAD (2020). Research Highlights – Climate Change and Future Crop Suitability in Zambia (available in https://www.ifad.org/documents/38714170/42164624/climate_analysis_zambia.pdf); and World Bank (2019) Zambia Climate-Smart Agriculture Investment Plan (available in https://openknowledge.worldbank.org/entities/publication/802ad03c-4b45-5c4a-bb14-a8bb0954864f) .

[55] All proposed inputs will undergo screening and categorization in line with the Adaptation Fund Environmental and Social Policy to ensure that no activity negatively affects the environment, people, or creates economic dependence.

increase soil moisture loss, intensify water stress, and shorten growing cycles.[56]	- Where possible, develop well fields to sustainably extract groundwater. - Promote traditional and indigenous water conservation methods (e.g., planting pits, contour ridging, or organic mulching).
	Support acquisition of low-cost, quick-return climate-smart assets to reduce losses from drought and extreme heat: - Basic infrastructure such as improved hand tools, protective crop storage, mobile drying racks, shade nets for seedlings, and lined compost pits. - In areas with access to shallow groundwater or seasonal runoff, support the use of affordable, low-tech irrigation systems that do not require access to electricity (e.g., treadle pumps or gravity-fed kits). - Explore water harvesting and storage technologies such as rooftop tanks, lined ponds, and soil moisture retention systems.
Flooding: Seasonal and flash floods damage standing crops, wash away topsoil and nutrients, and destroy inputs and infrastructure.	Promote the adoption of flood-resistant crop varieties: - Use early-maturing and waterlogging-tolerant crop varieties to shorten exposure to standing water and minimize yield loss. - Introduce flood-tolerant root crops such as cassava and sweet potatoes that can better withstand temporary waterlogging.
	Integrate farm water management and drainage agronomic practices to reduce flooding damage: - Promote field bunding, contour farming, and other soil-shaping techniques to control water flow and reduce runoff. - Support the construction and maintenance of small-scale drainage infrastructure, including furrows and diversion ditches. - Rehabilitate wetland buffer zones and natural waterways to absorb and slow floodwaters.
	Protect soil and prevent erosion from flooding: - Introduce green manures and fast-growing cover crops to provide surface protection and reduce soil erosion during rains. - Encourage the use of mulches or organic ground cover to reduce soil compaction and limit runoff velocity. - Promote vegetative buffers around fields and water bodies to reduce sediment loss and trap runoff.
	Support acquisition of low-cost, quick-return climate-smart assets to reduce flooding losses: - Provide elevated or flood-resilient storage systems to protect seeds, fertilizers, and harvested crops from water damage. - Support the use of raised seedbeds, planting on ridges, and drainage channels to reduce waterlogging in crops and root damage during heavy rains. - Introduce natural buffers, such as vegetative strips or contour hedgerows, to manage surface runoff and reduce erosion in flood-prone fields and retain topsoil.
	Increase resilience of farm infrastructure against flooding: - Elevate key structures (e.g., seed stores, drying platforms, livestock pens) above known high water marks. - Promote flood-proofed irrigation and storage facilities using materials less prone to rot, rust, or collapse in wet conditions. - Encourage raised walkways or stepping paths to maintain access to fields or homesteads during floods.
Cross-cutting solutions for all climate risks above	Crop diversification to buffer against climate shocks that may affect a single crop and reduce the risk of total yield loss: - Introduce intercropping and crop rotation systems in maize farms that include legumes such as beans, cowpeas, or groundnuts to enhance soil fertility through biological nitrogen fixation. - Train smallholders in staggered planting techniques to spread risk across rainfall variability and reduce the chance of total crop failure from false season starts or dry spells. - Explore mixed cropping, agroforestry, or small-scale horticulture alternatives to diversify income opportunities, improve household nutrition, and enable more efficient use of land and long-term soil health.
	Improve soil fertility and structure to enhance crop performance and climate resilience. - Provide soil mapping and testing to identify the most appropriate inputs for long-term soil health and crop performance. - Expand smallholder access to organic fertilizers and manure. - In areas with high soil acidity (common in AER I), supply agricultural lime to raise soil pH and improve the soil's nutrient uptake. - Promote traditional and indigenous soil management practices that align with agro-ecological principles and contribute to long-term sustainability.
	Improve timely access to climate information and agricultural inputs:

[56] Proposed solutions for drought and extreme heat are presented together due to their substantial overlap.

	- Provide reliable access to agro-weather services (e.g., seasonal forecasts, short-term weather alerts, and crop advisories) to support smallholders in deciding when and what to plant. - Timely access to inputs for adaptation (fertilizer, seeds, etc.), which are often delayed when provided by the public sector to align input use with optimal planting windows and key crop development stages, and other relevant farming subsidies.
	Invest in improved storage and drying technologies to reduce post-harvest losses: - Promote the use of hermetic bags and metal silos to protect stored crops from pests, mold, and moisture. - Support adoption of raised drying platforms, mobile drying racks, and tarpaulins to prevent contamination from soil, animals, and excess humidity. These practices are especially important for avoiding aflatoxin contamination in crops such as maize and groundnuts.
	Strengthen agricultural climate adaptation extension systems and knowledge transfer: - Enhance the technical capacity of frontline extension workers in climate adaptation practices such as soil fertility management, water conservation, flood management, seed selection, crop diversification, and veterinary support. - Strengthen linkages between extension systems and research institutions to facilitate the dissemination of climate-smart solutions tailored to local risks. - Set up climate-smart Farmer Field Schools as a complementary season-long platform through demonstration plots, joint evaluation of climate adaptation solutions, and exchange knowledge with peers.
	Diversify income sources to increase the resilience of rural households to climate shocks. - Promote the use of locally adapted livestock breeds that are more tolerant to drought, heat stress, and flooding. These breeds may include donkeys, pigs, rabbits, poultry, and small ruminants, which can provide an income and food buffer when crops fail. - Expand off-farm income opportunities to reduce dependence on climate-sensitive agriculture [Further details TBD – may include rural services and micro enterprises (e.g. repair services for farm tools, bicycles, or solar devices, mobile money agents and phone charging stations, tailoring, carpentry, or welding), sustainable charcoal production (e.g., with improved kilns), harvesting and selling non-timber forest products (e.g., mopane worms, wild fruits), participating in construction, road works, or public works programs).]

D2. MSMEs as agents to deliver climate adaptation solutions locally

75. Micro, small, and medium enterprises (MSMEs) play a central role in Zambia's rural economy, accounting for approximately 70% of national employment, with a significant share in the informal sector. In Zambia's rural economy, most MSMEs serve rural communities with smallholders as their primary clients. In Zambia, MSMEs are defined as enterprises with annual revenues between 1 and 50 million Kwacha (approximately USD 55,000 to 2.75 million) and up to 100 employees. These MSMEs include a wide range of actors, such as agro-dealers, input suppliers, irrigation services, logistics providers, and mobile platforms. They are integral to rural supply chains, and many act as intermediaries between smallholders and buyers, helping to distribute inputs and bridging rural and urban economies. They are also typically locally owned and embedded in specific geographies, and often operating informally.

76. MSMEs in Zambia are particularly well positioned to provide climate adaptation solutions and drive locally led adaptation (LLA) in rural economies due to their local presence, trusted relationships with smallholders, and operational flexibility. An adaptation MSME is defined as a company providing technologies, products, or services to improve adaptation by improving users' capacity to understand and respond to physical climate risks and related impacts, to capture related opportunities, or to contribute to the prevention or reduction of material climate risks and associated adverse impacts on assets, economic activities, people, or nature, while ensuring no harm and generating long-term value[57]. MSMEs' close proximity to rural communities gives them strong insight into local agro-climatic conditions, cropping systems, risk perceptions, and other local production challenges. MSMEs are the primary delivery channel for adaptation solutions because, as commercial actors, they have a direct financial incentive to sustain service delivery beyond the project period, unlike public extension services or NGOs, which depend on public funding or project cycles. This commercial sustainability is central to the project's exit strategy and its long-term adaptation impact. Public extension services and cooperatives can play complementary roles in facilitation, technical backstopping, and community mobilization. Milestone-based financing structures can support MSMEs by tying disbursements to demonstrated performance against pre-agreed targets and gradually phasing out concessional support as MSMEs demonstrate commercial viability. This approach reinforces commercial accountability and ensures that public

[57] As defined in the Adaptation Solutions Taxonomy developed by the Adaptation SME Accelerator Project.

finance catalyzes private service delivery rather than replacing it and ensuring long term sustainability. MSMEs also often supply affordable, accessible products to surrounding communities, including vulnerable groups. They can adapt quickly to shifts in market demand and consumer needs. Their local presence along with their responsiveness to local feedback, makes them reliable commercial partners for the supply of climate adaptation solutions. In addition, MSMEs often provide valuable extension services to households, informing them about the importance and advantages of implementing certain agriculture practices, including adaptation solutions.

77. Evidence from sub-Saharan Africa shows[58] that blended finance combined with technical assistance, last-mile agro-dealer professionalization, and value chain-integrated enterprise support consistently improve MSME sustainability outcomes. The project applies all three approaches: MSMEs are selected through a demand-driven screening process that prioritizes technical relevance and rural delivery experience (Activity 1.2.1); tailored technical assistance addresses business management, operational efficiency, and affordability barriers (Activity 1.2.3); supplier linkages reduce sourcing constraints (Activity 1.2.2); and milestone-based financing ties disbursements to delivery performance, with financing tapered as commercial viability is established (Activity 1.2.4). Together, these provisions are designed to catalyze market-based service delivery so that by the time project ends, MSMEs have an established customer base, a proven delivery model, and sufficient revenue from direct sales, service fees, and bundled business models to operate independently.

78. Women own an estimated 42% of micro-enterprises and 36% of SMEs in Zambia[59], playing a critical role in the national economy. However, they remain disadvantaged in starting and growing their businesses compared to their male counterparts. Traditional norms and legal constraints restrict women's economic agency and limit opportunities for entrepreneurship and business growth. Unpaid care and domestic responsibilities place a greater burden on women, who spend more time on household chores, fuel and water collection, and childcare. This limits their ability to scale adaptation-focused MSMEs or participate in value chains as suppliers or service providers. Supporting women-led MSMEs and reducing structural barriers to their growth is essential to unlocking the full potential of locally led adaptation in rural farming systems.

79. UNIDO has initiated a stakeholder engagement process in Zambia through its local networks and has tentatively identified 13 potential MSMEs offering climate adaptation solutions to rural areas. Some of the solutions include resilient crop varieties, improved water management, access to weather information, and improved storage facilities. A more detailed mapping and validation of these MSMEs will be conducted during the Project Formulation Grant (PFG) phase to confirm their capacity, geographic coverage, and alignment with the project's adaptation objectives.

D3. Sub-national public policy solutions to climate adaptation in rural areas

80. To strengthen district-level planning for adaptation in rural economies and improve the enabling environment for climate adaptation solutions, targeted policy support is needed to update IDPs in target regions' districts. This includes systematizing the IDP climate adaptation sections based on best-in-practice IDPs from well-resourced districts and aligned with key national policy documents such as the 8NDP and the NAP. In many cases, this will require filling gaps in district-level planning to ensure that rural adaptation needs are fully integrated. Some common district-level gaps for target regions include:
    - Conducting local climate risk vulnerability assessments to map drought- and flood-prone areas.
    - Encouraging the adoption of climate adaptation solutions that respond to climate risk findings and reflect community demand.
    - Provide additional support for livestock-based systems as an alternative source of income to agriculture such as dip tanks, veterinary services, and small-scale processing facilities.
    - Support alternative sources of income for community financial resilience.
    - Promote integrated land management through coordinated planning of agricultural land use, forest buffers, and water access.
    - Invest in rural facilities for input and grain storage to improve rural access to climate-smart inputs and reduce post-harvest losses.
    - Improve community water management initiatives such as defining water user rights and fees, managing resources around water points and boreholes, and mapping groundwater reserves.

81. Developing a rural weather information system is also critical to fostering more resilient livelihoods, and is rarely

[58] CSIS (2023). Supporting Small and Medium Enterprises in Sub-Saharan Africa through Blended Finance; IFC (2023). Last Mile Retailer: Improving Outcomes in Agribusiness; IFC/ETG (2022). ETG and IFC Partner to Support Smallholder Farmers in Africa

[59] No identified data on women-owned MSMEs

included in the IDPs of target regions. This system should provide timely and localized weather forecasts to households and extension officers to guide decisions on planting schedules, crop selection, the timing of technical assistance, and other productive activities. Digital platforms could be leveraged to disseminate climate information services efficiently, potentially building on Zambia's high mobile phone penetration. Potential sources for this data may include Zambia Meteorological Department which operates the country's hydrometeorological observation network, the Ministry of Agriculture and its Agricultural Information Service, and the Disaster Management and Mitigation Unit, which manages Zambia's national early warning systems and disaster risk reduction.

82. Building on the weather information system, Zambia should also develop and implement a district-level early warning system to reduce exposure to extreme weather events and improve rural communities' preparedness and response, particularly for droughts and floods. This system should include community-based monitoring and warning mechanisms, clear dissemination and communication protocols, and locally appropriate response measures.

83. To support the Comprehensive Agriculture Support Program (CASP) and accelerate Zambia's development agenda, the new e-voucher system can improve rural livelihoods resilience. E-voucher system has faced several implementation challenges that limit its effectiveness for crop diversification and climate-smart agriculture. On the smallholder side, delays in registration processes led to the exclusion of some producers and cooperatives, while late card printing and distribution often prevented timely access to inputs. On the supplier side, many participating agro-dealer MSMEs lacked the ICT skills and training to operate point-of-sale (POS) devices, and some were unfamiliar with proper redemption procedures or basic business practices. MSMEs also need to expand the variety of inputs eligible under the program, especially certified seeds and fertilizer, to better support crop diversification and the integration of climate-smart practices. Capacity building for District Agricultural Coordinators and public extension officers is also essential to support the implementation of the e-voucher program and broader climate adaptation solutions. Training should also cover the interpretation of climate information services, as well as adaptation solutions reflected in the revised IDPs. These efforts should ideally be supported through partnerships with universities and research institutions to strengthen the technical foundation and long-term sustainability of extension services.

D4. Barriers for the adoption of climate adaptation solutions

84. There are multiple barriers that constrain rural household demand for climate solutions (Section D1), MSME supply of these solutions (Section D2), and the development and implementation of district public policies to provide a supportive enabling environment for their adoption (Section D3).

85. Rural households face several barriers that constrain their demand for climate adaptation solutions. These households face high upfront costs to integrate these solutions, limited access to inputs and information, and weak climate adaptation extension services, all of which reduce their demand for and adoption of adaptation solutions. These barriers are particularly relevant when promoting a shift away from maize, widely grown in the target regions and highly sensitive to drought and heat, toward more resilient crops, and intercropping practices which is very limited in Central (0.8% of smallholders in the province) and Southern (1.6%) but higher in Western (8.7%). It will also be important to design solutions that safeguard the crucial role of certain districts in maintaining national food security, especially in Central Province and Southern Province.

86. Many climate adaptation solutions require high upfront capital and labour costs, but offer delayed returns, making them unaffordable to most rural households. Smallholders face limited access to input markets, including improved seeds, fertilizer, and lime. If products are sold, they often come in larger (more expensive) volumes, rather than smaller and more affordable 1–2 kg micro-packets suited to smallholder needs in a maize-dominated farm. Access to labour-saving equipment, such as jab planters, direct seeders, and rippers, also remains limited due to high costs. Affordable credit is scarce, leaving most households without the support needed to cover upfront investments.

87. Rural access to climate information is limited. Most rural households in the target regions lack localized data on climate risks, soil fertility, and water availability, which limits effective decision-making. Without timely and location-specific information, households struggle to select appropriate inputs, plan planting schedules, or adopt other adaptive practices suited to their agro-ecological context. Also, there are few recent Climate Vulnerability and Risk Assessments (CVRAs) conducted locally to support farm planning. Even where CVRAs have taken place, they are rarely translated into actionable guidance for households or integrated into extension service advice. As a result, rural households often rely on informal knowledge systems and experience-based

decision-making, which may not be sufficient to manage increasing climate variability.

88. Capacity building and extension services for climate adaptation remain weak. Farm extension services are very limited in Zambia and the target regions, especially for climate adaptation solutions. Cooperation between academia, public institutions, and households for the adoption of climate solutions is limited, and extension services focused on adaptation (sometimes provided by MSMEs, as mentioned above) are often inadequate or entirely absent in some areas. This leaves households without sufficient guidance and follow-up on how to integrate adaptation practices into their existing farms, select appropriate crops for diversification or mixed cropping, or prepare for delayed planting and sudden extreme events. Support is also lacking for techniques to reduce post-harvest losses, such as improved storage, drying facilities, and handling practices.

89. Women face even greater barriers to accessing adaptation solutions. In addition to the structural and financial constraints described above, women are often further disadvantaged by unequal access to land, credit, extension services, and decision-making processes (see Sections A1 and B2.2). Traditional gender roles and unpaid care responsibilities restrict their time, mobility, and economic agency, limiting their ability to adopt new practices or participate in training and input markets. A gender-sensitive approach is therefore essential to ensure that adaptation solutions are accessible, relevant, and sustainable for women smallholders.

90. Even where smallholder demand exists, there are significant barriers to MSME supply of adaptation solutions. MSMEs' ability to deliver adaptation solutions and provide post-sales services is limited by multiple structural and operational barriers. As a business, MSMEs are often undercapitalized and operate on narrow margins. This reflects the low profitability of rural markets, particularly in remote or low-density areas which suffer from poor infrastructure, high transport costs, and low purchasing power and which restrict MSMEs to offering mostly low-cost, fast-moving inputs. Due to narrow margins, MSMEs typically have limited cash flows to build inventory or offer credit to their customers. As a result, few MSMEs are in a position to experiment with new offerings such as innovative adaptation solutions, which carry higher upfront costs, uncertain demand, and slower turnover.

91. MSMEs also face significant challenges in sourcing climate adaptation solutions. Most rural MSMEs are disconnected from national-level importers or wholesale distributors, which are typically based in urban centres and handle larger purchase volumes. Instead, they rely on local intermediaries and resellers with limited availability of adaptation products. This weakens MSMEs' ability to access relevant solutions and limits their visibility into pricing, quality standards, and technical specifications. Additionally, adaptation solutions are often imported, but most rural MSMEs lack the relationships, logistics, or capital required to source, install, or service these goods effectively.

