FULLY DEVELOPED PROPOSAL FOR SINGLE COUNTRY

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project/Programme: Small-sized Project/Programme

Country: Indonesia

Thematic Focal Area:

Type of Implementing Entity: National Implementing Entity

Implementing Entity: Kemitraan (Partnership)

Executing Entities: Konsorsium Lingkungan Adaptif, Berketahanan, Inovatif, dan Partisipatif (KOLABORASI) Koaksi Indonesia, Lingkar Temu Kabupaten Lestari (LTKL), Earth Innovation Institute (EII), Alliance for Water Stewardship Indonesia in partnership with the District of Sigi, Central Sulawesi.

Amount of Financing Requested: 998,868 (in U.S Dollars Equivalent)

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

NOTE: The LOE should be signed by the Designated Authority (DA). The signatory DA must be on file with the Adaptation Fund. To find the DA currently on file check this page: https://www.adaptation-fund.org/apply-funding/designated-authorities

Stage of Submission:

☐☐ This proposal has been submitted before including at a different stage (concept, fully-developed proposal)

☐☐ This is the first submission ever of the proposal at any stage

In case of a resubmission, please indicate the last submission date: Click or tap to enter a date.

Please note that fully-developed proposal documents should not exceed 100 pages for the main document, and 100 pages for the annexes.

Project/Programme Background and Context

A. General Context: Climate Change and Adaptation

1. At the global level, the Intergovernmental Panel on Climate Change (IPCC) warns that even a mean global temperature increase of 1.5˚C will lead to an increase in the frequency and intensity of rainfall events in some regions, and droughts in other regions. On one hand, extreme intensity of rainfall could cause floods regardless of infrastructure preparedness to match extreme events (no-regret infrastructure development principle). Drought, on the other hand, is much more complex compared to other climate extreme events. Scientists have found a link between certain climate patterns, such as El Niño, and drought. El Niño is a weather event where the surface water in the Pacific Ocean along the central South American coast rises in temperature. These warmer waters alter storm patterns and are associated with droughts in Indonesia, Australia, and Northeastern South America. El Niño events keep climate scientists guessing, by occurring every two to seven years.

2. Moving to the country level, Indonesia is ranked in the top-third of countries in terms of climate risk, with high exposure to all types of flooding and extreme heat. The intensity of these hazards is expected to grow as the climate changes. Without effective adaptation, population exposure will also rise. High intensity of rainfall (generally more than 100 mm per day) for long stretches of time often contributes to flooding in Indonesia. Daily rainfalls of 248.5 mm, 110-197 mm and 182-289 mm were recorded in Jayapura District in Papua, South Sulawesi and Bengkulu, respectively, when floods and landslides hit those regions. The cause of extreme weathers in South Sulawesi and Bengkulu was Madden-Julian Oscillation, a natural phenomenon that increases the volume of moist air that causes high rainfall in most of Indonesia. It is predicted that the population across provinces in Indonesia that are exposed to extreme river floods could grow by 1.4 million by 2035–2044[1].

3. Central Sulawesi Province is one of the provinces in Indonesia that relies on the agricultural sector as the main priority in production. Currently, BMKG has 4 rainfall observation stations with data length of more than 20 years. Recent study by Solih Alfiandy and Donadli Sukma Permana on Trend of Rainfall Based on BMKG Observation Data and MERRA-2 NASA Reanalysis in Central of Sulawesi Province shows an increasing trend of total rainfall, a decreasing trend of some rainy days with <5 mm/days, and a rising trend of several rainy days with >50 mm/days (extremes) annually. The annual total rainfall trend increased by 4.68-52.40 mm/year, with the highest movement was observed in Poso and part of Sigi, Tojo Una-Una, Morowali Utara, and Morowali districts. A study by Hatauruk et al., 2020, shows that the level of flood hazard in the central Sulawesi is predominantly in the moderate category. This moderate category occurs in almost every district city including Sigi district[2].

[1]The World Bank Group and Asian Development Bank. (2021). Climate Risk Profile: Indonesia.
[2]Hutauruk et al. (2020). GIS-based Flood Susceptibility Mapping in Central Sulawesi.

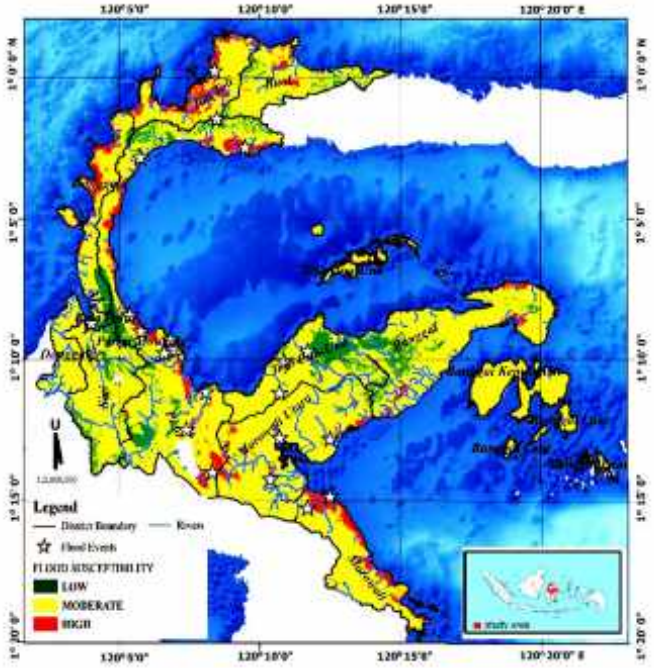

Figure 1. Flood Susceptibility Map of Central Sulawesi
Source: Hutauruk et al., 2020

4. Shifting on the drought side, the development of the El Nino phenomenon also hits Indonesia. The El Nino phenomenon is characterized by a positive increase in the sea surface temperature index anomaly in the Central Pacific, which has an impact on reduced levels of precipitation (rain), thus causing drought and dryness in the Indonesian region. The southern part of Indonesia, especially Southern Sumatra, Java, Bali, NTB, NTT, South Kalimantan, South Sulawesi and Southeast Sulawesi, did not have any rain for 2-3 months. The impacts felt were reported in the form of dry reservoir water, land and forest fires, as well as air quality that felt congested and the air felt hot. The impact of El Nino in 2023 was also felt in the Central Sulawesi region. A study by Sofian Alfandy et al., 2019, shows that the average surface air temperature has increased in Central Sulawesi Province over 39 years. It has been found that there is no rain in several areas, and the air feels hot and stuffy, including Sigi district.

5. Moving from province to district level, Sigi District, based on the Index and Vulnerability Data Information System (Sistem Informasi Data Indeks dan Kerentanan/SIDIK), is vulnerable to the impacts of climate change, particularly floods and droughts. According to the head of Sigi District Agency for Disaster Management, 66% of the villages are considered to have a moderate vulnerability to climate change. Villages located further from the district capital in the Sigi Biromaru sub-district tend to have a higher vulnerability to climate change. Figure 2 illustrates the vulnerability at village level[3].

[3]https://inarisk.bnpb.go.id:6443/arcgis/rest/services/SIDIK/Kerentanan_Iklim/MapServer

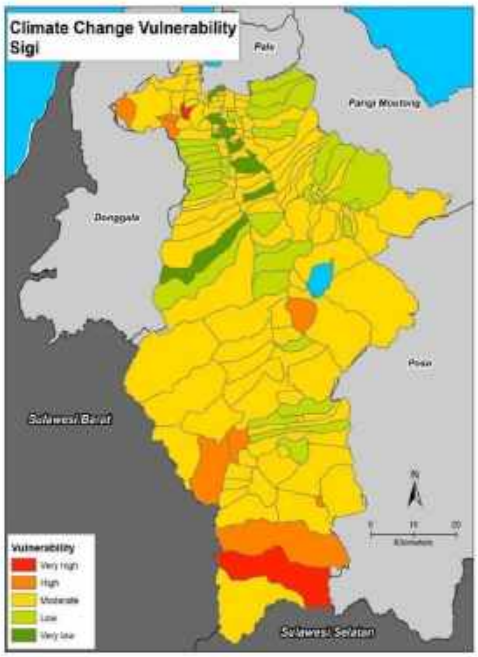

Figure 2. Vulnerability to climate change map of Sigi District in 2018
Source: SIDIK

6. As Sigi is suscpetible to flooding due the climate change, Sigi district also located on Alluvial, Planosol and Hidromorf soil type. These type of soil is diffcult to absorb water (Rahmati et.al, 2016) and it increases the risk of flooding.