92. Many MSMEs also lack the technical capacity to provide extension services for the sustained integration of climate adaptation solutions. MSMEs' staff technical knowledge is often limited to staple crop inputs and traditional farming practices, and few have been comprehensively exposed to or trained on the design or implementation of adaptation solutions. Opportunities to upgrade skills are scarce, due to limited cooperation with universities and public institutions that could offer technical guidance to MSMEs.

93. Weak program design has also limited the adoption of adaptation solutions in rural households. As shown across several projects[60], stakeholder participation is essential in participatory adaptation planning to foster ownership, enhance livelihoods, and reflect community values, yet it is often insufficiently incorporated in practice. Blending indigenous knowledge with scientific approaches is necessary to ensure that adaptive solutions are integrated in rural communities, but is sometimes treated as a procedural formality rather than a meaningful input. The success of these community-based initiatives often depends on strong community ownership, collective trust, and accountability, yet few activities are designed to systematically build local buy-in or transfer responsibility to communities over time.

94. At the district policy level, many District Development Coordinating Committees (DDCCs) face chronic resource constraints for climate data, capacity building, and extension support to update their IDPs. Most DDCCs do not have detailed, localized climate information to update their IDPs, and often lack the technical capacity regarding the GRZ's NAP, understanding climate risk assessment and defining context-specific adaptation solutions. The

[60] Highlighted in Zambia's NAP (2023). For example, see Ministry of Agriculture, UNDP, and GCF (2022). "Interim evaluation of the strengthening climate resilience of agricultural livelihoods in agro-ecological regions I and II." (available here: https://erc.undp.org/evaluation/documents/detail/21647)

hydrometeorological infrastructure and climate information services needed for evidence-based planning remain underdeveloped and climate data systems suffer from long time lags. Budget constraints also limit capacity-building opportunities for DDCC staff.

95. IDP implementation is also hindered by shortages of skilled public staff. Many District Agricultural Coordinators and extension service officers lack adequate training in climate adaptation solutions as well as access to demonstration plots, appropriate tools, reliable transport, and operational budgets. Collaboration with universities and research institutions remains weak, limiting the transfer of research into practical, field-level solutions. These capacity gaps among frontline public staff reduce the quality and frequency of household engagement, while resource shortages constrain their ability to provide timely, context-specific advice.

96. Coordination between national and sub-national public institutions is weak. Funding, technical support, and the sharing of lessons learned between district and the national institutions are often insufficient, fragmented, and unpredictable. Communication channels between DDCCs, ministries, and national agencies are limited, and feedback from local planning processes rarely informs national priorities. As a result, district-level innovation is often isolated, not fully aligned with the NAP, and successful practices are not systematically scaled or replicated across rural economies.

97. While rural community participation is often mentioned in policy frameworks, substantive involvement of local these communities in the design and iteration of IDPs remains limited and requires significant strengthening to integrate LLA principles. Community consultations should ensure that rural households actively participate in IDP formulation processes and climate adaptation planning workshops, bringing their experiences and priorities into policy design. Engaging traditional leaders, producer cooperatives, and producer associations can help surface local knowledge, values, and priorities that may otherwise be overlooked. Additionally, community engagement is often limited, and groups such as women, youth, and marginalized households are frequently underrepresented, which undermines the effectiveness and equity of adaptation efforts. Finally, policy frameworks should proactively support feedback loops and participatory learning processes, including the use of formal mechanisms for communities to share insights on policy performance and evolving adaptation needs.

Project/Programme Objectives:

98. This project addresses the financial, informational, technical, and institutional barriers that limit sustained uptake of adaptation solutions by rural households in the target regions to reduce their vulnerability against three climate risks: drought, flooding, and extreme heat. It will expand householders' capacity and incentives to adopt solutions while strengthening local MSMEs to provide affordable, context-appropriate and innovative goods and services, linking supply and demand to build a functioning local market for adaptation solutions that are needed locally. Given the severity of the projected climate risks, the project will also support rural communities by diversifying livelihoods and strengthening financial resilience via alternative income opportunities and community savings groups (where accumulated savings can also be used to purchase climate adaptation solutions). The project will further strengthen the enabling environment for adaptation solutions by updating district-level planning and governance through Integrated Development Plans (IDPs) aligned with national policies (especially the NAP) and community priorities, and by supporting their effective local implementation.

99. **Overall Objective**

To reduce vulnerability and increase the resilience of rural households and communities in the Southern, Western and Central Provinces of Zambia to the climate risks of drought, flooding and extreme heat, by addressing the financial, informational, technical and institutional barriers that limit the sustained uptake of locally appropriate climate adaptation solutions

Specific objectives

The following specific objectives jointly contribute to the achievement the overall project objective by addressing the key challenges related to the demand, supply, finance and system-level constraints that prevent the sustained uptake and scaling of climate-resilient solutions:

a. Strengthen community-driven identification of climate risks and demand for locally appropriate adaptation solutions and enable their effective delivery through accountable and inclusive local service providers, including MSMEs, in line with locally led adaptation principles.
b. Improve the financial resilience of rural households and communities and enable affordable and equitable

access to climate adaptation solutions and diversified, climate-resilient livelihood opportunities.

c. Strengthen district-level planning, institutional capacities, adaptive management and learning systems in support of the design, delivery, sustainability and scaling of climate-resilient livelihood strategies and adaptation solutions beyond the project lifetime

100. The project will be grounded in LLA principles by embedding participatory approaches in program design and implementation and integrating delivery models that enhance women's access to adaptation solutions while also expanding access for youth and marginalized groups. This approach will ensure that adaptation measures are tailored to local agro-ecological conditions, reflect community-defined priorities and widely owned, creating stronger incentives for sustained adoption and long term resilience.

Project/Programme Components and Financing:

Table 4: Project Components, Expected Outcomes, Outputs, and Budget Allocation

Project / Programme Components	Expected Outcomes	Expected Concrete Outputs	Amount (US$)
Component 1: Community driven demand and supply for climate adaptation solutions	Outcome 1: Rural households adopt climate-resilient solutions that enhance adaptive capacity and reduce livelihood vulnerability	Output 1.1: Participatory processes including training and co-design sessions delivered to rural households to identify and build demand for innovative and context-specific adaptation solutions	3,000,000
		Output 1.2: Climate adaptation solutions delivered to rural households and rural communities by local MSMEs identified, trained, and supported with financing and technical assistance by the project	5,000,000
Component 2: Financial empowerment and entrepreneurship for resilience	Outcome 2: Rural communities achieve greater financial resilience and diversified income sources for increased adaptive capacity.	Output 2.1: Community Resilience Financing vehicle designed and operationalized to incentivize alternative livelihoods and community-driven adaptation initiatives	3,750,000
		Output 2.2: Community savings groups supported through tailored capacity-building on financial literacy, entrepreneurship and climate risk management	3,750,000
Component 3: Locally led adaptation demand assessment and planning	Outcome 3: District development planning integrates community priorities and national and local climate adaptation and resilience measures.	Output 3.1: Integrated development plans (IDPs) of target districts reviewed and updated with climate risks and priorities, and community-level Adaptation Action Plans prepared with identified priority adaptation solutions.	2,000,000
		Output 3.2: National and local institutions trained and equipped with tools and processes for adaptive governance, coordination, and climate policy feedback	1,000,000
Component 4: Adaptive Management, Learning, and Sustainability	Outcome 4: Adaptive management and inclusive governance ensures effective learning and sustainable adaptation	Output 4.1: Adaptive management structures established	750,000
		Output 4.2: Gender- and youth-responsive learning systems developed, piloted, and operationalized	810,495
		Output 4.3: Knowledge products and communication materials on adaptation captured, synthesized, and disseminated at community, national, and international levels	1,000,000
4. Project/Programme Execution cost			1,980,980
5. Total Project/Programme Cost			23,041,475
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)			1,958,525
Amount of Financing Requested			**25,000,000**

Projected Calendar:

Table 5: Projected Project Calendar and Milestones

Milestones	Expected Dates
Start of Project/Programme Implementation	November 2027
Mid-term Review (if planned)	May 2031
Project/Programme Closing	October 2034
Terminal Evaluation	May 2034

Project Duration: 7 years (84 months, including 6 months of inception phase and 6 months of project closure and evaluation).

PART II: PROJECT / PROGRAMME 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.

A1. Proposed intervention

101. Rural communities in Zambia's Southern, Western, and Central Provinces face three major climate risks: drought, flooding, and extreme heat; and multiple interconnected financial, informational, technical, and institutional barriers that limit the sustained uptake of climate adaptation solutions. Potential adaptation solutions are well-known and included in key national climate policies such as the 8NDP and the NAP, and in some cases in district-level IDPs. However, many adaptation solutions require high upfront costs and labor with delayed returns, while access to inputs in small, affordable quantities and labor-saving equipment is limited. Most rural households lack access to local, timely, and actionable climate and data for decision-making. Extension services for climate adaptation from MSMEs and the public sector are weak, fragmented, and often absent, leaving rural households without practical guidance on adaptation solutions. Timely access to public benefits, such as FISP subsidies under the e-voucher system, could facilitate access to inputs for adaptation if these households and agro-dealers receive supporting technical assistance. Women face additional constraints, including unequal access to land, finance, and extension services, as well as time and mobility limitations linked to traditional gender roles, making a gender-sensitive approach essential for equitable access to adaptation solutions. These barriers are compounded by low adaptive capacity in the sector, driven by low productivity, overreliance on rainfed agriculture, declining soil quality, and weak extension services.

102. To promote the sustained adoption of profitable climate adaptation solutions, this project will address key barriers by building a functioning local market for adaptation solutions tailored to local ecological conditions, diversify rural livelihoods and improve the community's financial resilience, and improve the public policy enabling environment for adaptation solutions. The project will expand rural households' capacity and incentives to adopt solutions while strengthening local MSMEs to provide affordable, context-appropriate options, linking supply and demand. The project will also help diversify rural livelihoods and reinforce community financial resilience through alternative income opportunities and community savings groups. In parallel, the project will strengthen the enabling environment for adaptation by updating district-level planning and governance through Integrated Development Plans (IDPs) aligned with national policies (especially the NAP) and community priorities; and by supporting the IDPs effective local implementation, including expanding localized climate information services and early warning systems, enhancing public sector capacity to deliver adaptation support, and improving access to public benefits to offset adaptation costs. The project will also strengthen governance and policy feedback loops between national and local levels through structured channels, shared lessons learned, and targeted technical support to priority districts.

103. The project will be rooted in LLA principles by embedding participatory approaches in program design and implementation, and by integrating delivery models that enhance women's access to adaptation solutions and strengthen access for youth and marginalized groups. Rural households will gain access to technologies, products, and services needed to invest in resilience, while MSME suppliers and district-level public institutions will be able to respond to their needs, laying the foundation for widespread, lasting adoption of climate adaptation solutions across rural Zambia.

104. The project will explore climate adaptation solutions locally, that are context-specific and innovative. Some of these solutions have been tried and tested in other regions but will be tailored to local ecological conditions and the specific constraints faced by rural households. This will include establishing formal linkages between extension service providers and universities and research institutions to embed climate-smart research within local advisory services. This approach will improve the flow of updated technical guidance to frontline service

providers and build long-term capacity for adaptive learning. Additionally, while many of the proposed practices, such as intercropping and water harvesting, are already known locally, their integration into coordinated, area-specific adaptation packages represent a novel approach in these contexts.

A2. Opportunities for project Implementation

105. Rural households are generally cautious adopters of new practices and require sustained support to integrate climate adaptation solutions for the long term. This reflects their high aversion to risk and reluctance to adopt solutions with uncertain or unclear short-term benefits. However, there is an opportunity to build on public sector and donor initiatives that have already introduced adaptation solutions. This is because evidence shows that households who adopt one climate-smart practice become more open to adopting others, and those with neighbours already using such practices are more likely to follow. Therefore, it is often more effective to strengthen and expand existing practices rather than introduce entirely new ones.

106. Many climate adaptation solutions identified above are being adopted by rural households in an uneven manner. The GRZ has supported rural climate adaptation through policies such as the Climate-Smart Agriculture Investment Plan (CSAIP, 2019), the NAP (2023) and the 8NDP. Some of these solutions are already being adopted by rural households. Examples include residue retention, either as mulch or for livestock grazing (adopted by 59% of smallholders nationally), use of drought-tolerant maize varieties (23%), legume intercropping (13%), legume rotations (8.5%), minimum soil disturbance (7.8%), and agroforestry (4%). Similar data the provincial level highlights other potential entry point for scaling adaptation practices in the target regions. Drought-tolerant maize has already been partially adopted in Western (38% of smallholders), Southern (69%), and Central Provinces (87%). Intercropping, another important strategy for diversifying farm income and reducing climate risk, remains limited, with adoption rates of 0.8% in Central, 1.6% in Southern, and 8.7% in Western Province. These figures highlight both the opportunity for scaled adoption of climate adaptation solutions, and the fragmented nature of their current uptake. Engaging communities with early experience can help consolidate adoption of these solutions and encourage uptake by others.

107. Additionally, some rural communities in target regions are already adopting alternative crops that are more resilient to climate change. Certain species, such as groundnuts (7.5%-10% of the area planted in the target regions), sorghum (3%-4% in Southern and Western Provinces), millet (5.2% in the Western Province) and cassava (also key in the Western Province though not included in national statistics) are projected to be less affected by climate change and may serve as viable substitutes for maize. Because these crops are already familiar to many households, they represent a lower-risk entry point for scaling adaptation practices. Expanding support for these varieties, capacity building, and input access, will strengthen the resilience of rural households and complement other climate-smart agriculture interventions.

108. Importantly, despite strong policy support, many initiatives to support climate adaptation solutions have not resulted in permanent adoption. Zambian rural households show dis-adoption rates of climate-smart practices as high as 95%, highlighting the challenge of sustaining uptake. This creates an opportunity to focus on recipients who have recently adopted certain practices by reinforcing their continued use through follow-up extension services, improving timely access to inputs, and linking them to peer networks and extension systems. Ensuring that practices deliver visible short-term benefits while being embedded in local knowledge systems will further increase the likelihood of lasting uptake.

A3. Project Structure

109. This project is structured around four interlinked components to jointly encourage rural households and rural communities to adopt, sustain, and scale climate adaptation solutions. Component 1 develops the local demand from rural households and the supply from MSMEs for community-centered adaptation solutions, fostering a functioning local market. Component 2 strengthens household and community financial resilience through community savings groups and targeted milestone-based financing for alternative, diversified, and climate-resilient livelihoods. Component 3 enhances district-level policy planning and implementation to improve the enabling environment for these households to adopt and scale climate adaptation solutions. Component 4 ensures that learning and knowledge-sharing systems are inclusive and adaptive, enabling adaptation solutions to remain responsive to evolving climate and community needs, and be sustained beyond the project's lifetime. Together, these components create mutually reinforcing drivers to advance rural resilience that combine local ownership, institutional capacity, and practical solutions to support climate-resilient rural livelihoods.

Unidentified Sub-Projects (USP)

110. The project includes several interventions under Outputs 1.1 and 1.2 that fall under the Adaptation Fund's definition of Unidentified Sub-Projects (USPs). These include:
    - The final selection and deployment of climate adaptation solutions for rural households based on the indicative menu of potential adaptation solutions provided in Table 3, and grounded in established research from the World Bank, IFAD, and GIZ;
    - The identification and support of MSMEs to deliver appropriate climate adaptation solutions;
    - The piloting and customization of climate services and digital tools tailored to rural households and MSMEs.

    These interventions are not pre-defined at the concept stage in order to uphold the principles of locally led adaptation (LLA) and ensure the project remains responsive to localized climate risks, evolving community priorities, and dynamic technology and market environments. Site-specific vulnerabilities, institutional capacities, and socio-economic contexts vary significantly across the targeted districts—rendering a one-size-fits-all approach technically inappropriate and potentially maladaptive.

111. In accordance with the Adaptation Fund's Updated Guidance for Implementing Entities on USPs (Decision B.39/52), the use of USPs is justified on the basis that:
    - The nature or location of certain sub-projects cannot yet be determined without the outcomes of participatory planning processes and climate risk assessments;
    - Deferring selection allows for demand-driven, inclusive co-design of adaptation solutions, resulting in higher uptake, social acceptability, and long-term sustainability;
    - The benefits of flexibility and responsiveness outweigh the increased safeguards complexity, provided that robust environmental and social safeguards are enforced.

112. All USPs fall within permissible categories defined in the AF guidance, including partially unidentified sub-projects and fully unidentified sub-projects within a fixed framework. They will be governed by a comprehensive Environmental and Social Management Framework (ESMF), which will be drafted during the full proposal stage. The ESMF will outline:
    - A clear process for screening all USPs for environmental and social risks prior to implementation. Adaptation solutions will be validated through detailed agro-ecological and social analysis, alongside extensive stakeholder consultations with rural households and local actors. MSME selection criteria will include the enterprises' operational presence in target areas, alignment with community-defined priorities, potential to deliver or scale adaptation solutions, and a clear commitment to inclusive service delivery, particularly for women and youth. Every candidate MSME will be vetted against the project's ESMF and GP;
    - Defined eligibility and exclusion criteria for sub-project types and locations;
    - Stakeholder engagement provisions, including gender-responsive planning and accessible grievance redress mechanisms at all USP locations;
    - Clear roles and responsibilities for UNIDO (Implementing Entity) and national/local Executing Entities in safeguards implementation and supervision.

113. Budgetary provisions will be allocated to cover the full cost of USP safeguards screening, stakeholder consultations, gender and environmental assessments, and adaptive safeguards management. The Monitoring and Evaluation (M&E) system will track the identification, screening, implementation, and safeguard performance of each USP, with results disaggregated by sex and other social identifiers, in alignment with the Adaptation Fund's results framework. The final design, selection mechanisms, and safeguard measures for USPs will be elaborated in the full project proposal, ensuring compliance with the Environmental and Social Policy (ESP), Gender Policy (GP), and USP guidance issued by the Adaptation Fund.

Table 6: Justification for USPs

USPs	Justification for non-identification at this stage (criterion i.)	Benefits for non-identification (criterion ii.)	Benefit/risk trade-off (criterion iii.)
Output 1.1: Participatory processes including training and co-design sessions delivered to rural households to identify and build demand for innovative and context-specific	The specific adaptation solutions to be supported (e.g., crop varieties, water-efficient tools, digital climate advisory platforms) must be co-identified with rural households through participatory planning, local climate risk assessments, and socio-economic profiling. These will differ by district, livelihood group,	Enables inclusive, context-responsive, and locally owned adaptation actions that align with LLA principles. Increases uptake, gender and youth inclusion, and long-term sustainability of solutions.	All selected solutions will undergo safeguards screening under the ESMF, including environmental, social, gender, and digital inclusion checks. Only interventions passing these filters will be funded.

adaptation solutions.	and exposure to climate hazards. Pre-defining interventions would bypass this critical process.	Allows flexibility for emerging innovations.	Adaptive risk management will reduce potential harm.
Output 1.2: Climate adaptation solutions delivered to rural households and rural communities, by local MSMEs identified, trained, and supported with financing and technical assistance by the project.	The MSMEs and climate solutions to be supported will be identified through open, competitive calls based on the demand defined in Output 1.1. Business models, product offerings, and technical capacity will vary by district and sector. Pre-selecting suppliers or technologies would limit responsiveness and may exclude better-suited local actors.	Enhances transparency, promotes rural innovation, and ensures that support reaches MSMEs capable of delivering context-appropriate, scalable, and gender-responsive solutions. Stimulates private sector-led adaptation.	Each MSME proposal will be screened against the project's ESMF and Gender Policy. Eligibility criteria, safeguards screening, and milestone-based funding will ensure alignment with AF policies and minimize environmental and social risks.

114. Consultation processes for Unidentified Sub-Projects will be differentiated between (i) MSME-delivered adaptation solutions under Output 1.2 and (ii) the financing vehicle under Component 2. Under Output 1.2, facilitated community consultations and co-design sessions will be used to validate priority climate risks, demand for specific adaptation solutions and services (including operation and maintenance requirements), and transparent criteria for selecting beneficiary households and groups, with explicit inclusion of women, youth and vulnerable groups. Under Component 2, community consultations will be used to identify locally prioritised adaptation investments and to agree on inclusive eligibility criteria for recipient community entities.
In both cases, validated beneficiaries and investments will be confirmed through community meetings and documented as part of the technical, fiduciary and environmental and social screening and approval process for each USP by the Project Management Unit and the national Executing Entity.

Theory of Change

115. The Theory of Change outlines how the project's four components interact to jointly support rural households and rural communities in adopting, sustaining, and scaling climate adaptation solutions. It identifies the causal pathways linking targeted support for household demand and MSME supply, strengthened financial capacity through savings groups and milestone-based financing, an enabling environment through improved district-level planning, implementation, and institutionalized feedback loops between district and national authorities, and inclusive governance, monitoring, evaluation, and learning systems that sustain climate adaptation solutions.

Component 1: Community driven demand and supply for climate adaptation solutions

- IF rural households are supported to identify, pilot, adopt, and scale innovative climate adaptation solutions through locally led approaches, and
- IF rural MSMEs are strengthened and incentivized to source and supply affordable, context-appropriate solutions at scale, including improved extension services,
- THEN a functioning, locally driven market for adaptation solutions will emerge, ensuring rural households have both the technical and financial capacity to permanently adopt practices that improve farm profitability and reduce household vulnerability to climate risks.
- BECAUSE demand will be stimulated through targeted capacity building, start-up kits, access to climate information, early warning systems, and relevant public benefit schemes, while supply will be strengthened through MSME enterprise support, technical training, market linkages, and milestone-based incentives for last-mile delivery and sustained uptake.

Component 2: Financial empowerment and entrepreneurship for resilience

- IF a Community Resilience Financing Facility is established to support alternative income-generating activities and solutions that reduce vulnerability to climate shocks for increased resilience, and
- IF rural households are supported to strengthen savings groups with sound governance, financial literacy, and climate-resilient livelihood planning,
- THEN rural communities will have the financial capacity, organizational structures, and incentives to invest in diversified and climate-resilient income-generating activities.
- BECAUSE savings groups will equip members with the skills, resources, and collective mechanisms to mobilize and manage funds, including for the purchase of climate adaptation solutions, while the Financing Facility will provide targeted financing to scale viable climate-resilient rural initiatives, resulting in greater resilience and long-term economic stability.

Component 3: Locally led adaptation demand assessment and planning IF district-level planning processes are strengthened by updating Integrated Development Plans (IDPs) to align with national frameworks and

community needs, identify local climate adaptation gaps through climate risk assessments, and IDPs are translated into actionable community-level Adaptation Action Plans (AAPs); and

- IF national and local institutions have structured, well-functioning feedback channels and targeted technical support arrangements that are responsive to evolving climate risks, community priorities, and implementation challenges,
- THEN district development planning will systematically integrate local adaptation priorities, enabling households to tap into the information, services, and public programs needed to adopt adaptation solutions,
- BECAUSE IDPs and AAPs will address local adaptation gaps, embed locally identified solutions, and be reinforced by institutional two-way communication between district, provincial, and national authorities, ensuring that local priorities can inform district and national commitments, and that priority districts have additional capacity and technical support to design and deliver adaptation measures effectively

Component 4: Adaptive Management, Monitoring and Sustainability

- IF adaptive management processes are established, with clear roles for community representatives;
- IF gender- and youth-responsive learning systems are co-created with local actors, integrating resilience metrics, risk tracking, and accessible data platforms; and
- IF knowledge products, lessons, and evaluation findings are systematically captured, shared, and disseminated at community, national, and international levels;
- THEN adaptation solutions will be implemented more effectively, remain responsive to evolving climate and community needs, and be sustained beyond the project's lifetime;
- BECAUSE governance structures will ensure inclusive participation and accountability, learning systems will provide timely and actionable insights, and knowledge-sharing will enable replication, scaling, and integration of successful approaches into national and local systems.

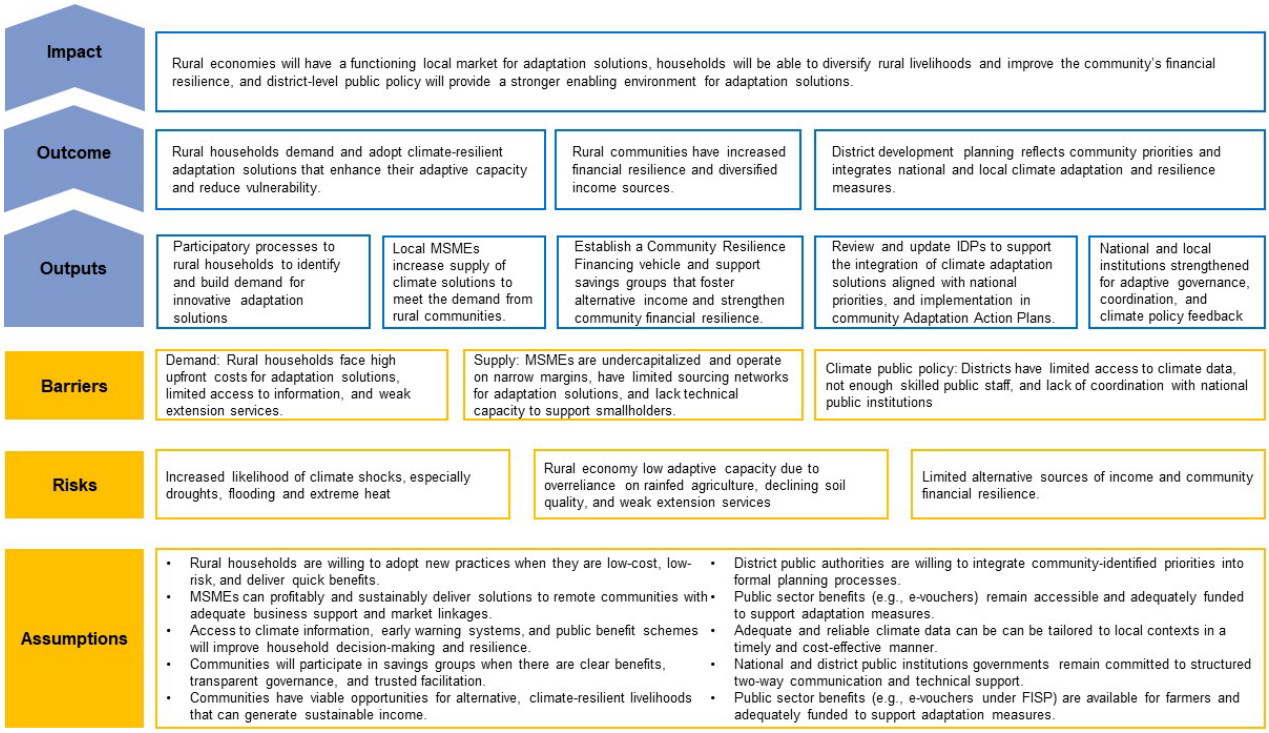

Figure 11: Theory of Change

Component Overview

116. **Component 1: Community driven demand and supply for climate adaptation solutions.** Component 1 will enable rural households to adopt and sustain innovative climate-resilient adaptation solutions that strengthen their productivity, reduce their exposure to climate risks, and improve food security. On the demand side, the project will help these households to identify, pilot, adopt, and scale context-appropriate climate adaptation solutions by integrating locally led adaptation principles into community consultations. The project will deliver inclusive and practical capacity building through workshops and field schools, and facilitate access

to climate information and early warning systems, extension support, and public benefit schemes designed to improve resilience and productivity. These activities will reduce key adoption barriers, particularly limited access to timely climate information and inadequate extension support for adaptation. They will also ensure strong stakeholder participation, fostering community buy-in and ensuring that solutions reflect local needs and priorities. On the supply side, the project will strengthen the capacity of rural MSMEs to deliver affordable adaptation solutions at scale by providing tailored enterprise support, technical training, and market linkages to identify, source, and deliver these solutions. MSMEs will be identified through a demand-driven and performance-oriented process, whereby community-level participatory demand assessments and co-design processes will first define locally validated adaptation needs, and MSMEs will only be engaged where their products or services directly respond to these priorities. MSMEs will be screened based on technical relevance and operational capacity, including experience delivering adaptation solutions in rural contexts and the ability to provide installation, after-sales support, and user training where required. Milestone-based financing will incentivize last-mile delivery and the sustained uptake of solutions by rural households. MSMEs will also receive support to deliver extension services alongside District Agricultural Coordinators and public extension officers, in partnership with universities and research institutions to ensure ongoing access to technical expertise. This will address key MSME constraints to supply climate solutions to rural households, including affordability barriers for buyers, limited sourcing options, weak business and financial management skills to improve their profitability in rural areas, and weak technical capabilities to provide extension services. Together, these activities will create a functioning locally-driven market for adaptation solutions, ensuring rural households have both the technical and the financial capacity to permanently adopt climate adaptation practices that increase their adaptive capacity to climate risks.

Outcome 1: Rural households adopt climate-resilient solutions that enhance adaptive capacity and reduce livelihood vulnerability

117. Output 1.1: Participatory processes including training and co-design sessions delivered to rural households to identify and build demand for innovative and context-specific adaptation solutions.

Activity 1.1.1: Shortlist potential adaptation solutions to be supported locally for adoption based on:

- Findings from local climate risk vulnerability assessments to evaluate households' exposure and adaptive capacity to climate hazards and GIS tools to map drought- and flood-prone areas (conducted under Activity 3.1.3).
- Community consultations to assess their preference for adaptation solutions and identify relevant indigenous and community-based practices.
- A cost-benefit analysis of potential adaptation solutions to prioritize low-cost solutions that can generate quick returns.

Activity 1.1.2: Deliver capacity building on shortlisted climate adaptation solutions to rural households, enabling them to select, pilot, and innovate solutions for long-term integration and scaling into existing farm practices. Training will be delivered through a range of capacity building approaches (e.g., workshops, farmer field schools, individualized and group technical assistance, and peer-to-peer farmer mentoring with champion adopters) ensuring inclusive participation of women, youth, and marginalized groups. Additional extension support will be provided by pre-vetted and trained local MSMEs (under Activity 1.2.5), District Agricultural Coordinators, and public extension service providers officers (under Activity 3.1.5).

Activity 1.1.3: In collaboration with local MSMEs, and, where feasible through producer cooperatives, provide rural households with start-up kits to test climate adaptation solutions. Each kit will include inputs such as seeds and fertilizer. Local feedback will be used to refine kit composition and delivery mechanisms.

Activity 1.1.4: Facilitate household access to public benefits and climate information. Depending on demand, this may include:

- Providing access to locally available climate services and early warning systems.
- Promote registration and use of e-voucher schemes to purchase farm inputs under FISP and other public benefits to improve livelihood resilience (see Activity 3.1.5).

Activity 1.1.5: Strengthen producer cooperatives to improve support to members and integrate climate adaptation solutions at scale. Capacity building will include cooperative registration, internal governance, and business model development, as well as improved service delivery to members by facilitating improved access to solutions. Technical assistance will also emphasize inclusive membership and long-term financial sustainability.

Activity 1.1.6: Facilitate the sharing of climate adaptation solutions and lessons learned across individuals and cooperatives by developing and disseminating user-friendly knowledge tools in local languages, such as booklets, flyers, brochures, and demonstration videos. The activity will also promote inter-community peer exchanges ensuring participation by women, youth, and marginalized groups.

118. Output 1. 2: Climate adaptation solutions delivered to rural households and rural communities, by local MSMEs identified, trained, and supported with financing and technical assistance by the project.

Activity 1.2.1: Identify, vet, and onboard a roster of local MSMEs currently offering or with the potential to offer adaptation solutions to target communities. While this activity prioritizes established rural MSMEs, it will also identify and nurture early-stage businesses and start-ups to expand the pipeline of local adaptation providers. Selected MSMEs will be listed in a vetted directory and invited to co-develop service offerings with target communities (under Activity 1.1.2.).

Activity 1.2.2: Identify cost-effective, scalable, and reputable national and regional suppliers from which MSMEs can source these solutions.[61]

Activity 1.2.3: Deliver tailored technical assistance and enterprise support services to strengthen MSME capacity to source climate adaptation solutions (including those covered by FISP e-voucher system) and deliver them to rural households, either directly or through cooperatives, and including inclusion training to ensure that service delivery models reach women, youth, and marginalized smallholders. Where needed, assistance may include the development of sustainable business models and pricing strategies to profitably offer affordable climate solutions, as well as operational improvements to reduce last-mile delivery costs. Support will be provided through workshops, mentoring, and market-linkage facilitation. Community representatives will be engaged to ensure that MSME services are responsive to local needs and expectations.

Activity 1.2.4: Design and deploy milestone-based financing to scale inclusive adaptation solutions offered to rural households (under Activity 1.1.2).MSMEs will be contracted as service providers by the Executing Entity for the delivery, operation and maintenance of the locally identified adaptation solutions. Milestones will be co-designed with communities to cover the full solution delivery cycle including installation, user-training, operation support, as well as defined operation and maintenance (O&M) services. MSMEs will receive financing upon reaching jointly agreed delivery and performance milestones, including milestones related to continued functionality and sustained use of the supported solutions by beneficiary households. Additional incentives will be provided for successfully serving women and youth and for the sustained uptake of solutions by smallholders. Payments to MSMEs will be made directly by the national Executing Entity on a milestone basis. Each milestone payment will be released only after (i) validation by the beneficiary households or community groups that the agreed services, including O&M-related services, have been delivered and are functional, and (ii) verification by the Project Management Unit and the Executing Entity in accordance with contractual, technical and fiduciary requirements. Milestones and corresponding O&M obligations will be explicitly defined in MSME service contracts and approved by beneficiary groups during solution co-design and contracting. MSMEs will not manage or disburse any adaptation grant resources intended for communities or households.

Activity 1.2.5: Deliver tailored capacity building to MSME staff to improve their capacity to deliver extension services to rural households. This may include topics such as farm planning, soil fertility management, water conservation, and how to best use weather data from climate services and early warning systems. District Agricultural Coordinators and public extension service officers will also be invited to participate in these trainings (aligned with Activity 3.1.5). The activity will establish linkages with key universities and research institutions to ensure ongoing access to up-to-date technical expertise for frontline extension service providers. Training-of-trainers modules will also be developed to institutionalize knowledge and ensure its sustained application after the project ends.

Activity 1.2.6: Establish accountability and feedback mechanisms for MSME service delivery. Feedback will inform continuous improvements to MSME offerings and changes to capacity building to MSMEs.

Activity 1.2.7 (Optional): Support MSME access to climate finance to support business growth and expand delivery of climate adaptation solutions to rural households. This may include linking MSMEs with relevant financial institutions, investment facilities, or guarantee schemes, and providing guidance on proposal development and compliance with investor requirements.

[61] For example, this may include fostering closer coordination with established seed companies in Zambia, such as Zamseed, Pannar, Seedco, MRI, Pioneer, Monsanto, and Kamano, to provide improved, stress-tolerant varieties and inputs tailored to agroecological conditions and smallholder preferences.

119. **Component 2: Financial empowerment and entrepreneurship for resilience.** Outcome 2 will increase community financial resilience and diversify income sources by supporting household- and group-based mechanisms to invest in alternative climate-resilient livelihoods. The project will establish a Community Resilience Financing Facility to provide targeted grant funding for alternative income-generating activities and large community driven adaptation initiatives. In parallel, the project will support the growth of complementary community savings groups in target communities. These groups will serve as both savings and investment platforms, and will provide support to its members to finance adaptation solutions and apply for funding to the Financing Facility. Given its national expertise and extensive in-country networks, SaveNet is envisioned to be a technical partner contracted by the national EEs for the implementation of activities to develop and strengthen savings groups, potentially including capacity building delivery, technical mentorship, ensuring alignment with national best practices, and financial intermediation with formal financial institutions. SaveNet's technical delivery role will be defined in detail during the full Funding Proposal. The project will also work with savings groups to provide business development services to its members and improve their knowledge about climate adaptation and insurance solutions.

Outcome 2: Rural communities achieve greater financial resilience and diversified income sources for increased adaptive capacity

120. Output 2.1: Community Resilience Financing vehicle designed and operationalized to incentivize alternative livelihoods and community-driven adaptation initiatives.

Activity 2.1.1: Design and operationalize the facility, including governance, potential recipients (i.e., savings groups and individual or groups of smallholders), eligibility criteria, and application and selection processes. The facility's eligibility criteria will include initiatives that support the adoption of economic activities that are less exposed to climate risks (e.g., honey production, trade, handicrafts) and to support the acquisition of community assets that are too expensive for savings groups to finance alone.

Activity 2.1.2: Targeted community outreach initiative to ensure that potential beneficiaries are fully aware of the facility, especially women, youth, and marginalized households. Deliver capacity-building sessions for potential applicants covering proposal development, basic financial management, and climate-resilient economic opportunities to ensure high-quality applications.*Activity 2.1.3*: Call for proposals, screening against the project's ESMF and GP confirm financing recipients, and milestones upon which financing will be disbursed.