7. Based on the result of the rainfall analysis in the past 37 years, there is an increasing trend in the number of rainy days >50 mm/day (extreme) per year. This indicates that there is a threat of increasing rains with extreme intensity in the future, which would cause floods and landslides that could submerge houses and agricultural land, and damage other public infrastructure, such as roads, fresh water, and electricity. Gumbasa, Palolo, Dolo Selatan, Marawola Barat Sub-districts are some of the areas with high exposure to disasters. In 2020, flash floods hit the Omu and Tuva Villages in the Gumbasa Sub-district. The disaster had disabled the Palu-Kulawi route for two days. Apart from these two villages, there were also several villages in Dolo Selatan sub-districts, which had been frequently hit by flash floods. Therefore, people who live along the river need to be alert and evacuate immediately if there are signs of flood. Local people assumed that the climate variability has increased the risk of floods and landslides, and other types of climate-related disasters in Sigi District.

8. The flooding events in Sigi are mostly triggered by high-intensity rains that can be classified into two sub-categories, i.e.: local rain and flash flood due to the propagation of peak runoff from high-intensity rain in the upstream of the catchment. The topography of Sigi, which is dominated by highland-mountainous areas, leads to a higher threat of flash flood to low-lying areas along the river systems. Several rivers with frequent floodings include 1) Miu river (Gumbasa Sub-district), Salui river, Kalangga river; 2) Palindo river (Dolo Selatan Sub-district), Wewe River, Magila River, Sadaunta River; and 3) Manggalapi River

(Palolo sub-district).

9. High intensity rainfall generally occurs in the southern part of Sigi. This region is both classified as the upstream part of Palu catchment and Lariang Hulu catchment. The region includes Kulawi Sub-district, southern part of Lindu Sub-district, South Kulawi Sub-district and Pipikoro Sub-district. The high flooding incidence in Sigi is caused by several factors, including 1) local weather and climate, 2) Madden Julian Oscillation (MJO) - Global Atmospheric Phenomenon, 3) rock and soil conditions, 4) topographic, and excerbated by 5) land cover changes. In addition, the risk of higher rainfall intensity and flooding would increase and trigger landslides and flash floods in several areas, mainly along the Palu Valley.

Disaster	Number of people				Number of residential units				Number of unit damaged		
	Number of events	Loss of life	Injured	Relocated	Severe damaged	Damaged	Litle damaged	Submerged	Health facilities	Religious facilities	Education facilities
Flood	15	10	28	5,039	235		122	1,011	2	8	11
Earthquake and liquefaction	1	405	1,112	76,835	8,342	5,960	13,850	0	35		267
Landslide	5		10	384	8	0	10	46	0	1	0
Extreme weather	1	0	2	0	0	0	0	0	0	0	0

Table 1. Disaster Incidents in Sigi District 2010-2019
Source: 2019 Disasters in Indonesia Data and Information

10. Sigi District also has the potential for drought. The indication is that there are several rivers in Sigi District that experience drought during the dry season. If action is not taken to solve the problem immediately, it is not impossible that drought will also occur in the future. In 2019, Sigi district experienced a long drought where seven villages experienced drought. The seven villages are Maranata Village, Sidondo Satu Village and Sibowi Village in the Sigi Biromaru Sub-District area. Then, the Dolo Sub-District area includes the villages of Solouwe, Karawana, Sidera and Jono Oge. It had been 11 months since residents in the area have experienced a water crisis due to drought. The drought problem was aggravated by the damage to the Gumbasa irrigation canal due to the earthquake.

11. In the Sigi District, climate change has led to significant impacts on local communities, as demonstrated by recent disasters. Flooding in Sambo Village and Balengga Village in 2024 displaced 384 people and damaged 73 homes. In Pandere Village, a flood in 2021 resulted in the loss of 50 hectares of cacao, corn, and coconut crops. Similarly, in 2019, floods in Bangga Village, Balongga Village, Walanata Village, Omu Village, and Tuva Village destroyed 500 houses and displaced 2,400 people.

12. Then, the Sigi District has also been severely affected by droughts, impacting water access, agriculture, and livelihoods. In 2019, villages such as Maranata,

Sidondo Satu Sibowi, Solouwe, Karawana, Sidera, and Jono Oge from a prolonged drought that deprived residents of water, sanitation, and hygiene for 11 months. In 2019 and 2023, Gumbasa and Tanambulava districts saw 6,000 hectares of farmland dry up. Recurrent droughts from 2015 to 2024 caused significant agricultural failures in villages like Bulumpewa, Porame, Lembantongoa, Sidera, and Lolu, leading to major crop losses and forcing farmers to temporarily shift to manual labor.

Box 1. The Surface Temperature: Precipitation Relationship in More Depth

The connection between precipitation and surface temperature is defined by the Clausius-Clapeyron equations. The Clausius-Clapeyron equations calculate the energy required to cause a chemical reaction at a given pressure. In terms of precipitation, the Clausius-Clapeyron equations can be used to calculate the thermal energy required to condense water vapor into droplets when the atmospheric pressure is known.

When water droplets evaporate into the atmosphere, they travel upwards. As the Clausius-Clapeyron relationship is dependent on atmospheric pressure, the thermal energy requirement for a phase change is lower at a lower pressure. As the water droplets travel upwards, two things happen:

The atmospheric pressure decreases, and the atmospheric temperature cools (this is known as the temperature lapse rate and is typically estimated at -6.5°C per kilometer). When the water vapor reaches an elevation where the atmospheric pressure and temperature satisfy the Clausius-Clapeyron relationship, the water vapor condenses into cloud droplets[4].

Box 2. Cause of Drought

Most droughts occur when regular weather patterns are interrupted, causing disruption to the water cycle. Changes in atmospheric circulation patterns can cause storm tracks to be stalled for months or years. This disruption can dramatically impact amounts of precipitation that a region normally receives. Changes in wind patterns can also be disruptive to how moisture is absorbed in various regions.

Scientists have found a link between certain climate patterns and drought. El Niño is a weather event where the surface water in the Pacific Ocean along the central South American coast rises in temperature. These warmer waters alter storm patterns and are associated with droughts in Indonesia, Australia, and northeastern South America. El Nino events keep climate scientists guessing, by occurring every two to seven years.

La Niña is the counterpart to El Niño, when the surface water in the Pacific Ocean along the coast of South America decreases in temperature. The cooler

[4]https://www.jbarisk.com/news-blogs/the-physics-of-precipitation-in-a-warming-climate

waters affect storm patterns by contributing to drier-than-normal conditions in parts of North and South America. El Niño and La Niña both usually last about a year. The effects of La Niña on weather patterns are often more complex than El Niño. Two of the most devastating droughts in the history of the United States—the 1930s Dust Bowl and the 1988 drought in the Midwest—are associated with the effects of La Niña.

There is still a lot of debate about the connection between drought and global warming, the current period of climate change. A 2013 NASA study predicts warmer worldwide temperatures will mean increased rainfall in some parts of the world and decreased rainfall in others, leading to both more flooding and more droughts worldwide. Other scientists question the prediction that there will be more droughts and believe global warming will create a wetter climate around the world[5].

13. Floods, exacerbated by climate change, pose significant impacts on the ecosystem, particularly in Sigi District. Soil erosion resulting from floods leads to the loss of nutrients, damaging forest root systems and decreasing forest productivity. This erosion affects 15% of forest areas, thereby jeopardizing tree stability and growth. Moreover, floodwaters carry pollutants such as agricultural chemicals and waste into water bodies, which deteriorates water quality. For instance, contamination levels have increased by 40% in the Gumbasa River, exacerbating ecological challenges and highlighting the urgent need for adaptive measures to safeguard local ecosystems against these detrimental impacts. This impact has the potential to get worse because according to projections of changes in flood risk in Sigi from 2022 to 2030 using the current trend scenario by the WWF Water Risk Filter, it shows an increasing trend with a risk change class of +0.8. This projection shows that areas currently identified by BNPB as having a high level of flood and flash flood danger, will be more susceptible to higher flood risks.

[5]https://education.nationalgeographic.org/resource/understanding-droughts/

Figure 3. Impact of Flash Flood in Sambo Village, Dolo Selatan, Sigi
Source: Field Survey 2024

14. Drought conditions in Sigi District have profound impacts across the ecosystem, exacerbating vulnerabilities to pests and wildfires in forest ecosystems. The increased incidence of forest fires by 30% in Central Sulawesi due to drought has led to significant forest degradation and loss of biodiversity. Additionally, dry and friable soils increase susceptibility to wind erosion and loss of topsoil layers. In Sigi District, drought-induced loss of topsoil layers has adversely affected agricultural productivity and contributed to land subsidence in several areas. Reduced water surfaces concentrate pollutants in rivers and lakes, exemplified by increased contamination levels in the Palu River, adversely affecting aquatic biodiversity and human health.

15. Several climate adaptation actions are currently underway in Sigi District, each playing a crucial role in enhancing resilience against floods. The "Program Sigi Hijau," supported by local government policies and Lingkar Temu Kabupaten Lestari (LTKL), exemplifies an indirect but moderately effective approach. Direct and highly effective interventions include the construction of riverbank embankments by the Sigi government, aimed at mitigating flood risks. Additionally, initiatives such as bamboo planting in degraded forest areas directly implemented by the local government underscore high effectiveness in bolstering ecological restoration efforts. Alongside physical interventions, efforts to disseminate climate change information and enhance community capacity through forums like the Disaster Risk Reduction Forum in Sigi demonstrate moderate effectiveness in fostering resilience-building across the district.

16. Efforts to adapt to drought conditions in Sigi District are robust and multifaceted, addressing immediate needs while aiming for long-term sustainability. Emergency responses such as water, sanitation, and hygiene (WASH) initiatives led by NGOs

demonstrate high effectiveness in providing temporary relief. Meanwhile, the construction of reservoirs by village and regional authorities, supported by local police, represents a direct and highly effective measure with a focus on sustainability. Altering crop patterns, facilitated by the Agricultural Service and local farmers, shows high effectiveness in immediate drought mitigation and long-term sustainability. Similarly, agricultural agencies' development of resilient plant varieties ensures indirect but highly effective long-term solutions. Physical interventions like digging wells and establishing food barns, undertaken collaboratively by village and regional authorities with police support, exhibit high immediate effectiveness with moderate sustainability efforts.

A.1. Water-Energy-Food Nexus

17. The Water-Energy-Food (WEF) Nexus is an integrated approach to managing water, energy, and food security that emphasizes the interdependencies between these critical sectors. In the context of Sigi District, understanding and applying the WEF Nexus is vital for sustainable development, particularly under the pressures of climate change. By acknowledging the interconnectedness of water availability, energy supply, and food production, this approach facilitates comprehensive planning and policy-making that aim to enhance resilience and sustainability.

Water-related Strategic Issues in Sigi District

18. Catchment water balance takes into account the total inflows of water entering the catchment, the total outflows of water leaving the catchment, and the capacity of the catchment to store water. One of the significant impacts of climate change and variability is the changing water cycle in the catchment, disrupting the catchment water balance that could further increase the risks related to conflict over water among different users in the catchment[6].

19. Sigi District is located in the Palu-Lariang river basin, or Wilayah Sungai Palu-Lariang, a trans-provincial river basin comprising 52 smaller surface catchments. Two of the Palu-Lariang river basin's largest catchments are located in Sigi, which are called Daerah Aliran Sungai (DAS) Lariang and DAS Palu. Understanding the catchments' water balance allows the district government to better plan a resilient fresh water supply for the upcoming industrial and agricultural centers in Sigi, as a part of the KAPET-PALAPAS National Strategic Area.

20. Currently, the study on the impact of climate change at the district level is not available and is expected to be made available through the implementation of this proposal.

21. The resilience of water supply to sustain livelihood and energy production also depends on the quality of available water sources. The Sigi Information on Environmental Management Performance in 2018 mentioned that maintaining

[6]A Chalid and A Mulyadi 2021 IOP Conf. Ser.: Earth Environ. Sci. 930 012074; and T.V.Reshmidevia, D.Nagesh KumarbcR. Mehrotrad A.Sharmad, Estimation of the climate change impact on a catchment water balance using an ensemble of GCMs

good quality of water resources is considered as one of the district strategic development issues.

22. Regular surface water quality monitoring by the district government is done at six subsidiaries of Lariang river. Monitoring in 2018 showed that both the physical and chemical parameters of Lariang river are not suitable for the district's drinking water supply. On the other hand, the groundwater quality monitoring in 2018 in nine sampling locations indicated that the district's groundwater is still suitable for fresh water supply for domestic purposes with prior treatments.

23. The district government has identified the lack of centralized domestic and industrial wastewater treatment plants and poor solid waste management as the significant causes for the declining of surface water quality.

24. While water sources availability is in abundance year-long in Sigi, only 3% of households are connected to the district water company (PDAM Donggala) piping system. As many as 70% of total households get their domestic water supply from individual bore wells[7]. While the total number showed that more than 70% of Sigi households already have access to clean water, SDG 6 targets, and national development targets required to be in a decent and/or safe state. However, information related to the quality of the individual bore wells are limited. The level of proneness to water quality contamination and resiliency towards natural disaster should be assessed, and the spatial distribution of the high-risk population in terms of access to decent or safe clean water.

25. Once collected and assessed, this information should be fed into the district's development targets and planning.

Food-related Strategic Issues in Sigi District

26. Based on the Ministry of Environment and Forestry's spatial data[8], the land use in Sigi District is dominated by forest cover. In 2019, 71% of the land was covered by forests, while only 17% or equal to 92,128 hectares was used as agricultural land, which has been constantly increased compared to the agricultural land in 1990–11% or equal to 60,597 hectares. According to the Ministry of Environment and Forestry Regulation No. 734/2014, the area available for non-forest use, including agricultural activities and urban development, is only 25% of the total area of Sigi. The rest of the area is designated for forest-related land use, including production forest (25%), protection forest (27%), and national park (23%). These figures are also consistent with the district's latest spatial planning for the 2021-2041 period (Regional Regulation No. 1/2021 on Sigi District Spatial Plan).

27. There are at least 2 leading commodities, namely cocoa, and coconut, where some of the commodities are grown by utilizing forest cover[9]. Currently, Sigi District has been designated as a center for agricultural development, particularly in organic cocoa. Historically, Sigi has been a leading cocoa producer in Central

[7]BPS Kabupaten Sigi. (2021). Statistik Kesejahteraan Rakyat Kabupaten Sigi 2021.
[8]https://dbgis.menlhk.go.id/arcgis/rest/services/KLHK
[9]https://kabupatenlestari.org/en/anggota/sigi/

Sulawesi Province, with cocoa plantations covering 27,887.50 hectares in 2023, making it the second-largest cocoa plantation area after Banggai District in the province[10]. Cocoa has been a prominent export product from Central Sulawesi, contributing substantially to foreign exchange earnings[11]. Meanwhile, according to Suud et al., 2021, Central Sulawesi is also known for coconut production[12], with Sigi District having 6,150 hectares of coconut plantations in 2023[13]. As part of efforts to enhance regional food security, the Central Sulawesi government has promoted coconut farming in Bangga Village, South Dolo Subdistrict, Sigi District, historically known for its coconut production[14].

28. Despite being a leading commodity, climate change has the potential to reduce cocoa and coconut productivity in Sigi District. As observed during 2011-2013, rising temperatures have adversely affected cocoa plant resilience, making them more susceptible to evolving viruses due to changing weather patterns. According to Central Sulawesi's Central Statistics Agency (BPS), cocoa exports have steadily declined. In 2011, Central Sulawesi exported 44,751 tons of cocoa, generating USD 132.31 million in foreign exchange, while in 2012, cocoa exports amounted to USD 78.53 million with 35,336 tons exported. By the first quarter of 2013, cocoa exports plummeted to 2,950 tons, a decrease of 59.5 tons compared to the same period in 2012[15]. Additionally, high rainfall from January to August 2011 in Central Sulawesi caused many cocoa pods to drop prematurely, resulting in a reduced harvest compared to previous years due to extreme climate changes[16]. More recently, in 2017, unfavorable weather conditions were suspected to have caused a significant decline in cocoa yields in Sigi District, Central Sulawesi, leading to substantial losses for farmers. Usually, one farmer can harvest up to five sacks of dry cocoa beans, but now the maximum is one sack of cocoa beans. This disappointing harvest, attributed to excessive rainfall, drastically reduced cocoa yields compared to previous years, leaving many farmers in distress[17]. Similar impacts have also affected the coconut commodity in Sigi District, Central Sulawesi. In 2019, many coconut trees in the district perished due to prolonged drought conditions. Observations in several locations revealed numerous coconut trees already dried out and deceased. Their fruits had fallen, leaving behind only dried trunks and leaves. The extensive loss of coconut trees resulted directly from the prolonged dry season experienced over the past few months[18].