Activity 2.1.4: Provide tailored technical assistance to financing recipients during implementation, coupled with regular field monitoring to track progress and document lessons learned for future replication.

Activity 2.1.5: Ongoing monitoring and organize experience-sharing forums for financing recipients to exchange lessons learned, foster peer-to-peer learning, and promote replication of successful models.

121. Output 2.2. Community savings groups supported through tailored capacity-building on financial literacy, entrepreneurship and climate risk management

Activity 2.2.1: Where savings groups do not exist, conduct community outreach and sensitization on the purpose, benefits, and governance of savings groups, ensuring participation from women, youth, and marginalized households, and facilitate the formation of savings groups in target communities. This will include jointly exploring the potential roles of community savings groups (e.g., risk sharing and social insurance, liquidity smoothing, and loans for individual and collective climate investments in adaptation solutions), group constitutions, savings targets, and internal governance structures, all aligned with SaveNet best practices for savings groups.

Activity 2.2.2: In close coordination with SaveNet, deliver training modules to members on risk management, climate change risks, and adaptation solutions tailored to rural contexts.

Activity 2.2.3: Offer business development services to members, support their integration of climate-resilient livelihood planning into savings group activities, and identify interventions for savings groups to translate increased adaptation demand into an effective ability to pay (e.g., overcoming liquidity constraints for adaptation working capital investments, financing purchases of adaptation investments, etc.).

Activity 2.2.4: In coordination with SaveNet, provide ongoing mentorship and peer-to-peer learning exchanges between savings groups to strengthen operational practices and build long-term sustainability.

Activity 2.2.5: Support applications from savings group members to the Community Resilience Financing Facility (under Output 2.1) and other donors that could provide complimentary financing to the savings groups,

including proposals developed jointly by several members or by the entire group, and facilitate group-based management of awarded funds to scale climate-resilient livelihood activities.

Activity 2.2.6: Where possible, connect savings groups to local financial institutions such as banks, microfinance institutions and mobile money platforms to enhance secure savings, access to credit, and identify opportunities for group-based investments.

122. **Component 3: Locally led adaptation demand assessment and planning.** Component 3 will strengthen district-level planning and governance to integrate climate adaptation solutions that reflect community priorities and improve the enabling environment for rural households to adopt them. The project will review and update Integrated Development Plans (IDPs) in high-priority districts to align with national frameworks such as the National Adaptation Plan (NAP), incorporating feedback from District Development Coordinating Committees (DDCCs), Ward Development Committees (WDCs), local communities, traditional leaders, and producer cooperatives. Updated plans will be translated into community-level Adaptation Action Plans (AAPs) that may include improved access to localized climate data, early warning systems, and support to secure public sector benefits to offset the costs of adaptation solutions. The project will also strengthen governance and policy feedback loops between national and local levels through structured channels, joint reviews, and targeted technical support to priority districts. These activities will help address key district-level public policy barriers to adaptation, including resource constraints for collecting and using climate data, limited technical capacity among district staff, and shortages of skilled personnel. They will also improve vertical coordination with national institutions and promote stronger community participation in the design and implementation of IDPs, embedding Locally Led Adaptation (LLA) principles into district planning processes.

Outcome 3: District development planning integrates community priorities and national and local climate adaptation and resilience measures

123. Output 3.1: Integrated development plans (IDPs) of target districts reviewed and updated with climate risks and priorities, and community-level Adaptation Action Plans prepared with identified priority adaptation solutions.

Activity 3.1.1: Shortlist priority districts for IDP updates by assessing district-level climate risk, vulnerability, and exposure. The selection process will also prioritize districts with lower adaptive capacity, higher poverty levels, and limited public budgets to ensure that the most resource-constrained areas benefit from improved resilience planning. The selection will be conducted in consultation with national, provincial, and district authorities to ensure alignment with development priorities.

Activity 3.1.2: Conduct a gap analysis of the IDPs from shortlisted districts to identify analytical gaps in local climate risk assessments and suggested climate adaptation solutions. The analysis will also assess the plans' alignment with the NAP and 8NDP, and will highlight priority IDP areas for development or updates.

Activity 3.1.3: Draft and integrate additional climate-relevant information into IDPs incorporating feedback from District Development Coordinating Committees (DDCCs), Ward Development Committees (WDCs), and, where necessary, local communities, traditional leaders, and producer cooperatives. Based on NAP some key additions may include:

- Conduct local climate vulnerability assessment, potentially including vulnerability mapping and climate risk ranking to evaluate the local exposure, sensitivity, and adaptive capacity of the target geographies to climate hazards.
- Use GIS and remote sensing tools to map drought- and flood-prone areas.
- Integrate priority climate adaptation solutions identified in community consultations under Activities 1.1.1 and 1.1.2.
- Assess potential support for livestock management and other alternative income sources to local communities.
- Identify additional training needs for District Agricultural Coordinators and public extension service officers to provide their services to local communities.
- Explore opportunities to improve the quality, availability, and use of localized weather and climate data, including links to early warning systems.

Activity 3.1.4: Improve institutional capacities and sustainability mechanisms of DDCCs by delivering training to DDCC staff and, if necessary, WDC members and other local leaders on the NAP and context-specific adaptation solutions to improve financial and environmental resilience of local communities. Develop training-of-trainers modules to ensure institutionalization of knowledge and practices within district staff.

Activity 3.1.5: Translate IDP climate adaptation solutions into community-level Adaptation Action Plans (AAPs) and support the implementation of AAPs, applying an iterative approach in consultation with local communities. AAPs may include gaps identified in the IDP such as training District Agricultural Coordinators and public extension service officers to deliver effective extension services (linked to relevant activities in Activity 1.2.5); partnering with local communities to ensure access to local weather and climate data, and strengthening their integration into early warning systems to support livelihood resilience; and facilitate smallholder access to public sector benefits

124. Output 3.2: National and local institutions trained and equipped with tools and processes for adaptive governance, coordination, and climate policy feedback.

Activity 3.2.1: Develop structured feedback channels between national ministries and district governments (mediated by provincial authorities) to ensure timely, two-way communication on climate adaptation priorities, progress, and emerging needs.

Activity 3.2.2: Organize joint review and learning sessions that incorporate community-level insights ensuring that national policies reflect district realities and local priorities.

Activity 3.2.3: Facilitate formal agreements between national ministries and DDCCs to provide targeted staff secondments, technical specialists, or roving support teams to high-priority districts, to strengthen DDCC capacity during critical planning and implementation periods and to ensure knowledge transfer for long-term institutional capacity.

Activity 3.2.4: Support integration of district-level outcomes into national adaptation reporting and planning systems, creating a sustained link between local results and national commitments.

125. **Component 4: Adaptive Management, Learning, and Sustainability.** Component 4 will ensure adaptive and inclusive learning and knowledge sharing to support effective implementation, capture lessons, and sustain adaptation outcomes. Learning and knowledge sharing frameworks will be co-created with local actors to integrate resilience metrics, track risks, and ensure accessible, gender- and youth-responsive data systems. Knowledge products and lessons will be shared through targeted learning, communications, and policy engagement.

Outcome 4: Adaptive management and inclusive governance ensures effective learning and sustainable adaptation

126. Output 4.1: Adaptive management structures established

Activity 4.1.1: Establish inclusive coordination structures with communities.

Activity 4.1.2: Develop transition and sustainability strategies embedded in national and local systems.

127. Output 4.2: Gender- and youth-responsive learning systems developed, piloted, and operationalized.

Activity 4.2.1: Co-create learning and knowledge sharing framework with local actors, integrating resilience metrics and community feedback.

Activity 4.2.2: Develop tracking tools and operational guidance to key local stakeholders.

Activity 4.2.3: Ensure digital equity and local accessibility of learning and knowledge sharing platforms.

128. Output 4.3: Knowledge products and communication materials on adaptation captured, synthesized, and disseminated at community, national, and international levels.

Activity 4.3.1: Document lessons, stories, and innovations from communities.

Activity 4.3.2: Organize learning events and dialogues across sectors and levels, in particular to support capacity building of national ministries and local governments through workshops and trainings.

Activity 4.3.3: Showcase project impacts and learnings at international and regional platforms and conferences.

B. Describe how the project/programme provides economic, social and environmental benefits, with particular 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.

129. The project is designed to deliver integrated economic, social, and environmental benefits, with a deliberate focus on the most vulnerable communities and rural households. The project is expected to reach approximately 4,200 rural households, with a projected gender distribution of 50:50 and at least 30% youth participation across Zambia's Central, Southern, and Western provinces. It will also benefit approximately 120 rural MSMEs, at least 50% of which are expected to be women- or youth-led. These impact estimates will be further refined during stakeholder consultations and research during the PFG phase, including tentative impact estimates for types of adaptation solutions

130. **Economic Benefits**:
- The project will improve rural household profitability and livelihood resilience by enhancing access to context-specific, climate-resilient adaptation solutions, tailored agronomic practices, and improved advisory services (Output 1.1). These activities directly support the Adaptation Fund Strategic Objective of increasing adaptive capacity at the individual and community level by strengthening climate-resilient livelihood strategies (AF Output 6.1; Indicator 6.1.1), as reflected in Part III A.
- Through Output 1.2, it will expand rural MSME participation in the delivery of adaptation solutions, creating new market opportunities, fostering job creation, and increasing income diversification, particularly for youth- and women-led enterprises. By linking household demand with locally provided adaptation solutions, these activities further contribute to the AF Strategic Objective of strengthening targeted livelihood strategies to manage climate risks (AF Output 6.1), while also reinforcing locally led and market-based adaptation pathways.
- The establishment of inclusive solutions and support for decentralized service delivery models, will also enhance value retention at the community level.
- Household income among participating rural households is projected to increase by 15%-30% (compared with a 'Business as Usual' scenario), based on improved smallholder profitability, reduced climate-related losses, and additional income from alternative livelihood opportunities supported by the Community Resilience Financing Facility.[62] These economic benefits are expected to translate into sustained adaptive capacity by enabling households to absorb, adapt to, and recover from climate shocks in line with AF Strategic Objectives.

131. **Social Benefits:**
- The project emphasizes inclusive and participatory processes that center the voices of women, youth, and marginalized groups in the co-design, selection, and deployment of adaptation solutions.
- Enhanced access to locally relevant climate adaptation solutions, support services, and knowledge will reduce gendered time burdens, increase agency in household decision-making, and foster community cohesion through strengthened savings groups and MSME networks.
- Improved access to climate information, financial literacy, and tailored mentorship will bolster adaptive capacity among vulnerable populations, especially those excluded from formal systems. This includes households with small land ownership (who often face difficulties in accessing local markets and financial services), female-headed households (often facing systemic economic disadvantages due to their limited access and control of productive assets), youth (often lacking the assets or training to establish climate-resilient livelihoods), and indigenous peoples, who face risks of exclusion if culturally appropriate engagement is not ensured. . These exclusion factors reduce adaptive capacity and increase vulnerability.
- The project will directly benefit an estimated 2,100 women and 1,250 youth through its work in rural households, MSMEs, and savings groups. It will also create or strengthen 100 community savings groups to enhance financial inclusion and collective resilience.
- Overall, the project is expected to directly benefit approximately 3,350 individuals through targeted support to rural households, MSMEs, and community savings groups, while indirectly benefiting a wider population through improved access to adaptation services, strengthened local markets, and district-level planning

[62] Yield and profitability improvements for conservation agriculture based on: FAO and UNDP (2020) "Conservation agriculture for climate change adaptation in Zambia - a Cost-Benefit Analysis" and World Bank (2019) "Zambia Climate-Smart Agriculture Investment Plan"

processes. Indirect beneficiaries include household members, farmers reached through MSME service delivery, and communities covered by updated Integrated Development Plans, extending benefits beyond direct participants.

- All beneficiary estimates are gender-disaggregated where applicable, with women and youth prioritized in line with locally led adaptation principles and the project's inclusive targeting approach.
- Consistent with LLA principles, benefits will be equitably distributed through community-driven and inclusive processes, rather than pre-defined targeting. Adaptation priorities will be identified through participatory demand assessments at community level, ensuring that the needs of marginalized and excluded groups are explicitly considered. Delivery mechanisms are designed to lower access barriers, including decentralized MSME-based service provision, community savings groups, and flexible financing modalities that do not rely on formal collateral or credit histories.
- Local MSMEs will also as trusted conduits for LLA-driven climate adaptation, using their deep community ties and operational flexibility to provide affordable, demand-driven solutions tailored to local agro-climatic conditions. The project ensures benefits reach households through demand-driven selection, performance-based payments for verified delivery milestones, and specific financial incentives for serving women and youth in remote rural areas.
- Equity will be further supported through gender- and youth-responsive targeting, disaggregated monitoring of beneficiaries, and adaptive management to address any emerging gaps in access. This approach ensures that adaptation benefits reach those most vulnerable to climate risks while maintaining local ownership, transparency, and accountability, in line with Adaptation Fund and LLA principles.

132. **Environmental Benefits:**
    - The project will support the adoption of climate-smart practices across an estimated 8,400 hectares of smallholder cultivated land[63]. These practices, such as minimum soil disturbance, mulching, and improved water management, will improve soil health, reduce erosion, and conserve water.
    - It will also support the development of locally appropriate adaptation pathways that are grounded in the sustainable use of natural resources, contributing to ecosystem integrity and reduced emissions from sustainable land use.

133. Below table provides indicative estimates of the benefits of the proposal's interventions. In summary, the proposal is expected to result in
    - Up to 4,200 rural households and up to 120 rural MSMEs as direct beneficiaries
    - Up to 2,000 community savings groups to be created/strengthened.
    - Up to 8,400 hectares under climate-resilient practices

Table 7: Indicative types of adaptation solutions, number of beneficiaries and size of interventions

Potential intervention	Indicative menu of solutions	Indicative number of beneficiaries	Expected benefits
Household water resilience	Rainwater harvesting; micro-irrigation kits; soil moisture retention practices; climate information-supported decisions	≥1,000 household-level installations/packages	Prioritizes drought/heat-stressed HH; contributes directly to the 4,200 HH target and supports CSA uptake
Community/shared productive water assets	Community water storage and productive-use assets; small rehabilitation/installation where feasible	≥15 community/shared assets	Cluster coverage for groups/producer organizations; strengthens local water security for production
CSA adoption support	CSA practice packages; advisory and demonstrations	Full coverage of direct HH beneficiaries	Directly linked to ~8,400 ha adoption target (indicative mean ≈ 2 ha/HH)
Post-harvest and heat-loss reduction	Hermetic storage; drying/handling improvements; small-scale efficiency improvements	≥800 HH/groups supported	Targets households/producer groups with highest climate-related losses
MSME delivery and maintenance ecosystem	MSME identification, training, financing, technical assistance, after-sales service	≥120 MSMEs supported/engaged	Ensures last-mile delivery and maintenance; strengthens local markets for adaptation solutions
Savings groups + resilience finance access	Savings group strengthening; resilience financing facility operations to enable uptake and livelihood diversification	≥2,000 savings groups strengthened/created	Strengthens inclusion (women/youth) and facilitates adoption of LLA-selected solutions
LLA planning integration and district	Ward/community Adaptation Action Plans; integration into district planning	All target districts supported	Institutionalizes sustainability and alignment to local planning cycles

[63] Assuming average cultivated areas of 2 hectares per household.

mainstreaming	and budgeting processes		
Climate risk information and advisory (cross-cutting)	Locally usable climate information packaging and extension content; feedback/learning systems	≥4,200 HH reached	Builds adaptive capacity in relation to drought/flood/heat risks

134. **Environmental and Social Risk Management**
In line with the Environmental and Social Policy (ESP) and Gender Policy (GP) of the Adaptation Fund, the project will be implemented under a comprehensive Environmental and Social Management Framework (ESMF). This includes:
- Screening of all activities, including Unidentified Sub-Projects (USPs), against AF safeguard principles;
- Application of gender and vulnerability analysis during design and implementation;
- Deployment of grievance redress mechanisms accessible at the community level;
- Continuous monitoring of environmental and social indicators, disaggregated by gender and other social variables.

These systems will ensure the project avoids, minimizes, or mitigates negative impacts and that any residual risks are managed adaptively throughout implementation.

C. Describe or provide an analysis of the cost-effectiveness of the proposed project/programme.

135. The project is designed to deliver cost-effective high-impact, locally led adaptation outcomes through a model that integrates community-driven demand, decentralized service delivery, private-sector engagement, and technology-enabled systems. Cost-effectiveness is ensured through a combination of strategic design choices and operational efficiencies compared with traditional "business-as-usual" (BAU) implementation alternatives often used in other development projects.

Table 8: Comparison of Cost-Effectiveness: Proposed Project vs. Business-as-Usual (BAU) Approach

Cost-effectiveness driver	Proposed Project	BAU Alternative
Community-defined demand reduces misalignment and maximizes uptake	Participatory planning and co-design processes ensure adaptation solutions are tailored to rural household realities and local ecological conditions. This approach ensures that interventions have strong user buy-in and are more likely to be adopted permanently.	Top-down "push" approaches carry a high risk of low adoption, have high retrofit costs, and high dis-adoption rates due to a lack of local relevance.
Leveraging local MSMEs as adaptation service providers	Channel resources to existing local MSMEs through competitive processes. These MSMEs can rapidly scale distribution of context-relevant climate solutions and reduce service delivery costs to beneficiaries.	Create parallel project-specific delivery systems that are often not financially sustainable after the project ends or rely on underfunded and fragmented public extension services
Competitive selection and performance-based support	MSMEs will be selected through an open, performance-based call for solutions, to target only the most effective, feasible, and community-endorsed interventions. This promotes innovation and efficiency, minimizes procurement risks, and ensures that funds are allocated based on technical merit and market readiness.	Non-competitive or standardized procurement regardless of local agro-ecological differences results in inefficient resource allocation and the promotion of solutions with unproven local technical merit.
Economies of scale through bundled and modular solutions	Modular, replicable interventions, such as start-up kits, to test climate adaptation solutions, that can be bundled and adapted across districts and reused across value chains and locations, reducing per-unit costs of capacity building while maintaining local relevance.	Bespoke, high-cost interventions that provide specialized support for a small number of beneficiaries without a clear pathway for replication, leading to high transaction costs per household.
Technology and data systems drive efficiency and monitoring	AI-enabled tools and digital platforms improve climate risk mapping, targeting, and monitoring. These systems reduce the need for repeated manual assessments and support real-time feedback loops, lowering operational costs and improving decision-making efficiency across components.	Reliance on manual, infrequent surveys and outdated climate data systems that suffer from long time lags. These traditional methods are labor-intensive, costly, and often produce results that are no longer actionable by the time they are processed.
Use of existing government and community platforms	Integration with existing district development structures, savings groups, and national systems (e.g., climate services, IDPs, community action plans) reduce the need for new institutional layers. Coordination with District Development Coordinating Committees (DDCCs) and	The establishment of parallel institutional structures that duplicate existing mandates, increasing bureaucratic friction and start-up costs while undermining local institutional ownership.

	existing community savings networks lowers start-up and transaction costs.	
Community Resilience Financing vehicle	- Financing is tied to verified delivery milestones so funds are only released upon specific outputs and outcomes. - Targeted training in proposal development before applications are submitted increases the number of high-quality, technically sound proposals.	- Upfront grant disbursements that provide the full amount at the start of a project can lead to high leakage where funds are spent without achieving the intended adaptation outcomes. - Open calls for proposals without prior technical guidance often results in a high volume of low-quality applications, leading to high administrative costs for screening and a high project failure rate.
Long-term impact and financial sustainability	Project investments are structured to catalyze resilient market systems, self-sustaining savings groups, and institutional uptake of adaptation solutions. As a result, the project reduces the likelihood of recurrent external financing needs.	One-off, grant-dependent interventions that fail to address the underlying economic and technical barriers to adoption. Without a market-based exit strategy, such models result in recurrent donor financing to sustain resilience benefits.