29. Most of the villages in Sigi District face moderate vulnerability to the impacts of climate change. The predominant livelihoods in these vulnerable villages revolve

[10]BPS Provinsi Sulawesi Tengah. (2024). Provinsi Sulawesi Tengah Dalam Angka 2024
[11]https://sulawesi.bisnis.com/read/20201008/539/1302418/sulteng-andalkan-kabupaten-sigi-sebagai-sentra-produksi-kakao-organik
[12]Suud et al. (2021).Kinerja Manajemen Rantai Pasok Kelapa di Provinsi Sulawesi Tengah.
[13]BPS Provinsi Sulawesi Tengah. (2024). Provinsi Sulawesi Tengah Dalam Angka 2024
[14]https://news.republika.co.id/berita/rbh13l457/pemprov-sulteng-kembangkan-pertanian-jagung-dan-kelapa-di-sigi
[15]https://sulteng.antaranews.com/berita/11238/meningkatkan-produksi-kakao-saat-pemanasan-global
[16]https://disbun.kaltimprov.go.id/artikel/harga-kakao-berjangka-turun-54-poin
[17]https://www.akurat.co/rill/1301870466/Hasil-Panen-Kakao-Sigi-Anjlok-Imbas-Cuaca-Tak-Mendukung
[18]https://www.antaranews.com/berita/1058150/tanaman-kelapa-di-sigi-banyak-mati-dampak-kemarau-panjang

around agriculture, particularly cocoa and coconut plantations. The productivity of these plantations heavily relies on temperature and rainfall patterns. With increasing temperatures, humidity levels decrease significantly, posing a severe threat to cocoa trees and the chocolate industry. Additionally, Sigi District is characterized by extensive plantation areas highly susceptible to drought, particularly in Gumbasa District. In this district, agricultural lands heavily depend on water supply from the Gumbasa irrigation system. If not addressed through climate adaptation measures, these conditions could exacerbate the current impacts of climate change on plantation commodities[19].

Energy-related Strategic Issues in Sigi District

30. Indonesia's compliance of energy needs has not yet been evenly distributed and still faces many challenges. As experienced in several regions in Indonesia, especially with conditions that tend to be difficult, Central Sulawesi with a total of 3,010,440 people or 811,927 households has a 91.93% electrification ratio. Zooming out to Sigi, the district's electrification ratio is 83% with 43 villages in four sub-districts having limited access to PLN's grid (State-Owned Electricity Company). These sub-districts are Lindu, Kulawi, South Kulawi, West Dolo, and Pipikoro. PLN has difficulty reaching these areas because the distance from the capital of Sigi to Kulawi and Pipikoro is about 50 km. On average, PLN can only manage to expand 2 km of the grid in each expansion point per year (ESDM, 2017), and remote villages are located 25 km outside the grid. Connecting the most outlying villages of Kulawi and Pipikoro to the grid will not be happening within five to ten years.

31. Although PLN has provided electricity to 83% of the villages in Sigi District, not all residents in these villages have reliable electricity. The electrical system in Central Sulawesi relies on hydroelectric power plants, where water resilience is a critical factor for power generation. The flow rate necessary to operate the turbines in Central Sulawesi's hydroelectric plants is highly variable, leading to potential power outages at any time. With the increasing risk of drought, river water levels cannot be consistently relied upon throughout the year to generate electricity.

32. The context of climate adaptation needs becomes crucial in the villages most affected. A more detailed assessment indicates that the sub-districts of Kulawi and Pipikoro experience fewer flood impacts compared to Gumbasa and South Dolo. Therefore, interventions to strengthen the adaptive capacity of community members are more urgently needed in Gumbasa and South Dolo. These sub-districts also hold strategic locations that connect the northern and southern parts of Sigi.

33. Communities require energy to enhance their climate adaptation resilience, with a crucial aspect being the integration of energy and information technology to develop early warning systems for floods, climate data, and weather information that support local agriculture and plantations.

[19]https://kumparan.com/paluposo/kabupaten-sigi-terancam-kekeringan-1550977945211949363/full

A.2. Socio Economic Context

Population

34. Over the last ten years, the population number in Sigi District has been steadily increasing, from 215,030 in 2010 to 257,580 in 2021, showing approximately 1% annual growth rate[20]. The highest percentage of population (22,54%) resides in its capital, Sigi Biromaru, while the lowest percentage lives in Nokilalaki, a sub-district located 52 kilometers away from the district's administrative capital.

35. In 2020, the population density in Sigi is 50 people per km2, only a third of the average Indonesia population density. However, the access to civil registration is still considered as a challenge due to the district's vast area. Since 2014, Sigi has implemented an online civil administration information system, but the number of National Registry ID Card (KTP) ownership is only 75% in 2017, and only 40 out of 1,000 people have birth certificates[21]. This condition has worsened since 2018, where a large number of residents lost their civil registry documents due to the major earthquake and liquefaction[22].

36. In Sigi District, several indigenous communities have been officially recognized through the Sigi Regent's Decree. These include the To Kulawi Uma in Moa Village, To Kulawi Uma in Masewo Village, and To Kulawi Moma in Toro Village. Specifically, in Gumbasa and South Dolo Subdistricts, which are project locations, the Topoado indigenous community resides. Topoado refers to the Kaili ethnic group, with "To" meaning people or group and "Po" indicating a speaker of the language[23]. Additionally, according to the Indigenous Territories Registration Agency, the Kaili Inde Gia indigenous community, which consists of small family-based groups, is the majority population in Wisolo Village. They live in scattered settlements around Mount Wisolo and along nearby rivers. Their economic livelihood is derived from plantation commodities such as coconut, cocoa, candlenut, bananas, corn, and vegetables[24].

Poverty Level

37. The main livelihood in Sigi Districts is agriculture. In 2020, 52,132 (45%) of people of productive age worked as farmers or farm workers, and 44,276 (38%) worked in the service industry. Minimum wage in Sigi district according to Central Sulawesi Governor Decree No. 561/399/Dis.Nakertrans.6.ST/2021 is Rp 2,390,739, while the regional poverty line is Rp 370,788.

38. The poverty level in Sigi has fluctuated in the past five years. Currently, Sigi District is categorized into Desil 1 Category District with extreme poverty based on the National Household Data (Bappeda Sulteng, 2022). There are 153,000 poor people in Sigi, which contributed to the poverty rate in Sigi is 13,05% against its entire population[25]. Meanwhile, the national target of poverty rate is at 8,5 to 9%

[20]BPS, 2021, Kabupaten Sigi Dalam Angka 2021.
[21]Kabupaten Sigi, 2019, Rencana Kerja Perangkat Daerah Kabupaten Sigi 2019.
[22]https://sulteng.antaranews.com/berita/44616/banyak-warga-sigi-kehilangan-dokumen-kependudukan
[23]https://aman.or.id/news/read/844
[24]https://brwa.or.id/wa/view/NDJPc0l6aEhvbXc
[25]https://bappeda.sultengprov.go.id/musrenbang-penyusunan-rkpd-kabupaten-sigi-tahun-2022/

in 2022.

39. Out of this poverty number in Sigi District, 38.16% are unemployed and 55.63% are informal workers, who mostly work in the agricultural sector. More than half (54.5%) of the population in poverty has healthcare insurance (BPJS) and up to 83% have home ownership[26].

Economic Condition

40. The economic condition of Sigi District is reflected in the agricultural activities of its villages. Specifically in the 6 project villages, in Pandere Village, rice is harvested every four months yielding 500 kg/ha, corn every three months at 3,000 kg/ha, and cocoa biweekly at 140,000 IDR/kg. Pakuli Utara Village produces similar yields of rice and corn. Simoro Village also harvests corn and coconut every three months and cocoa biweekly. Bangga Village focuses on corn, yielding 2,500 kg/ha every four months at 4,500 IDR/kg. Sambo Village grows rice and corn, with rice sold to middlemen at 11,000 IDR/kg. Wisolo Village diversifies with secondary crops, cloves, durian, mango, and avocado.

41. In the 6 project villages in Sigi District, the primary occupation of the residents is farming. In Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo, 90-94% of the population are engaged in agricultural activities, with the remaining 3% working as civil servants (Aparatur Sipil Negara [ASN]) and 3-7% in private sectors. The community of Bangga similarly relies heavily on farming as their main source of livelihood. These farmers typically work their lands year-round, adhering to the planting and harvesting cycles of their crops to sustain their livelihoods.

42. Climate disasters have had adverse economic impacts on the communities of Sigi District. The two sub-districts most severely affected by climate-induced flooding are Gumbasa and South Dolo, encompassing six villages—Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo—where the flooding has been most severe. A total of 3,108 households have been exposed to the impacts of these floods. With an average Gross Regional Domestic Product (GRDP) of 39.73 million IDR per year[27], the estimated economic loss due to flooding affecting these six villages is about 10.2 billion IDR per year, based on a scenario of three flood events per year[28]. This situation may continue to deteriorate in line with the increasing climate risks in Sigi District.

43. The high frequency of flooding events has made the social resilience of the community vulnerable. The impacts of flooding have caused damage to infrastructure that affects social conditions, such as students unable to attend school, hindered transportation access, damaged rice fields and plantation lands, and reduced water resilience. Consequently, the village communities face limitations in carrying out daily activities and fulfilling their socio-economic needs.