D. 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.

136. The project is designed in full alignment with Zambia's national development and climate adaptation priorities. It builds on the country's policy frameworks that emphasize climate-resilient development, inclusive economic transformation, and locally led adaptation. By linking household- and community-led adaptation with MSME innovation and institutional planning, the project ensures coherence with Zambia's broader development agenda while delivering tangible, locally anchored resilience outcomes.

with National and Sub-National

Table 9: Alignment of the Project Policies and Strategies

Policy / Strategy	Publication Year	Key Policy Objectives	Project Elements Consistent with Policy
National Adaptation Plan (NAP)	2023	Reduce vulnerability and enhance adaptive capacity across priority sectors	Strengthening rural household resilience through context-specific adaptation solutions, expanding access to water-efficient technologies, climate information services, and resilient crops, and enhancing institutional capacity and district planning processes for adaptation.
Eighth National Development Plan (8NDP)	2022–2026	Climate-resilient growth, poverty reduction, decentralisation	Fostering MSME-driven innovation and rural enterprise development, and promoting environmental sustainability by embedding adaptation solutions into planning and governance systems.
Updated Nationally Determined Contribution (NDC)	2021	Adaptation in agriculture, water, livelihoods, and resilience	Advances NDC adaptation priorities in agriculture, livestock, water, and infrastructure by promoting climate-smart practices, renewable energy-based processing, and MSME innovation.
National Climate Change Policy	2016	Mainstream climate change across sectors and levels	Operationalize Policy's goals by mainstreaming adaptation across development sectors, enabling private sector engagement, and promoting innovation in climate services and technologies
District Integrated Development Plans (IDPs)	Rolling	Local development and decentralized implementation	Updating of IDPs to integrate community adaptation priorities, and ensures that sub-national planning processes reflect climate risks, and that locally identified solutions are embedded in government decision-making and budget cycles.
National Policy on Environment	2021	Sustainable natural resource management and climate resilience	Supports community-driven adaptation, resource efficiency, and the sustainable use of ecosystems.

137. **Linkages between the CRAFT Project and the Sustainable Development Goals (SDGs) in Zambia**
The CRAFT project supports the implementation of the Sustainable Development Goals (SDGs) in Zambia by operationalizing national climate and development priorities through locally led adaptation, resilient livelihoods, and MSME-based service delivery. The project contributes to SDG implementation in a practical and integrated

manner, consistent with Zambia's Eighth National Development Plan (8NDP) and National Adaptation Plan (NAP). Specifically, the project contributes to:

- **SDG 1 (No Poverty)** by strengthening the resilience of poor and vulnerable rural households to climate shocks through diversified livelihoods, improved access to adaptation solutions, and enhanced financial resilience mechanisms.
- **SDG 2 (Zero Hunger)** by supporting climate-resilient agricultural practices and technologies that reduce climate-related production losses and improve food security for smallholder farmers.
- **SDG 5 (Gender Equality)** by expanding women's access to finance, entrepreneurship opportunities, and climate adaptation solutions, and by integrating gender-responsive approaches across project components.
- **SDG 6 (Clean Water and Sanitation)** by promoting water-efficient and climate-resilient solutions that address drought and flood risks affecting rural livelihoods.
- **SDG 8 (Decent Work and Economic Growth)** by strengthening local MSMEs and green entrepreneurship to deliver adaptation goods and services, creating income and employment opportunities in rural areas.
- **SDG 9 (Industry, Innovation and Infrastructure)** by supporting the development and scaling of locally appropriate adaptation innovations through MSMEs and decentralized delivery models.
- **SDG 11 (Sustainable Cities and Communities)** by integrating climate risks and adaptation priorities into district-level planning processes, including Integrated Development Plans (IDPs).
- **SDG 13 (Climate Action)** by directly enhancing adaptive capacity and resilience to drought, flooding, and extreme heat at household, community, and institutional levels.
- **SDG 17 (Partnerships for the Goals)** by leveraging partnerships between government institutions, communities, MSMEs, civil society, and development partners.

Through these linkages, the CRAFT project translates Zambia's SDG commitments into concrete, locally implemented actions, ensuring that climate adaptation investments contribute simultaneously to poverty reduction, gender equality, economic resilience, and sustainable development outcomes.

138. Below is also a structured "National and Sectoral Alignment Matrix" that lists the relevant national and sectoral instruments (along with their years) and maps each instrument to the specific Outputs outlined in the Concept Note (1.1–4.4). This matrix directly responds to the request for the inclusion of essential sectoral plans related to food security, poverty reduction/social protection, and water resources management. For clarity, the project's Outputs are defined in the Concept Note results framework as follows: Outputs 1.1–1.2 pertain to Component 1; Outputs 2.1–2.2 relate to Component 2; Outputs 3.1–3.2 correspond to Component 3; and Outputs 4.1–4.4 are associated with Component 4.

Table 10: National and Sectoral Alignment Matrix

National/sectoral plan or instrument	Year(s)	Core priority relevant to the concept note	CN outputs directly advanced (explicit output numbers)
National Adaptation Plan (NAP)	2023	Prioritized adaptation actions; mainstreaming into sub-national planning and institutional systems	**Output 1.1** (participatory co-design and demand-building for adaptation solutions); **Output 1.2** (delivery of adaptation solutions via local MSMEs); **Output 3.1** (IDP review/update and community Adaptation Action Plans); **Output 3.2** (institutional tools/processes for adaptive governance and policy feedback); **Outputs 4.2–4.4** (MEL/ESS systems and learning to support adaptive management and sustainability).
Eighth National Development Plan (8NDP)	2022–2026	Economic transformation and job creation; environmental sustainability; decentralized delivery systems	**Output 1.2** (MSME-led last-mile delivery of solutions); **Output 2.1** (resilience financing facility to incentivize alternative livelihoods and adaptation initiatives); **Output 2.2** (savings group capacity building for financial resilience and climate risk management); **Output 3.1 and 3.2** (planning integration and institutional capacity); **Outputs 4.1–4.3** (governance/adaptive management and dissemination of knowledge products).
Zambia Updated NDC	2025	Adaptation priorities in agriculture, livestock, water and infrastructure; cross-cutting gender/youth commitments	**Output 1.1** (co-design and capacity building for context-specific solutions); **Output 1.2** (solution delivery and extension services); **Output 2.2** (savings groups and climate risk management capacity building); **Output 3.1** (mainstreaming into district planning instruments).
National Climate Change Policy	2016	Mainstreaming adaptation across sectors; enabling	**Output 1.2** (private sector/MSME engagement for solution delivery); **Output 3.2** (institutional coordination and policy feedback processes);

		private sector engagement; innovation in climate services/technologies	**Outputs 4.2–4.3** (systems for learning, safeguards integration, and knowledge dissemination).
District Integrated Development Plans (IDPs)	Ongoing (district)	Sub-national planning and budgeting; integration of local priorities	**Output 3.1** (review/update of IDPs with climate risks and priorities; preparation of Adaptation Action Plans).
Food security / agriculture investment and policy instruments (sectoral)	Current (to be confirmed/validated during PFG)	Resilient agricultural production systems; reduced losses; value chain resilience	**Output 1.1** (participatory identification and demand-building for resilient/CSA solutions); **Output 1.2** (delivery of solutions and associated extension services); Output 2.1 (financing facility to support livelihood diversification and adaptation initiatives); **Output 2.2** (financial literacy/entrepreneurship/climate risk management training).
Poverty reduction / social protection instruments (sectoral)	Current (to be confirmed/validated during PFG)	Targeting vulnerable groups; shock responsiveness; livelihood diversification	**Output 2.1** (resilience financing facility to incentivize alternative livelihoods and adaptation initiatives); **Output 2.2** (savings groups for financial resilience, entrepreneurship and climate risk management); **Output 4.2** (gender- and youth-responsive MEL and safeguards systems).
Water resources management and water resilience instruments (sectoral)	Current (to be confirmed/validated during PFG)	Water security, safe water harvesting and productive-use water management	**Output 1.1** (co-identification and design of context-specific water resilience solutions); **Output 1.2** (delivery of water-related solutions via MSMEs); **Output 3.1** (integration of water resilience priorities into district IDPs and Adaptation Action Plans); **Output 4.2** (ESS systems to ensure safe siting/design and risk management).

E. 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.

139. The project will be implemented in full compliance with applicable national technical standards, regulations, and policies, as well as the Environmental and Social Policy (ESP) and Gender Policy (GP) of the Adaptation Fund.

140. **Environmental and Social Assessment**: All project interventions, including Unidentified Sub-Projects (USPs) under Outputs 1.1 and 1.2, will be screened in line with the Environmental Management Act No. 12 of 2011 and the requirements of the Zambia Environmental Management Agency (ZEMA). Where necessary, Environmental Project Briefs or Environmental Impact Assessments (EIAs) will be prepared and approved before implementation, in accordance with national standards. All proposed agricultural inputs (e.g., seeds, soil amendments, irrigation kits, agro-technologies) will undergo screening and categorization in line with the Adaptation Fund Environmental and Social Policy to ensure that no activity negatively affects the environment, people, or creates economic dependence. Where risks are identified, mitigation measures will be developed and monitored throughout implementation. Local stakeholders will be engaged in the assessment and monitoring process, with particular attention to women, youth, marginalized groups, and other vulnerable groups. A grievance redress mechanism will be accessible to address concerns, and all activities will be implemented in partnership with local institutions to strengthen ownership and sustainability.

141. **Infrastructure and Technology Standards**: Any construction, rehabilitation, or installation of infrastructure (e.g., irrigation kits, seed storage, water harvesting technologies) will comply with national building codes, engineering regulations, and relevant sectoral technical guidelines, such as those issued by the Ministry of Infrastructure, Housing and Urban Development and the Ministry of Agriculture. Renewable energy technologies will follow standards set by the Energy Regulation Board (ERB) to ensure safety, efficiency, and long-term operability.

142. **Occupational Health and Safety**: The project will comply with the Occupational Health and Safety Act No. 36 of 2010, ensuring safe working conditions for all project-related activities, including MSME operations, training facilities, and community-level works.

143. **Gender and Social Inclusion Standards**: The project will operationalize Zambia's National Gender Policy (2014), ensuring that women and youth have equitable access to adaptation technologies, finance, and

decision-making processes. All sub-projects will be assessed against the Adaptation Fund's Gender Policy, with clear indicators on participation and benefit-sharing.

144. **Compliance with AF ESP**: The project will adopt a risk-based screening process for all activities and USPs, guided by the AF ESP. Activities deemed high-risk will either be redesigned or excluded. The ESMF will specify roles and responsibilities for safeguards oversight, ensure the accessibility of the grievance redress mechanism in all project areas, and include gender-responsive monitoring and reporting.

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

145. During the design of this project, particular attention was paid to ensuring that there is no duplication of interventions, and to achieve clear complementarity with ongoing and pipeline climate adaptation initiatives in Zambia, while building on their acknowledged assets and systems. Table 11 below outlines ongoing and upcoming initiatives that this project will coordinate and collaborate with to strengthen Zambia's overall climate resilience programming. Particular attention is given to three projects currently financed by the Adaptation Fund and the Green Climate Fund in Zambia, which provide valuable lessons and synergies for this project:
    - The GCF-funded project implemented by UNDP and the Ministry of Agriculture, "Strengthening Climate Resilience of Agricultural Livelihoods in Agro-Ecological Regions I & II", approved in March 2018, operates in the Eastern, Lusaka, Muchinga, Southern, and Western provinces. It supports climate information and early warning systems (CIS/EWS), climate-smart agriculture (CSA), and value-chain interventions, reaching approximately 946,000 direct and 3 million indirect beneficiaries.
    - The Adaptation Fund (AF) project, implemented by IFAD, titled "Climate Change Adaptation of Livelihoods through Rural Finance (CALRF)." This single-country proposal (2023–2025) aims to enhance access to finance for adaptation, promote diversified livelihoods, and strengthen district-level planning.
    - At the regional level, UNIDO is currently developing the Concept Note for the Zambia–Malawi initiative 'Supporting Resilient Agricultural Value Chains and Livelihoods of Climate-Vulnerable Border Communities'. Its pre-concept has been endorsed, and UNIDO aims to submit the Concept Note for consideration at the March 2025 Adaptation Fund Board meeting.

146. Building on these three key projects in Zambia, this project brings complementary in the following ways:
    - Geographically, this project will focus on Southern, Western, and Central provinces, complementing the focus of the GCF/UNDP project in 16 target districts (e.g., Namwala, Gwembe, Siavonga, Kazungula, Sesheke, Senanga, Shangombo, and Mulobezi). This project will prioritize other communities and districts in Southern and Western provinces, and cover the entire Central Province, which the GCF/UNDP project does not serve. There is also no overlap with the regional AF/UNIDO project which focuses on the border districts in the Eastern province. Target districts and communities of this project will be validated jointly with the Ministry of Green Economy and Environment and in consultation with other key Ministries and stakeholders during the full proposal/PFG phase to ensure full complementarity and zero duplication.
    - Second, in terms of beneficiaries, this project specifically targets households cultivating ≤2 hectares, women- and youth-led households, and rural MSMEs serving as last-mile suppliers. In contrast, the GCF/UNDP project targets broader smallholder populations and value chains, while AF/IFAD's CALRF centres on financing mechanisms for households and communities.
    - Finally, in terms of its approach, this project will uniquely implement interventions such as co-design of locally led adaptation initiatives, MSME delivery incentives, savings-group empowerment, and the mainstreaming of Integrated Development Plans (IDPs) into district-level adaptation processes. This integration of IDPs is a new and distinctive feature of this project. It ensures that climate vulnerability and risk analyses and adaptation measures are embedded in local planning and budgeting systems, strengthening vertical coordination between national and subnational levels. Also this project addresses both the locally-led demand and supply of adaptation solutions, by providing last-mile advisory and deployment services from the supply side, and at the same time from the demand side for affordability and uptake of the adaptation solutions through finance mechanisms such as savings groups.

147. In addition, the project will strategically align with and enhance ongoing initiatives to maximize efficiency and impact through building on existing assets and systems. It will seek synergies with the climate information and training resources developed under the GCF/UNDP project, including Zambia Meteorological Department (ZMD) advisory products, climate-smart agriculture curricula, and farmer registries, by reusing relevant content and dissemination channels at the district and ward levels. Rather than recreating national climate information

service (CIS) structures, the project will finance last-mile MSME advisory services and micro-pack inputs that are linked to community savings mechanisms, ensuring practical and sustained delivery of adaptation solutions and technologies. It will further seek to build on regional value chain lessons from the regional AF/UNIDO project by replicating effective models for post-harvest loss reduction and cooperative strengthening through a Joint Learning Plan. Shared indicators may also be developed to enable cross-project learning, alignment, and evidence-based scaling of successful approaches. These efforts are expected to foster coherence across GCF and AF-financed interventions, reinforcing Zambia's national adaptation efforts through coordinated, complementary, and locally grounded approaches that institutionalize adaptation within district-level planning systems through IDPs.

Table 11: Overview of complementary programmes

Project title	Time- frame / Financiers	Short Description of Intervention	Synergy Opportunities
Strengthening Climate Resilience of Agricultural Livelihoods in Agro-Ecological Regions I & II (FP072)	2018–ongoing Green Climate Fund (GCF) through UNDO and Ministry of Agriculture	Implements climate information and early warning systems (CIS/EWS), climate-smart agriculture (CSA), and value-chain interventions across Eastern, Lusaka, Muchinga, Southern, and Western Provinces. Reaches about 946,000 direct and 3 million indirect beneficiaries.	Focusing geographically on Southern, Western, and Central Provinces—avoiding overlap with FP072's 16 districts. It will reuse FP072's ZMD advisory products, CSA curricula, and farmer registries to strengthen local delivery and uptake at ward level through MSMEs, rather than recreating national CIS systems. Shared indicators and joint learning will facilitate cross-project tracking of adaptation outcomes.
Climate Change Adaptation of Livelihoods through Rural Finance (CALRF)	2023–2025 Adaptation Fund (AF) through IFAD	Aims to enhance access to finance for adaptation, promote diversified livelihoods, and strengthen district-level planning and financial inclusion through rural credit mechanisms.	Linking savings groups and MSMEs to adaptation financing at the community level, rather than creating new credit lines. This project focuses on last-mile delivery of adaptation inputs and micro-pack solutions tied to community savings mechanisms, reinforcing financial resilience and inclusivity, particularly for women- and youth-led households.
Regional Project: Supporting Resilient Agricultural Value Chains and Livelihoods of Climate-Vulnerable Border Communities (Zambia–Malawi)	Pipeline – pre-concept endorsed AF through UNIDO	Targets border districts in Eastern Province (Zambia) and Central/Northern Malawi to strengthen agricultural value chains, post-harvest management, and cooperative structures for climate-vulnerable communities.	Synergies with regional value chain lessons and replicate effective post-harvest loss reduction and cooperative-strengthening approaches through a Joint Learning Plan. It will also contribute to regional knowledge sharing and develop shared indicators for impact tracking and cross-project learning.
Accelerating Impacts of CGIAR Climate Research for Africa (AICCRA) - Zambia	2021-ongoing World Bank through CGIAR	Project works with smallholders to access climate-smart agriculture solutions by scaling digital climate services, validating climate smart agriculture technologies, and strengthening partnerships with SMEs and delivery intermediaries. It provides innovation grants, promotes drought-resilient seeds and water management practices.	Coordination and replication of AICCRA validated climate-smart innovations (e.g., drought-tolerant seeds, water management technologies) and digital advisory services into new districts and value chains, while also integrating the SMEs and intermediaries supported through AICCRA as delivery partners.
Amplifying the impact of the "Challenge Programme for Adaptation Innovation" of the GER through learning and knowledge management (CAIL)	2023 – ongoing Global Environment Facility (GEF) through UNIDO	The objective of this project is to accelerate innovation and private sector engagement in climate change adaptation, by identifying, sharing, and disseminating learnings and the knowledge generated in this field, including those projects supported by the GEF-managed LDCF and SCCF through the Challenge Program for Adaptation Innovation, in the areas of (i) investment funds, (ii) MSME incubation and acceleration, and (iii) CCA impacts and measures.	Strong links and coordination will be ensured between this project and CAIL by incorporating knowledge and learnings from the CAIL on the methodologies and tools that will be developed by this project, particularly concerning Project Component 4.
Adaptation Fund Climate Innovation Accelerator (AFCIA)	Ongoing AF partnership	AFCIA, aims to foster innovation in climate change adaptation in developing countries. The programme targets a broad range of potential finance recipients, including governments, non-	Strong collaborative linkages with the AFCIA will be established to enhance the development, adaptation, and dissemination of methodologies and

	with UNDP, UNEP/CTCN, UNIDO, WFP	governmental organizations, community groups, entrepreneurs, young innovators and other groups. It will award competitive grants of up to US$ 250,000 each.	toolkits for climate adaptation and resilience-building, especially under Project Component 2.
Climate Change Adaptation in Forest and Agricultural Mosaic Landscapes	2021 – ongoing GEF through FAO	Landscape-based project in select Zambian districts (Nyimba, Petauke, and parts of Western Province) to boost resilience among rural communities and ecosystems. It introduces and scales innovations in sustainable land and forest management (e.g. agroforestry, conservation agriculture, improved value chains in forestry), strengthens community/producer organization capacity, supports participatory land-use planning, and fosters livelihood diversification to reduce pressure on natural ecosystems	Extract and replicate lessons learned in encouraging adoption of agriculture climate adaptation solutions (e.g., climate-tolerant crops, soil health, agroforestry combinations) into the forest-adjacent mosaic zones targeted by this GEF intervention. Explore opportunities to leverage participatory land-use planning frameworks to ensure that agricultural expansion under the project respects ecological thresholds.
Climate-Resilient Agri-Food Systems (CREATE)	2023 - 2027 GIZ	Strengthen the resilience of Zambia's agricultural and food systems by building capacity in the Ministry of Agriculture, supporting evidence-based policy, advising on climate-smart innovations, and helping small and medium agri-businesses adapt and scale resilient practices. It operates across national and regional levels (Eastern, Luapula, Southern Provinces) to integrate climate adaptation into agriculture transformation programs (support SMEs in business model resilience, and enhance institutional frameworks for climate-responsive agriculture.	CREATE's work with the Ministry of Agriculture aligns with the proposed Component 3 on district-level planning, offering an entry point to harmonize policy implementation and embed adaptation into Integrated Development Plans. Additionally, Component 1 can build on CREATE's SME networks and advisory innovations to expand last-mile delivery of technologies.
Inclusive GEF Assembly Challenge Program 76	2024 – ongoing GEF through UNIDO	The objective of the GEF Assembly Challenge Program is to catalyze inclusive and innovative on-the-ground action, to be implemented by a wide range of partners, that addresses global environmental priorities and climate change challenges.	Lessons learned from implementation of the Inclusive GEF Assembly Challenge Program will be made available in the peer learning and knowledge exchange activities with a special focus on inclusivity as part of Project Component 4.
Resilient Landscapes and Livelihoods Project	(under development) GCF	This project aims to improve climate resilience, land productivity, and carbon storage in vulnerable rural watersheds, while also increasing access to diversified livelihood activities.	The project will be aligned with these strategies by creating synergies through shared knowledge, learning exchanges, and coordination mechanisms that strengthen the impact and scalability of bamboo-based climate resilience solutions.
SMARTFARM - A data and digital technology driven and farm management solution for climate resilience	2025-2027 GEF through UNIDO	Makes real-time weather and climate data along with data-driven farm advisory available to smallholder farmers, hence increasing adoption of climate resilient agriculture practices and enhancing rural communities' resilience to climate change.	The project will leverage data-driven farm management and climate adaptation strategies to improve productivity and resilience. Its focus on climate-smart agriculture, resource efficiency, and access to markets and finance can directly support smallholders by climate smart farming techniques, efficient water use, and optimized planting schedules.
Transforming Landscapes for Resilience and Development I and II (TRALARD)	TRALARD I: 2016-2025 (ongoing) TRALARD II: 2026-2031 World Bank	Focus on Zambia's Miombo ecoregion to restore degraded landscapes, strengthen climate resilience of communities, and foster sustainable livelihoods. Interventions include reforestation and assisted natural regeneration, watershed protection, sustainable forest and land use practices, fire management, integration of climate-smart agriculture and value chains.	Explore opportunities to collaborate with climate-smart agriculture packages in the same landscapes targeted by TRALARD, to expand uptake of drought-tolerant crops, conservation agriculture, or agroforestry where TRALARD is restoring forests. Potential collaboration on shared community planning platforms and participatory land-use plans to coordinate agricultural expansion and avoid conflict with forest restoration goals.
Zambia Integrated Forest Landscape Program (ZIFLP)	2020-ongoing GEF and	Improve landscape management and increase environmental and economic benefits for rural communities in Eastern Province by integrating sustainable land use, restoring degraded forests,	Potential lessons learned and tools in combining community forest management structures and climate-smart practices to deepen agriculture

	World Bank	promoting climate-smart agriculture, and strengthening community forest governance.	interventions in forest-adjacent zones.

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

148. The project embeds learning and knowledge management across all components, synthesizing and amplifying lessons to maximize coherence, effectiveness, and replicability. Knowledge generated through rural household co-design processes (Output 1.1), MSME engagement (Output 1.2), community resilience building (Output 2), and institutional strengthening (Output 3) will be continuously captured, analyzed, and shared.

149. A structured learning agenda will guide this process, with core themes including: a) effectiveness of locally led adaptation planning and co-design mechanisms; b) business models, operational efficiencies, and financing pathways for MSMEs delivering adaptation solutions; c) performance of digital climate services in rural contexts; d) social inclusion outcomes, particularly for women, youth, and marginalized groups; and e) institutional integration of adaptation priorities in district and national systems.

150. Tracking of experiences, learning, and evidence generated under the project will be undertaken through existing national, provincial, district, and community-level institutional structures, complemented by project-specific monitoring and learning arrangements. Tracking will be conducted continuously throughout implementation, with structured learning points captured at key stages, including community engagement, capacity-building activities, MSME service delivery, financial literacy training, and district-level planning processes. District Coordination Committees and provincial structures will support routine reporting and coordination, while periodic reviews and learning events will assess progress, challenges, and emerging lessons. During the PFG phase, targeted interviews with national and district officials will establish baselines on institutional capacity and IDP processes, which will inform subsequent tracking.

151. Qualitative and quantitative data will be collected through reports, field observations, interviews, and routine monitoring. Information collected will cover community and district experiences in implementing adaptation measures and engaging with MSME-led solutions; the effectiveness of capacity-building and financial literacy interventions; institutional coordination and functionality of IDP-related processes; constraints related to financing, human resources, and logistics at local levels; evidence on the sustainability of adaptation actions beyond the project period; and differentiated experiences across rural and peri-urban contexts.

152. These insights will be transformed into practical knowledge products such as toolkits, policy briefs, case studies, and manuals that capture technical, financial, and social dimensions of the proposed interventions. Knowledge generated under the project will be sustained by embedding learning within existing institutional structures, particularly IDPs, district reporting frameworks, and community-based organizations. The project's emphasis on strengthening financial literacy, viable MSME business models, and institutional capacity within existing systems, rather than creating new ones, is designed to enable continued application of lessons after project closure. Partnerships with national networks, including savings group platforms and youth skills institutions, will further support the long-term use and dissemination of knowledge.

153. Strategic communication and dissemination will ensure that knowledge reaches targeted audiences through multiple channels. At the local and sub-national level, learning will be shared through community workshops, extension services, and community radio broadcasts in local dialects, as well as through district and provincial coordination platforms, including DCC meetings, engagement with Community Forestry Management Groups, and collaboration with sector institutions such as the Ministry of Community Development and savings group networks. Learning products will be shared through existing reporting and planning channels linked to the Ministry of Green Economy and Environment and district administrations, ensuring integration with ongoing government processes. At the national level, policy briefs, high-level dialogue forums, and contributions to Zambia's NAP reporting and NDC updates will ensure that project lessons inform national adaptation planning. At the regional and international level, findings will be contributed to platforms such as the Africa Adaptation Knowledge Network (AAKNet), WeADAPT, and relevant UNIDO and UNFCCC forums, and shared at events including Africa Climate Weeks and COP side events. The project will also leverage UNIDO's Climate Adaptation Innovation and Learning (CAIL) platform to ensure visibility and exchange across UNIDO-supported adaptation projects globally.

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

154. As part of the concept proposal development, the project team has engaged in consultations with Zambia's DA to understand national priorities, identify key gaps and local barriers to adaptation, and explore stakeholder interest and potential roles. Initial feedback has been highly positive and has informed the design of the Concept Note. The proposed interventions are aligned with national priorities and will be further refined through continued consultations during the development of the Full Proposal.

155. Stakeholder consultations were conducted in December 2025 in Lusaka, Zambia, in coordination with the National Designated Authority (NDA) under the Ministry of Green Economy and Environment (MGEE). These consultations were **preliminary in nature** and aimed to ensure early alignment with national priorities, validate the project's strategic direction, and familiarize the project team with the national institutional and policy context. Participants included representatives from national government institutions, development partners, civil society organizations, private sector actors/MSMEs, academia, and independent experts. The consultations provided initial guidance to inform the Concept Note, with more detailed and locally grounded consultations to be undertaken during full proposal development.

156. The consultations generated several consistent findings, which have been incorporated into the Concept Note. These include strong NDA ownership and alignment with a focus on climate-resilient livelihoods, MSME-led delivery of adaptation solutions, and locally led adaptation; the importance of ensuring economic sustainability of supported MSMEs beyond the project period; the need for community-driven identification of climate challenges prior to engaging solution providers; the recommendation to keep geographic targeting flexible at Concept Note stage; and the identification of institutional capacity gaps at district and community levels, reinforcing the need for capacity building and integration of climate priorities into Integrated Development Plans (IDPs).

Table 12: Summary of Stakeholder Consultations and Inputs

Name	Institution	Gender	Role / Mandate	Key Input Reflected in the Concept Note
Dr. Douty Chibamba	Ministry of Green Economy and Environment (MGEE)	Male	Permanent Secretary; National Designated Authority (NDA)	Strong endorsement of project; emphasis on MSME viability, avoiding duplication, and aligning with national priorities
Mr. Eric Nsofu	NDA Office, MGEE	Male	Technical Officer	Guidance on NDA procedures, geographic targeting, consultation fatigue, and institutional arrangements
Ms. Brenda Simainga	NDA Office, MGEE	Female	Environmental Specialist (Readiness Support)	Inputs on readiness, institutional capacity, and examples of comparable initiatives
Ms. Francesca Kaitano	MGEE	Female	Policy & Planning Officer	Inputs on district structures, IDPs, and coordination mechanisms
Ms. Judith Shonga	MGEE	Female	Green Economy & Climate Change Officer	Inputs on climate policy alignment and local implementation challenges
Mr. Absalom Sakala	Department of Environmental Management, MGEE	Male	Senior Environmental Specialist	Provincial climate risk insights and adaptation priorities
Mr. Brian Kapotwe	IFAD Zambia	Male	Country Programme Coordinator	Lessons from RUFEP/CARLF, financial inclusion mechanisms, and synergies
Ms. Mubanga Nkhuwa	Carbon Forest Zambia (CFZ)	Female	Social Enterprise Representative	Nature-based solutions, carbon finance, language considerations, community engagement
Mr. Joseph Musonda	Global Empowers	Male	Social Enterprise Representative	Water solutions, community-driven needs assessment, MSME sustainability
Ms. Antoinette Ngoma	Plan International Zambia	Female	Programme Representative	Gender and youth inclusion, entrepreneurship, social outcomes of climate impacts
Mr. Michael Phiri	MKP Farms	Male	MSME Owner	Climate-resilient value chains, market

				access, alternative livelihoods
Dr. Kabwe Mubenga	University of Zambia (UNZA)	Male	Academic / Researcher	Climate, agriculture, and innovation linkages
Dr. Charles Chisanga	University of Zambia (UNZA)	Male	Academic / Researcher	Technical and research perspectives on adaptation
Mr. Lawrence Simatyaba	Independent Expert	Male	Behavioural Change Specialist	Behavioural change considerations and community acceptance

157. In conceptualizing this proposal, the project team has started to identify and assess the challenges and needs of climate adaptation MSMEs in the southern African region through UNIDO networks, including adaptation MSMEs supported through the Private Financing Advisory Network (PFAN) and regional investment fora. They include Ilobezi (supplier of drought resilient sorghum seeds), Vitalite (certified farming inputs, agriculture information platform, and solar-water pumps), and Solar Move (lease-to-own water management solutions). Online review of 13 adaptation MSMEs confirmed that there are adaptation solutions from MSMEs that improve household productivity and resilience to climate risks. Engagement with them and others will continue for further consultations and technical validation of the project design during PFG phase.

158. During the Full Proposal stage, the project will conduct an inclusive consultative process to ensure that its design reflects the priorities, needs, and preferences of stakeholders at all levels. It will build on initial engagements and deepen collaboration with a wide range of actors, including rural households, MSMEs, and relevant public institutions, and will seek to identify barriers that prevent households and MSMEs from accessing climate adaptation solutions. All findings will be documented and disclosed, and will serve as the foundation for the finalized project design and the Environmental and Social Management Framework (ESMF), making the consultation process an integral part of the project's safeguard and gender architecture.

159. At the community level, consultations will be held with a sample of vulnerable rural households, women's and youth associations, and vulnerable households. Through focus groups and key informant interviews, these consultations will map current livelihood challenges, capture priorities for adaptation, and highlight barriers to accessing adaptation solutions, including issues of affordability, availability, or limited technical knowledge. Feedback will also help the project identify which adaptation solutions should be prioritized for climate-resilient investment and how best to package these adaptation solutions for community uptake. The results of these consultations will feed directly into the preparation of the ESMF and gender action plan, ensuring that community voices guide gender-responsive programming and safeguard provisions.

160. Insights from on-site consultations with Plan International Zambia, Carbon Forest Zambia (CFZ), and directly informed revisions to the consultation framework, ensuring stronger integration of gender dynamics and meaningful women participation in the project. To ensure that gender dynamics are meaningfully addressed within the Zambian context, consultations will be designed to capture the differentiated experiences, needs, and barriers faced by women and men. Separate women-led focus groups will be organized to encourage open dialogue, particularly in contexts where gender norms, social expectations, or limited legal protections may restrict women's participation in mixed settings. The consultations will specifically assess how gender dynamics should inform project design and identify gender-specific barriers to be addressed through project activities. These dynamics may include time burdens from unpaid care work, unequal access to land, finance, and inputs, and limited decision-making power. Together, they contribute to women's disproportionately high poverty rates, lower labor force participation, and to their greater vulnerability to climate change and reduced capacity to adopt adaptation solutions. The consultation process will also explore structural constraints to women's entrepreneurship, including persistent barriers to starting, expanding, and sustaining businesses compared to men, particularly due to unequal access to capital, training, and professional networks. Identified constraints will inform activity design, including targeted support to women-led MSMEs. Finally, the consultations will examine gender-specific barriers to participating in savings groups and public benefit schemes, with findings used to shape targeted actions under the project's Gender Action Plan.

161. At the district and provincial levels, consultations will be conducted bilaterally or in workshops with Ward Development Committees (WDCs), District Development Coordinating Committees (DDCCs), and key local governance stakeholders in the context of component 3, to ensure that IDP review and updating processes will be conducted effectively in consideration of existing governance structures and that there will be full ownership of resulting community adaptation plans. Extension officers, research institutions and universities contributing to climate-smart knowledge, and traditional leaders will also be consulted to inform and validate the proposed

activities, identify delivery pathways for adaptation solutions, and assess how local governance structures can facilitate MSME engagement. A particular emphasis will be placed on identifying the capacity and financial gaps of existing MSMEs, especially those led by women, youth and members of marginalized communities. Local authorities and communities will actively contribute to the project's design, which will be guided by a robust stakeholder analysis.

162. The consultation process will also introduce and promote the project's grievance mechanism, to ensure transparency and accountability from the outset. All findings will be documented in comprehensive consultation reports, which will be included as annexes to the final project proposal. These will detail the stakeholders consulted, dates, discussion topics, and how stakeholder inputs have been reflected in project planning and design.

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

163. Zambia's rural households and rural MSMEs face escalating climate risks, including prolonged droughts, erratic rainfall, and increasing and extreme temperatures. These impacts directly threaten food security, rural livelihoods, and the viability of value chains that underpin the national economy. In the absence of targeted adaptation support, rural households and MSMEs will continue to rely on outdated practices, climate-blind investments, and limited institutional support, resulting in low incomes and food security, degraded ecosystems, and heightened vulnerability of women, youth, and marginalized groups.

164. Baseline scenario (without AF intervention):
- Rural households continue to use rainfed, low-resilience practices, with limited access to climate-resilient technologies, inputs, or climate services.
- MSMEs remain undercapitalized and unable to develop or deliver adaptation solutions to rural communities, perpetuating dependence on informal and poorly adapted systems.
- Community savings groups and local institutions remain weakly capacitated, with limited ability to mobilize resources or manage shocks.
- District Integrated Development Plans (IDPs) and national planning processes remain inadequately informed by climate risk data, undermining long-term resilience.