[26]BPS, 2021, Statistik Penduduk Miskin Kabupaten Sigi Tahun 2020
[27]BPS Kabupaten Sigi. (2023). Produk Domestik Regional Bruto Kabupaten Sigi Menurut Lapangan Usaha 2018-2022.
[28]BPBD Provinsi Sulawesi Tengah. (2024). Data Bencana 2024. https://pusdalops-bpbdsulteng.com/data-bencana-publik

Education and Local Wisdom

44. The average years of schooling in Sigi District throughout 2016 to 2020 is 8,4 years, which is relatively low compared to the national policy on twelve years of compulsory education. However, the expected years of schooling has increased from 12.31 in 2016 to 12.87 in 2020, indicating that Sigi provides access to formal education up to high school level.

45. The educational infrastructure in the 6 project villages in Sigi District varies considerably. In Pandere Village, there are three elementary schools, one junior high school, and one high school, but no higher education institutions. Pakuli Utara Village also has two elementary schools, one junior high school, and one high school, with no higher education facilities. Simoro Village is more limited, with just one elementary school and no higher education options[29]. Bangga Village mirrors Pandere Village with three elementary schools, one junior high, and one high school. Both Sambo Village and Wisolo Village have one elementary school each but lack junior high, high school, and higher education facilities[30]. This disparity highlights the need for improved educational access and resources in these areas.

Village	Number of Educational Facilities			
	Elementary School	Junior High School	High School/ Vocational School	Academy/ University
Pandere	3	1	1	0
Pakuli Utara	2	1	1	0
Simoro	1	0	0	0
Bangga	3	1	1	0
Sambo	1	0	0	0
Wisolo	1	0	0	0

Table 2. Number of Educational Facilities 2021
Source: BPS Kabupaten Sigi

46. In Sigi, nature and forest protection are considered as customs and traditions that have been passed down between generations, especially for the indigenous people living alongside the forests. There is a local wisdom called Taolo[31], a forest zone status that prohibits land opening in specific areas with steep slopes to prevent erosion and landslides. The indigenous law also forbids and gives out sanctions for people commiting forest encroachment and environmental pollution[32].

[29]BPS Kabupaten Sigi. (2021). Kecamatan Gumbasa Dalam Angka 2021.
[30]BPS Kabupaten Sigi. (2021). Kecamatan Dolo Selatan Dalam Angka 2021.
[31]https://jaring.id/antara-bukti-konservasi-dan-batas-di-atas-kertas/
[32]https://sulteng.antaranews.com/berita/179460/upaya-komunitas-adat-lindu-jaga-kualitas-lingkungan

Health

47. Life expectancy in Sigi District has significantly improved from 68.69 in 2016 to 69.99 in 2020. Public health services have also improved with health facilities and workers (doctors, nurses, midwives, and pharmacists) spreading evenly across all 15 sub-districts. In 2020, 98.72% of childbirth were assisted by doctors and midwives. Child vaccination is accessible in every public health center. However, the number of children (12.46%) have not yet had a Child Identity Card (KIA) and their vaccinations were not well documented. This is a challenge as database and documentation is imperative in healthcare access and improvements.

Village	Number of Stunted Toddlers
Pandere	18
Pakuli Utara	4
Simoro	2
Bangga	0
Sambo	0
Wisolo	1

Table 3. Number of Stunted Toddlers 2022
Source: BPS Kabupaten Sigi

48. The health condition in the 6 project villages of Sigi District reveals significant disparities in the prevalence of stunted toddlers. Pandere Village faces the highest challenge with 18 stunted toddlers, indicating severe nutritional deficiencies. Pakuli Utara and Simoro villages have relatively lower numbers, with 4 and 2 stunted toddlers respectively[33]. Conversely, Bangga and Sambo villages report no cases of stunting, suggesting better nutritional status and health conditions. Wisolo Village has a minimal incidence, with only 1 stunted toddler[34]. These variations underscore the need for targeted health and nutrition interventions across these villages.

Gender

49. According to the 2021 data published by the Statistics Bureau of Sigi District, the population of the district in 2020 is 239,430 people with a gender ratio of 112.91, meaning that there were 113 men for every 100 women.

50. The gender ratio in the 6 project villages of Sigi District shows a near balance between male and female populations, reflecting a relatively equal gender distribution. In Pandere Village, the population consists of 1,345 males and 1,312 females, resulting in a gender ratio of 49%. Pakuli Utara Village has 769 males and 706 females, with a gender ratio of 48%. Simoro's gender ratio is 49%, with 489 males and 466 females[35]. Bangga Village has a slightly lower ratio at 47%,

[33]BPS Kabupaten Sigi. (2023). Kecamatan Gumbasa Dalam Angka 2023.
[34]BPS Kabupaten Sigi. (2023). Kecamatan Dolo Selatan Dalam Angka 2023.
[35]BPS Kabupaten Sigi. (2023). Kecamatan Gumbasa Dalam Angka 2023.

with 1,458 males and 1,285 females. Sambo Village maintains a perfect balance with a 50% gender ratio, having 623 males and 612 females. Wisolo Village follows closely with a 48% gender ratio, comprising 632 males and 592 females[36]. This data indicates that the gender distribution in these villages is fairly balanced, which is crucial for equitable community development and resource allocation.

Village	2022 Population			Gender Ratio
	Male	Female	Total	
Pandere	1,345	1,312	2,657	49%
Pakuli Utara	769	706	1475	48%
Simoro	489	466	955	49%
Bangga	1,458	1,285	2,743	47%
Sambo	623	612	1235	50%
Wisolo	632	592	1224	48%

Table 3. Population and Gender Ratio of 6 Project Villages
Source: BPS Kabupaten Sigi

A.3. Current Enabling Condition in Sigi District

51. The current efforts of Sigi District government to mitigate and adapt to the climate crisis are well-illustrated in the issuance of Sigi Hijau. It is a cross-sectoral policy breakthrough and the manifestation of Sigi's commitment to pursue jurisdictional sustainability achievable through several strategies that include climate change mitigation and adaptation including Regional Action Plans for Climate Change Mitigation and Adaptation as the extension of the national and provincial action plans to the district level. This proposed project aims to support Sigi District develop its own regional action plans for climate change adaptation. Sigi Hijau showcases the district's commitment further and will ensure effective implementation and access to funding from government fiscal incentives or private and non-profit.

52. Since the issuance of Green Sigi Vision in 2019, the district government has established its roadmap towards prepping the implementation pillars, including the availability of a multi-stakeholders forum. It was still conducted despite their post-disaster condition. By June 2022, following to the slow recovery, the district had revived their efforts. In parallel, through the Sustainable District Platform (Lingkar Temu Kabupaten Lestari/LTKL) secretariat - a district association under the Association of Districts Government in Indonesia (APKASI), the district has conducted stakeholders mapping and assessment in Sigi and across Palu City to identify core groups for Green Sigi implementation and ensure inclusivity of the multi-stakeholders platform, from architectural, disaster prevention, youth empowerment, women group, indigenous community, literacy, and community business development working groups. The Green Sigi multi-stakeholders platform is targeted to be established by end of 2022. Prior to the establishment,

[36]BPS Kabupaten Sigi. (2023). Kecamatan Dolo Selatan Dalam Angka 2023.

the government has committed resources to support the process through district planning agency (Bappeda).

53. Jurisdictions with significant forest and conservation areas generally issue more regulations related to sustainable land use than the smaller ones. Sigi District, with relatively smaller size forest and conservation land, has published regulations on five topics of sustainable land use, including forest and peat protection and conservation, green growth planning, sustainable commodities, disaster/environmental management, and indigenous people and customary law.

54. As the proportion forest and conservation area against the total area of Sigi District is more than 70%, Sigi District relies heavily on their forest area for its ecosystem services, particularly on water and soil quality, resulting into a strong Jurisdictional Approach commitment to protect of the forest and conservation area, social forestry, and agrarian reform. Focusing on environmentally sound development and sustainable land use, Sigi will use its natural assets to increase its economic growth through sectors, such as ecotourism, forestry, and agriculture. Sigi has issued a local regulation on Regional Action Plan (Rencana Aksi Daerah/RAD) for sustainable development in Sigi District. There are also several initiatives on Lore Lindu National Park that involve all villages, including a formal agreement for the indigenous community surrounding the national park to utilize the forest sustainably.

B. Project context

55. Sigi District has developed its disaster risk assessment in 2020. The assessment has not covered many types of disasters and will need to be detailed down to be able to provide critical recommendations for mitigation and adaptation strategies. Mitigation and adaptation are the two strategies for addressing climate change. Mitigation is an intervention to reduce the emissions sources or enhance the sinks of greenhouse gasses. Adaptation is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities[37].

56. As climate risks are increasing, the Sigi government should be aware of which risks can be mitigated and which risks are not possible and will need to be approached through an adaptation framework. In terms of adaptation, there are several basic elements as the basis of developing a comprehensive adaptation strategy, which are water and air. Due to the intensive climate variability occurrences in the region, the water cycle in many regions are changing drastically. These changes are impacting the catchment water balance, which further affects the irrigation regime, energy production through hydropower dams, distribution of goods and services through the river networks, and other economic and development activities. In addition, the increasing occurrences of floods and long periods of droughts would be more threatening to the livelihoods of local

[37]Bruno Locatelli, Climate Change and Forests in the Congo Basin: Synergies between Adaptation and Mitigation: https://www.cifor.org/fileadmin/fileupload/cobam/ENGLISH-Definitions&ConceptualFramework.pdf

communities, and business and economic continuity in the region.

57. Based on the public consultation in Sigi District, Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages have been decided as village candidates for the project implementation. These 6 villages are chosen because of their climate hazard impacts, vulnerability, agriculture commodities, Proklim village, and accessibility from Palu City.

    The selection of Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages for the Adaptation Fund project in Sigi District is based on comprehensive public consultations that identified these areas as highly impacted by climate hazards such as flash floods. The table also highlights key insights regarding the common vulnerability to floods across all villages, emphasizing the urgent need for enhanced flood management strategies. These villages exhibit high to very high vulnerability levels, particularly in their agricultural sectors, which are crucial for local livelihoods. The chosen villages predominantly cultivate commodities like coconut, cacao, and paddy. Although none of these villages have yet attained Proklim (Climate Village) status, their accessibility from Palu City ensures practical implementation and monitoring of adaptation measures. These factors collectively underscore their suitability for focused climate resilience efforts under the project. Based on the context above, this proposal is focused on building a climate resilient district through a Water-Energy-Food nexus with Sigi District as the pilot.

Village name	Climate Hazard Impacts	Vulnerability	Agriculture Commodities	Proklim Village
Pandere	Flash flood	High	Coconut, Candlenut and Cacao	Not yet
Pakuli Utara	Flash flood	High	Coconut and Cacao	Not yet
Simoro	Flash flood	High	Coconut and Cacao	Not yet
Bangga	Flash flood	Very high	Coconut and Cacao	Not yet
Sambo	Flash flood	Very high	Paddy and Cacao	Not yet
Wisolo	Flash flood	Very high	Cacao	Not yet

Table 4. Proposed Pilot Villages Based On Priority Criteria

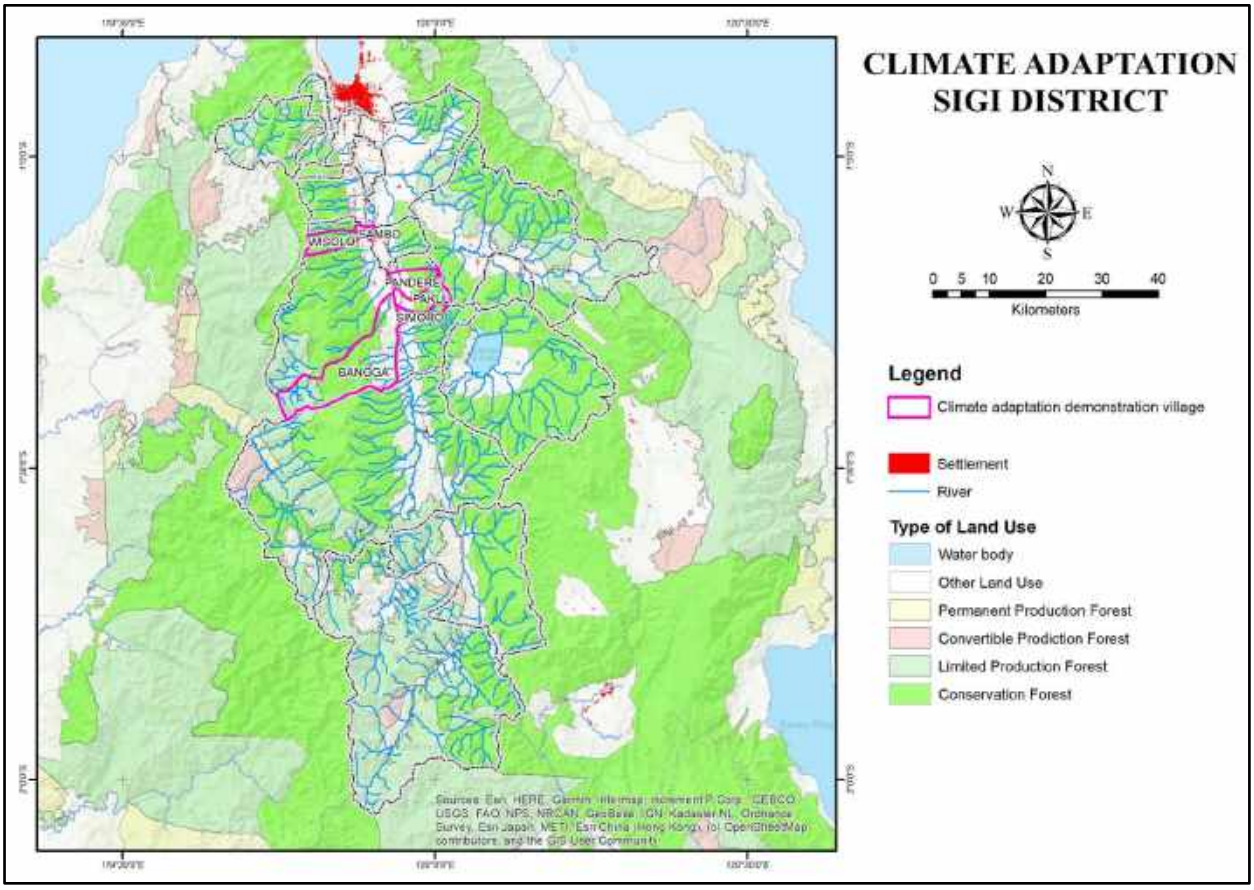

Figure 4. Map of Climate Adaptation Demonstration Village

58. Effective planning and implementation of climate change adaptation require a thorough understanding of current climate vulnerabilities and accurate projections of future impacts. A climate change vulnerability assessment will use an indicator-based approach that incorporates relevant local indicators, including those related to gender, age, and other social identities, as well as indicators focused on the Water-Energy-Food (WEF) nexus. This assessment will include factors such as access to electricity, water sources, and agricultural areas.

59. In addition to vulnerability assessments, capacity assessments will be conducted to address the critical issue of stakeholder capacity at all levels. By understanding capacity gaps, Sigi District can formulate appropriate actions for climate change adaptation. At the community level, the assessment will focus on existing community-based organizations relevant to adaptation and resilience programs. Furthermore, the project aims to strengthen governance through the Green Sigi Vision by supporting the development of Regional Action Plans for Climate Change Adaptation (RAD-API) and integrating these measures into other regional plans. The pilot implementation at the village level will involve WEF interventions, focusing on increasing community resilience and adaptive capacity through collaborative and multi-pronged approaches.

Importance of Project

60. The consortium considered the above project components as critical for Sigi District. If the project is not available to be implemented, people living in climate

vulnerable areas will suffer from a variety of risks, ranging from building damages and loss of income sources, to loss of lives. Without proper assessment of climate change vulnerability, areas in the district that are highly vulnerable to the impacts of climate change, will not be properly identified, which could lead to ineffective interventions. In addition, capacity assessment is needed to identify the current institutional capacity level of local stakeholders in implementing climate change adaptation actions and improvements. These assessments will serve as the basis for development RAD-API, which will be mainstreamed into regional planning for long-term actions. Without background study of RAD-API, Sigi District will not have adequate data and justification for pursuing regional sustainable development strategies that are climate-adaptive, and could limit the district's capacity and access to relevant funding needed for implementation.

61. Without a strong enabling environment for implementing adaptation policies, the 6 project villages in Sigi District, which are highly vulnerable to flooding and drought, will face several significant challenges, such as efforts to adapt to climate impacts may be uncoordinated and insufficient, failing to address the unique vulnerabilities of each village; hinder capacity-building initiatives for local communities and authorities, leaving them ill-prepared to implement and sustain adaptation measures; and, hinder capacity-building initiatives for local communities and authorities, leaving them ill-prepared to implement and sustain adaptation measures.

62. If the WEF Nexus approach is not applied to improve the effectiveness of the District's Climate Change Adaptation Action Plan, the interventions may be fragmented and less effective. This approach ensures integrated management of water, food, and energy resources, which is crucial for building resilience against climate hazards like flooding and droughts. Without it, there could be inefficient resource allocation, increased vulnerability, and reduced sustainability of adaptation measures. This could ultimately hinder the district's ability to achieve long-term climate resilience.