165. Adaptation alternative enabled by AF resources (through this project):
- Output 1.1: Rural households gain access to context-specific, climate-resilient technologies and practices identified through participatory processes, increasing resilience to local climate change risks.
- Output 1.2: Local MSMEs are capacitated and financed to supply adaptation solutions, transforming them into long-term partners for resilience and ensuring sustainable access for rural households.
- Outputs 2.1 and 2.2: Community savings groups and a resilience financing facility enhance household and community financial resilience, reducing dependence on distress coping strategies.
- Outputs 3.1 and 3.2: District and national institutions integrate climate adaptation into IDPs and policy frameworks, ensuring systemic mainstreaming of adaptation.
- Outputs 4.1–4.3: Adaptation initiatives are implemented more effectively, remain responsive to evolving climate and community needs, and will be sustained beyond the project's lifetime

166. Incremental reasoning: Adaptation Fund resources are essential to finance the incremental costs of adaptation that would not be supported under a development-only baseline. Specifically:
- Development finance might support generic MSME development, but it would not finance the additional costs of integrating climate risk information, climate adaptation solutions, or safeguards screening.
- Community savings groups and MSMEs may operate without climate-sensitive approaches, and without AF support they cannot cover the incremental costs of developing adaptation-specific business models, products, and services.
- District and national planning processes would continue, but without AF resources they would lack the technical and financial capacity to systematically mainstream climate adaptation into IDPs and national systems.

167. No co-financing is being considered for the project. The project has been intentionally designed as a self-contained intervention, whereby all core activities required to achieve the stated objectives and results are fully financed through Adaptation Fund (AF) resources, without reliance on additional co-financing. The project

scope prioritizes locally led, demand-driven adaptation measures and MSME-based service delivery, avoiding large-scale infrastructure or capital-intensive investments that would require parallel funding sources. Using AF resources exclusively, the project will achieve its objectives through a targeted and phased implementation model. AF funding will support participatory climate risk and demand assessments, co-design and deployment of locally appropriate climate adaptation solutions, capacity building for communities and MSMEs, and catalytic project support structured around clearly defined performance and delivery milestones. The project leverages existing local institutions, including community savings groups, MSMEs and district-level planning bodies, as implementation partners. Their contributions are institutional, technical and operational in nature, rather than financial, enabling efficient and cost-effective use of AF resources. Sustainability and impact beyond the project lifetime will be ensured through the integration of community adaptation priorities and climate risks into local planning instruments, including Integrated Development Plans (IDPs) and community-level Adaptation Action Plans, as well as through a monitoring, learning and adaptive management framework fully financed under the AF grant. This approach enables institutionalization of project outcomes, supports replication and scaling of effective adaptation solutions, and maximizes adaptation impact without requiring co-financing during project implementation.

J. Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project/programme.

168. Sustainability has been embedded in the design of the project to ensure that project outcomes continue to generate adaptation benefits well beyond the life of the project. The approach builds on five interrelated dimensions: financial, institutional, social/environmental sustainability, learning and adaptive management, and replication and scaling. By combining market-driven delivery systems, institutional mainstreaming, inclusive governance, and environmentally sound practices, the project ensures that resilience outcomes are durable, replicable, and scalable. This integrated design ensures that project investments will continue to provide benefits for vulnerable communities and institutions long after project completion.

169. Financial Sustainability:
    - Component 1: Financial sustainability relies on building a self-sustaining local market for adaptation solutions. The project will support increased demand for adaptation solutions by rural households and will engage local MSMEs to supply those adaptation solutions at affordable prices and at scale.
    - Component 2: This component promotes community-led financial resilience by creating and strengthening self-sustaining community savings groups and diversified income streams for local communities to reduce their dependence on external support.
    - Component 3: Financial sustainability is achieved by institutionalizing adaptation solutions within district government planning and formal budget cycles. By embedding local climate risks and potential context-specific adaptation solutions directly into IDPs, which are the primary sub-national instruments for translating national objectives into local budgets, the project ensures that adaptation measures are eligible for sustained public funding beyond the project's lifetime. The project will also translate IDP climate adaptation solutions into practical community-level Adaptation Action Plans (AAPs) and support their effective implementation. As district governments execute these AAPs, they will be better positioned to advocate for and allocate resources toward resilient infrastructure and services from the national budget.

170. Institutional and Policy Sustainability:
    - The integration of adaptation priorities into District Integrated Development Plans (IDPs) and national systems (Outputs 3.1 and 3.2) ensures that adaptation is institutionalized in government planning and budgetary processes.
    - Strengthened adaptive management structures (Output 4.1) establish inclusive platforms for decision-making, monitoring, and accountability that will remain in place after project closure.
    - National and district-level capacity building, combined with alignment to Zambia's NAP and 8NDP, ensures that government institutions can sustain and scale adaptation actions.

171. Social and Environmental Sustainability:
    - The project applies locally led adaptation (LLA) principles to guarantee that communities, especially women, youth, and marginalized groups, co-design interventions, increasing ownership, social acceptability, and continuation of practices.
    - Gender-responsive and youth-inclusive approaches ensure that adaptation outcomes contribute to long-term empowerment and equitable access to opportunities.

- Environmental sustainability is built in through the promotion of climate-smart, resource-efficient solutions, reducing land degradation, improving soil and water management, and strengthening ecosystem services that underpin livelihood resilience.

172. Learning and Adaptive Management: Robust learning and knowledge sharing systems (Outputs 4.2 and 4.3) will generate actionable evidence that informs mid-course corrections, improves delivery efficiency, and strengthens the foundation for replication.

173. Replication and scaling: Scaling will occur through commercially viable MSME-led service delivery models. By supporting MSMEs to develop and refine business models for delivering climate adaptation solutions, the project enables continued expansion to new customers and geographic areas after project completion, driven by market demand rather than external financing. Replication will be supported through institutional integration at district and national levels. The incorporation of climate risks and locally prioritized adaptation actions into IDPs creates a framework through which similar approaches can be replicated in additional districts using public resources and future climate finance. The project will also generate practical knowledge and evidence on effective locally led adaptation approaches, including delivery models, financing mechanisms, and gender-responsive practices. These lessons will be captured through learning products and shared with national institutions, development partners, and private sector actors to inform replication in other regions. The project's alignment with national policies and strategies, including the National Adaptation Plan and the 8th National Development Plan, further supports uptake and scaling by other programmes and funding mechanisms. Together, these pathways ensure that the benefits of the project can be sustained, replicated, and scaled beyond the initial project scope, demonstrating that locally led adaptation models can be effectively institutionalized and expanded across Zambia and beyond.

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

174. The project will fully comply with the Adaptation Fund's Environmental and Social Policy (ESP) and Gender Policy (GP). In line with UNIDO's Environmental and Social Safeguards Policies and Procedures (ESSPP), the project has been preliminarily screened and classified as a Category B project, given that it involves community-level interventions with potential site-specific, limited, and manageable environmental and social risks.

175. An Environmental and Social Management Framework (ESMF) will be developed during the full proposal stage to guide screening, assessment, and management of risks. The ESMF will ensure that all project-supported activities are environmentally responsible, socially inclusive, and legally compliant with Zambian regulations and AF requirements. Interventions will be categorized by risk level (low, moderate, high), and high-risk activities will undergo more detailed assessment, possible redesign, or exclusion. The ESMF will:
    - Provide tools for systematic safeguards screening of all sub-projects, including Unidentified Sub-Projects (USPs) under Outputs 1.1 and 1.2, all of which will be subject to the ESMF;
    - Include clear eligibility and exclusion criteria to prevent activities with unacceptable risks;
    - Require meaningful and inclusive stakeholder consultations, with Free, Prior, and Informed Consent (FPIC) applied where relevant;
    - Outline procedures for grievance redress accessible at community level;
    - Integrate gender-responsive and youth-inclusive safeguards measures;
    - Establish monitoring and reporting mechanisms for adaptive risk management.

176. Below is a revised "National Compliance and ESP Mapping Matrix" that identifies the principal Zambia legal and regulatory instruments, technical standards and procedural requirements applicable to the proposed intervention types (including USPs under Outputs 1.1 and 1.2), and maps them to the relevant AF ESP principles. This matrix clarifies competent authorities and the specific compliance procedures that will be operationalized through the ESMF/ESMP framework during PFG/full proposal development.

Table 23: National compliance and ESP mapping matrix (summary)

Intervention type	Zambia requirement / instrument / procedure	Competent authority	AF ESP principles addressed	Operationalization during PFG/full proposal and implementation

All interventions (incl. USPs)	Environmental Management Act / national screening requirements; EPB/EIA processes where required	Zambia Environmental Management Authority (ZEMA)	Legal compliance; E&S assessment; consultation/disclosure	ESMF to screen and categorize all interventions (incl. USPs); prepare EPB/EIA/ESMP as applicable; disclose and consult; implement GRM
Water abstraction / pumping / irrigation (where triggered)	Water resources permitting and catchment governance requirements	Water Resources Management Authority (WARMA)	Water resources; community health & safety; compliance	Permit compliance where required; catchment-sensitive siting and O&M controls incorporated in sub-project screening
Water harvesting installations	National water harvesting guidance/requirements and safe installation practices	Ministry of Water Development and Sanitation (MWDS / local authorities)	Resource efficiency; community health & safety	Standard installation and quality assurance requirements are embedded in MSME eligibility criteria, procurement and inspection
Built works / installations	Applicable engineering and local authority approval procedures	Ministry of Local Government & Rural Development (MLGRD)/ Ministry of Infrastructure and Housing Development (MIHD)/Local authorities	Community health & safety; labour; compliance	Contractor method statements, OHS plans, site safety protocols; local approvals obtained where required
Renewable energy technologies (where used by MSMEs/solutions)	Sector safety and operational standards	Ministry of Energy (MOE)/ Ministry of Small and Medium Enterprises (MSME)/Energy Regulation Board (ERB)	Community health & safety; compliance	Supplier/MSME screening and procurement requirements to ensure safety/quality compliance
OHS for contractors/MSMEs	National occupational safety and health requirements	Ministry of Labour & Social Security (MLSS)/ OHS Institute / relevant institutions	Labour and working conditions; community health & safety	OHS plans, PPE, incident reporting and community safeguards integrated into contracts and supervision
Safeguards and gender-responsive MEL	National compliance commitments plus AF ESP/Gender Policy requirements	Project + competent authorities	Cross-cutting ESP principles	Output 4.2 systems operationalized for safeguards monitoring, gender/youth responsiveness, and learning feedback loops.

177. At this stage, no activities are anticipated to result in irreversible or large-scale environmental or social impacts. Risks are considered site-specific and manageable, with mitigation measures embedded in project design. All risks that partially overlap with Unidentified Sub-Project (USP) interventions will undergo formal environmental and social screening prior to implementation in accordance with the Adaptation Fund's USP guidance. All identified risks will be reassessed during the full proposal stage, and the ESMF will be developed to ensure robust safeguards compliance throughout implementation.

Table 14: Environmental and Social Principles: Risk Screening and Potential Impact

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks
Compliance with the Law	No	LOW RISK – The project aligns with Zambia's national laws and regulations, including the Environmental Management Act (2011), and has endorsement from the Ministry of Green Economy and Environment. All activities will comply with relevant legal frameworks governing agriculture, MSMEs, environmental protection, and climate adaptation.
Access and Equity	No	LOW RISK – The project prioritizes equitable access to adaptation solutions for rural households, MSMEs, women, and youth. However, socio-economic barriers may limit participation of marginalized groups if not proactively addressed. The project will use inclusive targeting, transparent selection of MSMEs, and participatory planning to ensure equitable benefit distribution.
Marginalized and Vulnerable Groups	No	MEDIUM RISK – Women, youth, and vulnerable rural households in Zambia are disproportionately vulnerable to climate change. Without safeguards, these groups could face barriers to accessing adaptation solutions or finance. Targeted interventions will ensure inclusivity through tailored capacity building, affirmative action in MSME support, and community-level engagement strategies.
Human Rights	No	LOW RISK – The project upholds Zambia's human rights commitments and does not involve activities that would infringe on rights related to land, labour, or participation. Instead, it is designed to strengthen livelihoods, enhance resilience, and empower vulnerable groups.
Gender Equality and	No	MEDIUM RISK – Structural barriers such as limited land ownership rights and unequal access to

Women's Empowerment		inputs and extension services may prevent women from fully benefiting. The project will mainstream gender equity through a Gender Action Plan, deliver tailored mentorship, and ensure women's active participation in decision-making and access to climate technologies and markets.
Core Labour Rights	No	LOW RISK – Informal labour arrangements are common among MSMEs and rural households. Risks include inadequate occupational health and safety standards and potential child labour in informal enterprises, as well as child labour within individual households. The project will promote compliance with international labour standards, provide training on safe practices, and ensure occupational health and safety measures are enforced.
Indigenous Peoples	No	LOW RISK – Zambia has communities with strong traditional resource management practices. Risks of exclusion exist if culturally appropriate engagement is not ensured. The project will apply participatory, culturally sensitive approaches, recognizing traditional knowledge and ensuring Indigenous groups benefit equally.
Involuntary Resettlement	Yes	NO RISK – The project does not involve land acquisition or displacement. All interventions will be designed to avoid resettlement and to safeguard community and household land tenure rights.
Protection of Natural Habitats	No	MEDIUM RISK – Poorly implemented adaptation solutions (e.g., irrigation or land-use interventions) could impact natural habitats. The project will ensure site-specific safeguards screening, apply ecosystem-based approaches, and avoid activities that may cause habitat loss.
Conservation of Biological Diversity	No	LOW RISK – Introduction of new agricultural inputs or technologies carries some risk of impacting biodiversity if not properly managed. All inputs will be screened to avoid invasive species or unsustainable practices, ensuring interventions enhance rather than undermine biodiversity.
Climate Change	No	LOW RISK – The project is designed to enhance adaptation and reduce vulnerability. However, deployment of new technologies (e.g., seed storage, irrigation) may carry localized emissions risks. The project will prioritize low-carbon, renewable energy solutions, and energy efficient technologies.
Pollution Prevention and Resource Efficiency	No	LOW RISK – Improper disposal of agricultural inputs or waste from MSMEs and smallholders could cause pollution. The project will promote circular economy principles, enforce waste management plans, and ensure efficient use of resources.
Public Health	Yes	NO RISK – The project is expected to generate positive health outcomes by improving food security and reducing climate-related stressors. Health safeguards will ensure that no technologies or inputs negatively affect local health conditions.
Physical and Cultural Heritage	Yes	NO RISK – The project will not impact cultural heritage sites. Screening and community consultations will ensure protection of any culturally significant areas.
Lands and Soil Conservation	No	LOW RISK – While the project is expected to deliver positive impacts by promoting soil and water conservation practices, there is a minor risk of soil stress if irrigation or inputs are mismanaged. Safeguards will ensure sustainable land management practices are applied.

PART III: IMPLEMENTATION ARRANGEMENTS

178. The project will be implemented by the United Nations Industrial Development Organization (UNIDO) as the accredited Multilateral Implementing Entity. The Ministry of Green Economy and Environment (MGEE) of the Republic of Zambia will serve as a national Executing Entity (EE), responsible for overall coordination of field-level implementation and alignment with national adaptation priorities. An additional national EE may be identified during the Project Formulation Grant (PFG) phase in consultation with MGEE and in accordance with UNIDO's grant manual rules and procedures, to ensure the optimal mix of technical expertise and institutional mandate. If a second EE is identified in consultation with the MGEE, the distribution of roles and responsibilities between the two national EEs will also be discussed during PFG phase and captured in the full proposal.

179. UNIDO will also serve as the Executing Entity for Component 4, which focuses on effective project management, knowledge sharing and learning activities that directly support the uptake, replication and scaling of the project's adaptation solutions across the target districts. Leveraging its expertise and experience in supporting governments to address climate challenges as well as working with local MSMEs to provide climate solutions, as well as its international network and reach with the climate adaptation ecosystem at large, UNIDO is expected to complement and support MGEE as the main EE in maximizing the impact of the proposal's interventions. In particular, UNIDO will support MGEE in establishing an effective project management structure, as well as operationalization of a learning and knowledge management system for continuous feedback loop into the project during its implementation. UNIDO's past and current portfolio of climate adaptation projects will also offer a platform through which the knowledge products and communication materials building on Components 1 to 3 are captured, synthesized, and disseminated effectively at community,

national, and international levels.

180. Learning and knowledge management activities (Section II Part G) will be led by the PMU in coordination with MGEE and its decentralised structures, including Provincial Administration offices, District Coordinating Committees, and the Forestry Department, which operates through Community Forest Management Groups. These entities will be supported by technical consultants during the PFG phase and implementation, including external experts engaged to assess institutional arrangements and capacity gaps, and operational practices related to Integrated Development Plans. Community-level structures, including savings groups and local committees, will also contribute to project feedback and learning processes.

181. UNIDO will retain overall oversight of project implementation, ensuring that activities are carried out in line with the Adaptation Fund's Environmental and Social Policy, Gender Policy, and agreed implementation standards. UNIDO will be accountable to the Adaptation Fund for all financed activities and will manage project cycle services, including financial oversight, monitoring of delivery, and consolidated reporting to the Adaptation Fund. UNIDO will also oversee the commissioning of the project's mid-term and terminal evaluations. At the operational level, a Project Management Unit (PMU) will be established in Zambia to manage the day-to-day execution of project activities. The Terms of Reference and the modus operandi of the PMU, and its hosting arrangement between the two national EEs will also be determined during the PFG phase.

182. A Project Steering Committee (PSC) will be established to provide strategic guidance and ensure alignment with national and local priorities. The PSC will be chaired by UNIDO and include representatives from MGEE, other relevant government ministries, local authorities in target districts, and representatives of beneficiary communities. The final composition of the PSC will be confirmed during full proposal development in consultation with national stakeholders.

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

183. The project directly supports the Adaptation Fund's overall objective, as defined in its updated Results Framework, to reduce vulnerability and increase adaptive capacity to respond to the impacts of climate change, including variability, at local and national levels. The project's objectives also contribute directly to AF's Outcome 6 (Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas), Outcome 3 (Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level) and Outcome 7 (Improved policies and regulations that promote and enforce resilience measures), as reflected in the Results Framework Alignment Table (Table 15).
    - Through objectives 1 and 2, the project contributes to AF's outcome 6 by strengthening access to locally appropriate climate adaptation solutions and services, supporting diversified and climate-resilient livelihood opportunities, strengthening community-level financial resilience mechanisms, and improving last-mile delivery of adaptation goods and services through accountable and inclusive MSMEs. In parallel, these objectives contribute to Outcome 3 by strengthening community awareness, demand and ownership of climate risk reduction and adaptation responses, and by enabling households and communities to apply appropriate adaptation practices.
    - Through objective 3, the project contributes to AF's outcome 7 by strengthening district-level planning and institutional systems, including the integration of climate risks and climate-resilient livelihood priorities into Integrated Development Plans and associated community-level Adaptation Action Plans. Objective 3 also contributes to AF's outcome 3 by strengthening learning, adaptive management and knowledge systems that reinforce local awareness, ownership and application of climate adaptation and risk reduction measures.