63. Implementing a center of excellence for climate change adaptation at the district level is crucial for the community. This center will enhance the district's ability to monitor, evaluate, and learn from climate adaptation initiatives. It will document best practices, disseminate knowledge, and share lessons learned, ensuring that effective strategies are replicated and scaled up. Without this center, Sigi District risks losing valuable insights and innovations, leading to inefficient adaptation efforts and diminished community resilience against floods and droughts.

64. Upon the development of effective and targeted action plans, the consortium considered the importance of showcasing how such action plans can be implemented on the ground. Implementation of small-scale projects specific to the needs of the focused vulnerable villages will help increase their resilience toward climate change. This pilot implementation will also serve as a demonstration for local stakeholders for replication in other areas facing similar challenges.

Project/Programme Objectives

65. The main objective of the proposed project is to increase the economic, social and ecosystem resilience of Sigi District towards the detrimental impacts of climate change. The consortium will achieve this objective by focusing on building climate resilience district through evidence-based climate change adaptation action with appropriate WEF nexus approach.

66. Below is the Theory of Change for the Project and alignment of the project objectives with the Adaptation Fund Result Framework at the outcome level as indicated red boxes:

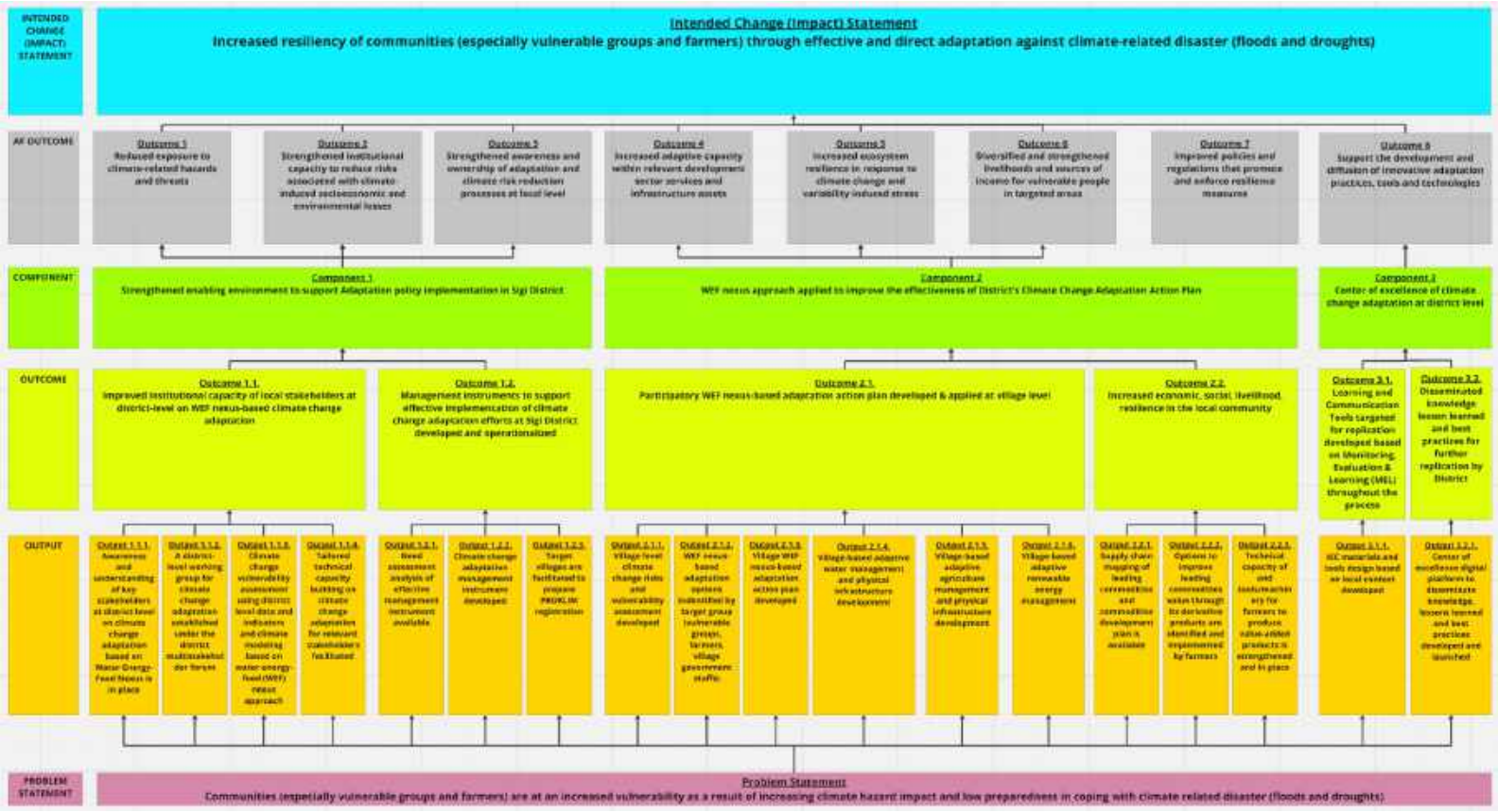

Figure 5. The Theory of Change (TOC)

Project/Programme Components and Financing

67. The project to build a climate-resilient district in Sigi is structured around three main components, each with specific outputs and outcomes.

Component 1 aims to strengthen the enabling environment for adaptation policy implementation, focusing on enhancing institutional capacity and developing management instruments. Outputs include increased stakeholder awareness, the establishment of a working group, vulnerability assessments, technical capacity building, and management instruments.

Component 2 employs the Water-Energy-Food (WEF) nexus approach to improve the District's Climate Change Adaptation Action Plan. Outputs encompass village-level risk assessments, identification of WEF-based adaptation options, development of village adaptation plans, and construction of adaptive infrastructure. Additionally, this component aims to enhance economic resilience through supply chain mapping and value addition for local commodities.

Component 3 establishes a Center of Excellence for climate change adaptation at the district level. It focuses on developing learning and communication tools, including a digital platform to disseminate knowledge, lessons learned, and best practices.

In total, the project aims to foster a robust climate adaptation framework, enhance community resilience, and ensure sustainable development in Sigi District through a comprehensive budget allocation.

Project/ Programme Components	Expected Concrete Outputs	Expected Outcomes	Amount (US$)
Component 1. Strengthened enabling environment to support Adaptation policy implementation in Sigi District	Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place	Outcome 1.1. Improved institutional capacity of local stakeholders at district-level on WEF nexus-based climate change adaptation	**$ 292.961**
	Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum		
	Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach		
	Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated		
	Output 1.2.1. Need assessment analysis of effective management instrument available	Outcome 1.2. Management instruments to support effective implementation of	

	Output 1.2.2. Climate change adaptation management instrument developed	climate change adaptation efforts at Sigi District developed and operationalized	
	Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration		
Component 2. WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan	Output 2.1.1. Village level climate change risks and vulnerability assessment developed	Outcome 2.1. Participatory WEF nexus-based adaptation action plan developed & applied at village level	**$ 436.647**
	Output 2.1.2. WEF nexus-based adaptation options indentified by target group (vulnerable groups, farmers, village government staffs)		
	Output 2.1.3. Village WEF nexus-based adaptation action plan developed		
	Output 2.1.4. Village-based adaptive water management and physical infrastructure development		
	Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development		
	Output 2.1.6. Village-based adaptive renewable energy management		
	Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available	Outcome 2.2. Increased economic, social, livelihood, resilience in the local community	
	Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers		
	Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place		
Component 3. Center of excellence of climate change adaptation at district level	Output 3.1.1. IEC materials and tools design based on local context developed	Outcome 3.1. Learning and Communication Tools targeted for replication developed based on Monitoring, Evaluation & Learning (MEL) throughout the process	**$ 103.549**
	Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched	Outcome 3.2. Disseminated knowledge lesson learned and best practices for further replication by District	
Total Project/Programme Cost			**$833,157**
Project/Programme Execution Cost (9.5%)			$87.459
Project/Programme Cycle Management Fee charged by the Implementing Entity (8.5%)			$78.252
Amount of Financing Requested			$998.868

Projected Calendar

68. The projected timeline for the climate resilience project in Sigi District includes several key milestones. The project is set to commence in March 2025. A mid-term review is planned for February 2026 to assess progress and make necessary adjustments. The project will conclude in January 2027, followed by a terminal evaluation in February 2027 to evaluate its overall impact and effectiveness. This timeline ensures a structured approach to implementation, monitoring, and evaluation, facilitating effective adaptation measures in the district.