Table15: Alignment of Project Objectives, Outcomes, and Grant Allocation with the Adaptation Fund Results Framework

Project Objective[64]	Project Objective Indicator(s)	Adaptation Fund Outcome	Adaptation Fund Outcome Indicator	Grant Amount (USD)

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

Objective 1 Strengthen community-driven identification of climate risks and demand for locally appropriate adaptation solutions, and enable their effective delivery through accountable and inclusive local service providers, including MSMEs, in line with locally led adaptation principles	Percentage of targeted rural households with improved and secure access to climate-resilient livelihood assets and services (including adaptation technologies, inputs and MSME-provided services), disaggregated by gender and youth	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	8,000,000
		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	1,000,000
Objective 2 Improve the financial resilience of rural households and communities and enable affordable and equitable access to climate adaptation solutions and diversified, climate-resilient livelihood opportunities	Percentage of targeted rural households with sustained and diversified climate-resilient income sources and improved financial resilience, disaggregated by sex and youth.	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	Indicator 6.2: Percentage of targeted population with sustained climate-resilient alternative livelihoods	7,500,000
		Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	Indicator 3.2: Percentage of targeted population applying appropriate adaptation responses	1,000,000
Objective 3 Strengthen district-level planning, institutional capacities, adaptive management and learning systems in support of the design, delivery, sustainability and scaling of climate-resilient livelihood strategies and adaptation solutions beyond the project lifetime	Number of district development planning instruments (Integrated Development Plans and associated community-level Adaptation Action Plans) introduced or updated to integrate climate risk and climate-resilient livelihood priorities.	Outcome 7: Improved policies and regulations that promote and enforce resilience measures	Indicator 7: Climate change priorities are integrated into national development strategy	3,000,000
		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	560,495
Total outcome level grant amount				**21,060,495**
Project Outcome(s)	**Project Outcome Indicator(s)**	**Adaptation Fund Output**	**Adaptation Fund Output Indicator**	**Grant Amount (USD)**
Outcome 1: Outcome 1: Rural households adopt climate-resilient solutions that enhance adaptive capacity and reduce livelihood vulnerability	Number of rural households that adopt at least one climate adaptation solution, disaggregated by gender and youth.	Output 6: Targeted individual and community livelihood strategies strengthened	Indicator 6.1.1: Number and type of adaptation assets (tangible and intangible) created or strengthened in support of individual or community livelihood strategies	8,000,000
Outcome 2: Rural communities achieve greater financial resilience and diversified income sources for increased adaptive capacity	Number of rural households participating in community savings groups or alternative income-generating activities that strengthen financial resilience, disaggregated by gender and youth.	Output 6: Targeted individual and community livelihood strategies strengthened	Indicator 6.2.1: Type of income sources for households generated under climate change scenario	7,500,000
Outcome 3: District development planning	Number of districts with updated Integrated	Output 7: Improved integration of climate-	Indicator 7.1: Number of policies introduced or	3,000,000

integrates community priorities and national and local climate adaptation and resilience measures	Development Plans and translated into a community-level Adaptation Action Plan, supported by institutions trained in climate adaptation.	resilience strategies into country development plans	adjusted to address climate change risks (by sector)	
Outcome 4: Adaptive management and inclusive governance ensures effective learning and sustainable adaptation	Number of knowledge products and lessons shared disseminated and number of learning events facilitated to share them	Output 3.2: Strengthened capacity to capture and disseminate knowledge and learning	Indicator 3.2.2: Number of tools and guidelines developed (thematic, sectoral, institutional) and shared with relevant stakeholders	2,560,495
Total output level grant amount				**21,060,495**

PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[1]

Dr. Douty Chibamba Permanent Secretary Ministry of Green Economy and Environment Zambia CC: Mr. Billy Katontoka National Coordinator, NDA, Ministry of Green Economy and Environment, Zambia	Date*: 30 October 2025*

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.

Ganna Onysko

Ms. Ganna Onysko
Senior GEF, GCF, AF Coordinator
Division of Funding Partner Relations
Directorate of Global Partnerships and External Relations
United Nations Industrial Development Organization - UNIDO
Implementing Entity Coordinator

Date: 10 March *2026*	Tel. and email: +43 1 26026 3708 TO: f.haidara@unido.org CC: gef@unido.org; glo@unido.org; g.onysko@unido.org

Project Contact Person: Sunyoung Suh, Project Manager

Email: s.suh@unido.org
CC : Mr. Manuel Bueno, Senior Climate Finance Expert, TCS/CMP/CTI (m.bueno@unido.org)
Ms. Najlae Boumia, Project Associate, TCS/CMP/CTI (n.boumia@unido.org)
Ms. Eleonora Gatti, Head, TCS/CMP/CTI (e.gatti@unido.org)
Mr. Alois Mhlanga, Director, TCS/CMP (a.mhlanga@unido.org)

[1] Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

All correspondence should be addressed to the
Permanent Secretary
Telephone: 0211 -252395
0211 -252394
0211 -252391

REPUBLIC OF ZAMBIA

In reply please quote
No.: NDA/71/21/9

MINISTRY OF GREEN ECONOMY AND ENVIRONMENT

OFFICE OF THE PERMANENTS SECRETARY
Corner of John Mbita & Nationalist Road
P.O BOX 30147
Lusaka-Zambia

30 October 2025

The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5
UNITED STATES OF AMERICA

SUBJECT: ENDORSEMENT FOR CLIMATE RESILIENCE AND ADAPTATION FACILITY FOR TECHNOLOGIES (CRAFT)

In my capacity as Designated Authority for the Adaptation Fund in Zambia, I confirm that the above national project/programme 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 Zambia.

Accordingly, I am pleased to endorse the above project/programme proposal with support from the Adaptation Fund. If approved, the project/programme will be implemented by the United National Industrial Development Organization (UNIDO) and executed by the Ministry of Green Economy and Environment Zambia and UNIDO.

Sincerely,

Dr. Douty Chibamba
Permanent Secretary
MINISTRY OF GREEN ECONOMY AND ENVIRONMENT

Cc: Mr. Billy Katontoka, National Coordinator, NDA, Ministry of Green Economy and Environment
Cc: Ms. Sunyoung Suh, Climate Technology Innovation Unit, UNIDO

Project Formulation Grant (PFG)

Submission Date: 6 February 2026

Adaptation Fund Project ID: N/A
Country: Zambia
Title of Project: Climate resilience and adaptation facility for technologies: improving rural adaptive capacity and resilient livelihoods in the Southern, Western and Central provinces of Zambia
Type of IE (NIE/MIE): MIE
Implementing Entity: United Nations Industrial Development Organisation(UNIDO)
Executing Entity/ies: United Nations Industrial Development Organisation (UNIDO)

A. Project Preparation Timeframe

Start date of PFG	**1 June 2026**
Completion date of PFG	**31 August 2027**

B. Proposed Project Preparation Activities ($)

Describe the PFG activities and justifications:

List of Proposed Project Preparation Activities	Output of the PFG Activities	USD Amount	Budget note[1]
1a. Stakeholder consultations in target provinces and districts 1b. National validation workshop	**1. Stakeholder validation report**	43,000	**Estimated costs** $15,000.00 - Costs for engagement of local expert(s) and/or service provider(s) to conduct stakeholder consultations $12,000.00 - Travel costs for local consultations in target regions $4,000.00 - Costs for engagement of local expert(s) and/or service provider(s) to conduct validation workshop $5,000.00 - Costs for national validation workshop $7,000.00 - Travel costs for national validation workshop

[1] The proposal should include a detailed budget with budget notes indicating the break- down of costs at the activity level. It should also include a budget on the Implementing Entity management fee use.

2a. CRVA for target districts 2b. Environmental and Social Management Framework (ESMF) development, including for USPs 2c. Gender analysis and action plan development 2d. National Executing Entity institutional capacity assessment 23. Project budget, disbursement schedule, workplan and institutional arrangements development, including draft TORs for the Executing Entity and PMU 2f. Writing and revision of the main proposal document 2g. Coordination for proposal writing and revisions among all stakeholders during development and review	**2. Fully developed proposal document and associated annexes in compliance with UNIDO and AF guidelines and policies**	93,363.64	**Estimated costs** $8,233.64 - Costs for engagement of CRVA expert(s) and/or service provider(s) $5,500.00 - Costs for engagement of ESS expert(s) and/or service provider(s) $5,500.00 - Costs for engagement of gender expert(s) and/or service provider(s) $20,000.00 - Costs for engagement of service provider(s) $5,500.00 - Costs for engagement of expert(s) for preparing project budget, workplan and institutional arrangements $40,000.00 - Costs for engagement of international expert(s) and/or service providers for writing and finalization of Concept Note $5,000.00 - Costs for engagement of local expert(s) and/or service providers for writing and finalization of Concept Note $3,630.00 - Costs for engagement of expert(s) for proposal development coordination
Sub-total		136,363.64	
Implementing Entity Fee	**IE administrative and technical support for project development**	13,636.36	
Total Project Formulation Grant		**$150,000.00**	

C. Implementing Entity

This request has been prepared in accordance with the Adaptation Fund Board's procedures and meets the Adaptation Fund's criteria for project identification and formulation

Implementing Entity Coordinator, IE Name	Ms. Ganna Onysko Senior GEF, GCF, AF Coordinator Division of Funding Partner Relations Directorate of Global Partnerships and External Relations United Nations Industrial Development Organization - UNIDO Implementing Entity Coordinator	
Signature		**Date:** 6 February 2026
Project Contact Person	Sunyoung Suh +43 1 26026 3956 | s.suh@unido.org	
Telephone	+43 1 26026 3708	
E-mail	TO: g.onysko@unido.org CC: gef@unido.org / glo@unido.org / f.haidara@unido.org	

Initial Gender Assessment – CRAFT Zambia

1. Purpose and Scope of the Gender Assessment

This initial gender assessment provides an overview of gender-differentiated vulnerabilities, constraints, and opportunities relevant to the CRAFT Zambia project. It informs project design at the Concept Note stage by identifying key gender gaps related to climate risk exposure, access to resources, livelihoods, finance, and decision-making, and by outlining how the project's locally led adaptation (LLA) approach can address these gaps. The assessment draws on national data, sectoral analysis presented in the Concept Note, and existing evidence on gender and rural livelihoods in Zambia. A more detailed gender analysis will be undertaken during the full proposal and inception stages.

2. Gender-Differentiated Climate Vulnerability in Rural Zambia

Climate risks in Zambia—particularly drought, flooding, and extreme heat—affect women and men differently due to structural inequalities in access to assets, services, and decision-making power. Women make up approximately **64% of the rural population** and are heavily engaged in agriculture, yet they face persistent disadvantages that heighten their vulnerability to climate shocks[1].

Women smallholders typically cultivate smaller and less fertile plots, have weaker land tenure security under customary systems, and have more limited access to productive assets such as irrigation equipment, improved tools, and climate-resilient inputs[2]. These constraints reduce women's adaptive capacity and limit their ability to respond to climate variability. During droughts or floods, women often experience disproportionate losses in food security and income, while also carrying increased unpaid care and household responsibilities, which further restrict their time and mobility.

Female-headed households are among the most vulnerable groups in rural Zambia, with poverty rates exceeding those of male-headed households[3]. Youth and young women face additional barriers, including limited access to land, finance, and entrepreneurial opportunities, increasing the risk of long-term exclusion from climate-resilient livelihood pathways.

3. Gender Gaps in Access to Livelihoods, Finance, and Adaptation Solutions

The Concept Note highlights several structural constraints that are particularly relevant from a gender perspective:

- **Access to finance:** Women have limited access to formal credit due to lack of collateral, customary land tenure, and lower engagement with formal financial institutions. Community savings groups are therefore a critical entry point for women's financial inclusion.
- **Access to information and extension services:** Public extension services are overstretched and often fail to reach women effectively. Women receive less climate and agronomic information and are less likely to participate in training due to time, mobility, and social constraints.
- **Entrepreneurship and MSMEs:** Women-led MSMEs face barriers including limited start-up capital, weaker business networks, and lower access to technical assistance, constraining women's participation in emerging markets for climate adaptation solutions.
- **Decision-making and planning:** Women are often underrepresented in community-level and district-level planning processes, including those related to climate adaptation and local development planning[4].

  These gender gaps directly affect the uptake, sustainability, and impact of climate adaptation solutions and therefore need to be addressed to ensure effective and inclusive outcomes.

Key Issues	Actions
Vulnerable and marginalized groups, including women smallholder farmers, female-headed households, youth, and poor rural households, are disproportionately affected by climate risks (drought, flooding, and extreme heat) but face barriers in accessing climate adaptation solutions and livelihood support.	• Ensure inclusion of women, youth, and marginalized groups in participatory demand assessment processes for identifying priority adaptation solutions. • Integrate gender and social inclusion considerations into community-level vulnerability assessments and Adaptation Action Plans. • Target capacity-building and solution delivery support to households most exposed to climate risks.
Decision-making structures at community and district levels are often male-dominated, limiting women's participation in climate adaptation planning, implementation, and monitoring processes.	• Promote equitable participation of women and youth in community consultations, training sessions, and co-design workshops, including through tailored facilitation approaches. • Apply inclusive consultation modalities (e.g. separate or time-appropriate sessions) to enable women's effective participation. • Strengthen gender-responsive practices in district-level planning and coordination mechanisms supported by the project.
Women and youth have limited access to financial resources, entrepreneurial opportunities, and climate-resilient livelihood options, reducing their ability to invest in adaptation solutions and manage climate shocks.	• Strengthen community savings groups and financial literacy programs to improve women's access to savings, credit, and risk-buffering mechanisms. • Support women- and youth-led MSMEs through targeted capacity building and access to milestone-based financing. • Facilitate linkages between savings groups, MSMEs, and adaptation solution providers.
Limited recognition and visibility of women's roles, knowledge, and experiences in climate adaptation and resilient livelihood practices.	• Document and disseminate women's and youth's roles and experiences in adopting and delivering climate adaptation solutions through project learning products. • Promote women and youth champions as role models in locally led adaptation initiatives and knowledge-sharing platforms.
Climate and technical information on adaptation solutions is often complex and not easily accessible to women, youth, and marginalized groups, particularly those with lower literacy levels or limited mobility.	• Develop and disseminate adaptation information, training materials, and communication tools tailored to different audiences, including women and youth. • Use appropriate languages, formats, and delivery channels to improve comprehension and uptake of climate information. • Provide facilitation support to ensure correct understanding and application of adaptation solutions.

4. Gender Relevance of the CRAFT Zambia Project Design

The CRAFT Zambia project is inherently gender-relevant due to its focus on rural livelihoods, financial resilience, MSME-led service delivery, and locally led adaptation. The project design integrates gender considerations across all components:

- **Component 1 (Community-driven demand and supply):** Participatory processes for identifying adaptation needs and co-designing solutions create space for women and youth to articulate priorities and influence solution selection. Disaggregation of beneficiaries by gender and youth is embedded in project indicators.
- **Component 2 (Financial empowerment and entrepreneurship):** Community savings groups, where women already represent a majority of members, are leveraged to strengthen women's financial resilience and enable investment in adaptation solutions. Targeted support for women- and youth-led enterprises helps address gender gaps in entrepreneurship.
- **Component 3 (Planning and governance):** Integration of climate adaptation priorities into Integrated Development Plans (IDPs) provides an opportunity to strengthen gender-responsive planning at district and community levels[4].
- **Component 4 (Monitoring and learning):** Gender- and youth-responsive monitoring and learning systems ensure that differential outcomes and barriers are tracked and addressed through adaptive management.

5. Approach to Gender Equality and Inclusion

At the Concept Note stage, the project adopts a gender-responsive approach, with the potential to move toward gender-transformative outcomes at the full proposal stage, in line with the Adaptation Fund Gender Policy. Key principles include:

- **Equitable access:** Ensuring women, youth, and marginalized groups can access adaptation solutions, financial mechanisms, and capacity-building opportunities.
- **Participation and voice:** Embedding inclusive and participatory processes that enable women to influence decision-making at household, community, and district levels.
- **Economic empowerment:** Strengthening women's income generation, entrepreneurship, and financial resilience to reduce vulnerability to climate shocks.
- **Risk reduction:** Avoiding increased time burdens, exclusion, or unintended negative impacts on women and girls.

Specific gender targets and actions will be refined during the full proposal stage, informed by more detailed gender analysis and stakeholder consultations.

5. Conclusion and recommendations for the full proposal (CRAFT Zambia)

This preliminary gender assessment provides the basis for a more detailed gender analysis to be undertaken during full proposal development, which will inform the design of CRAFT project activities related to locally led climate adaptation, resilient livelihoods, and MSME-based service delivery. The assessment highlights opportunities for strengthening gender equality by addressing differences in women's and men's access to adaptation solutions, finance, and decision-making.

The full proposal will remain attentive to existing gender disparities in access to and control over resources, including climate adaptation technologies and livelihood opportunities, which contribute to women's socioeconomic vulnerability. Accordingly, the CRAFT project will promote women's participation in the identification, implementation, benefit-sharing, and monitoring of project activities, consistent with locally led adaptation principles. Capacity development for women and youth will be prioritized, and the project will systematically collect sex-disaggregated data to monitor differential impacts and inform adaptive management.

[1] Zambia Statistics Agency (ZamStats) (2022). *Living Conditions Monitoring Survey (LCMS)*. Government of the Republic of Zambia: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.zamstats.gov.zm/wp-content/uploads/2024/07/2022-LCMS-Report-2022.pdf

[2] FAO (2019). *Gender and Climate Change in Zambia: Evidence and Opportunities*. FAO Zambia Country Office https://www.fao.org/family-farming/detail/en/c/1137967/

[3] World Bank (2021). *Zambia Poverty Assessment*. World Bank Group. https://openknowledge.worldbank.org/entities/publication/e4c7b209-b224-4b0a-9b1d-264e67f4a89f

[4] Government of the Republic of Zambia (2022). *Eighth National Development Plan (8NDP), 2022–2026*. https://www.cabinet.gov.zm/newsite/wp-content/uploads/2023/12/8NDP-2022-2026.pdf