Milestones	Expected Dates
Start of Project/Programme Implementation	Maret 2025
Mid-term Review (if planned)	Februari 2026
Project/Programme Closing	Januari 2027
Terminal Evaluation	Februari 2027

PART II: PROJECT/PROGRAMME JUSTIFICATION

A. Project/Programme Components

69. **Project Component 1: Strengthened enabling environment to support Adaptation policy implementation in Sigi District.** This component is aligned with the Adaptation Fund Outcome 1: Reduced exposure to climate-related hazards and threats, the Adaptation Fund Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses, and the Adaptation Fund Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level.

70. The project outcome that is expected to be achieved under this component is **Outcome 1.1. Improved institutional capacity of local stakeholders at district-level on WEF nexus-based climate change adaptation,** that is aligned with the Adaptation Fund Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning.

    Outcome 1.2. Management instruments to support effective implementation of climate change adaptation efforts at Sigi District developed and operationalized, that is aligned with the Adaptation Fund Output 2.1: Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events.

71. The project outputs will include:
    Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place. This output will be achieved by conducting the following activities:
    - Activity 1. Establish comprehensive (baseline,mid,endline) understanding of current institutional awareness on WEF Nexus-based climate change adaptation
    - Activity 2. Develop a detailed awareness programme on WEF Nexus-based Climate Change Adaptation
    - Activity 3. Workshop on climate change adaptation - WEF approach
    - Activity 4. Awareness Video/Photo/Poster competition among relevant district-level stakeholders and for public on WEF Nexus-based Climate Change Adaptation

    Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum. This output will be achieved by conducting the following activities:
    - Activity 1. Brainstorming on the idea of working group establishment (role, function, workplan of draft working group)
    - Activity 2. Drafting decision letter (SK) of Working Group
    - Activity 3. Launching working group (discuss and agree on working group work plan)

Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach. This output will be achieved by conducting the following activities:

- Activity 1. Climate change vulnerability assessment through secondary data and FGD
- Activity 2. Develop climate change vulnerability assessment report

Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated. This output will be achieved by conducting the following activities:

- Activity 1. Conducting need Assessment on Climate Change Adaptation Preparedness
- Activity 2. Develop a detailed training program and set of modules of technical training
- Activity 3. Workshop and technical training on climate change adaptation
- Activity 4. Technical assistance and facilitation for background study for Climate Change Adaptation Action Plan (RAD-API)

Output 1.2.1. Need assessment analysis of effective management instrument available. This output will be achieved by conducting the following activities:

- Activity 1. Initial assessment with interview and desk-analysis
- Activity 2. Consultation with Focus group discussions on management instruments with multistakeholders platform

Output 1.2.2. Climate change adaptation management instrument developed. This output will be achieved by conducting the following activities:

- Activity 1. Design management instrument
- Activity 2. Development of management instruments
- Activity 3. User trial test of management instruments
- Activity 4. Dissemination & training of management instrument
- Activity 5. Climate awareness goes to schools (trainings)

Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration. This output will be achieved by conducting the following activities:

- Activity 1. Workshop, training, and socialization PROKLIM at village level
- Activity 2. PROKLIM registry assistance with enumerators

72. **Component 2. WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan.** This component is aligned with the Adaptation Fund Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets, the Adaptation Fund Outcome 5: Increased ecosystem resilience in response to climate change and variability-induced stress, and the Adaptation Fund Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas.

73. The project outcome that is expected to be achieved under this component is **Outcome 2.1. Participatory WEF nexus-based adaptation action plan developed & applied at village level,** that is aligned with the Adaptation Fund Output 4.1: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability.

Outcome 2.2. Increased economic, social, livelihood, resilience in the local community, that is aligned with the Adaptation Fund Output 8.1: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.

74. The project outputs will include:

Output 2.1.1. Village level climate change risks and vulnerability assessment developed. This output will be achieved by conducting the following activities:

- Activity 1. Focus grup discussions (preparedness and awareness on climate change risk and vulnerability assessment)
- Activity 2. Develop rapid assessment on climate change risks and vulnerability
- Activity 3. Diseminate result of rapid assessment to all village stakeholders

Output 2.1.2. WEF nexus-based adaptation options indentified by target group (vulnerable groups, farmers, village government staffs). This output will be achieved by conducting the following activities:

- Activity 1. Develop pre-material on adaptation options
- Activity 2. Facilitate FGDs on adaptation options
- Activity 3. Develop IEC materials of identifed adaption options (WEF Nexus)

Output 2.1.3. Village WEF nexus-based adaptation action plan developed. This output will be achieved by conducting the following activities:

- Activity 1. Develop action plan
- Activity 2. Support village to propose identified actions to be financed by village fund and by Adaptation Fund
- Activity 3. Workshop on viillage climate adaptation plan

Output 2.1.4. Village-based adaptive water management and physical infrastructure development. This output will be achieved by conducting the following activities:

- Activity 1. Strengthen water adaptive management village task force
- Activity 2. WASH household-based e-Survey
- Activity 3. Develop activity plan for adaptive water management, physical construction, operation & maintenance, and monitoring/evaluation
- Activity 4. Evidence-based planning and budgeting for village WASH program
- Activity 5. Physical construction of adaptive water infrastructure (NbS knock-down levee along the river 500 meter)
- Activity 6. Physical construction of adaptive water infrastructure (ponds)
- Activity 7. Physical construction of adaptive water infrastructure (mini nature-based water treatment plant & distribution pipe)

- Activity 8. Physical construction of adaptive water infrastructure (household water and sanitation facility)

Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development. This output will be achieved by conducting the following activities:

- Activity 1. Strengthen adaptive Agriculture management village task force (Kelompok Tani)
- Activity 2. Survey of flood prone agriculture areas
- Activity 3. Develop activity plan for adaptive agriculture management & physical infrastructure
- Activity 4. Build demonstration plot nursery to produce seedlings for the establishment of plantations
- Activity 5. Improvement/construction of agriculture irrigation/drainage system
- Activity 6. Flood plain development
- Activity 7. Retention well construction in flood prone areas of plantations

Output 2.1.6. Village-based adaptive renewable energy management. This output will be achieved by conducting the following activities:

- Activity 1. Development module of efficiency and energy management
- Activity 2. Solar PV installment for climate impact information
- Activity 3. Climate IoT tools and software development for supporting sustainable agriculture
- Activity 4. Improving internet access for climate resilience information
- Activity 5. Capacity building to build the technical skills related to the installation and use of solar PV systems and climate IoT tools
- Activity 6. Conducting FGD for Community-driven climate resilience information sharing
- Activity 7. Conducting for Workshop Community awareness on energy efficiency and management

Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available. This output will be achieved by conducting the following activities:

- Activity 1. Conduct supply chain analysis on leading commodities
- Activity 2. Conduct market demand and distribution analysis on leading commodities and derivative products
- Activity 3. Develop sustainable commodities development plan

Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers. This output will be achieved by conducting the following activities:

- Activity 1. Identification of preferable derivative products to be further developed to increase income of farmers
- Activity 2. Conduct identifed derivative products distribution analysis to ensure product reaching the right market at the right time (including identinfying buyers)

Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place. This output will be achieved by conducting the following activities:

- Activity 1. Training of trainers for farmers on value-added commodities production
- Activity 2. Developing appropriate Processing Tools/Machinery/Technology for the farmers (to be granted to Village enterprise/BUMDes)
- Activity 3. Training for village enterprises to develop business model e.g. market, distribution, and Return of Investment (RoI)
- Activity 4. Workshop on increasing on economic, social, livelihood, resilience in the local community

75. **Component 3. Center of excellence of climate change adaptation at district level.** This component is aligned with the Adaptation Fund Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies.

76. The project outcome that is expected to be achieved under this component is **Outcome 3.1. Learning and Communication Tools targeted for replication developed based on Monitoring, Evaluation & Learning (MEL) throughout the process,** that is aligned with the Adaptation Fund Output 8.1: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.

Outcome 3.2. Disseminated knowledge lesson learned and best practices for further replication by District, that is aligned with the Adaptation Fund Output 8.1: Viable innovations are rolled out, scaled up, encouraged and/or accelerated.

77. The project outputs will include:
Output 3.1.1. IEC materials and tools design based on local context developed. This output will be achieved by conducting the following activities:

- Activity 1. Identify local context on adaptation efforts for designing IEC materials and tools
- Activity 2. Developing IEC materials and tools design based on local context and lessons learned from the project
- Activity 3. Public consultation on the IEC materials and tools
- Activity 4. Finalization of IEC materials and tools design based on local context
- Activity 5. Development of project lessons learned
- Activity 6. Develop communication strategy
- Activity 7. Create short documentary about community based climate adaptation
- Activity 8. Dissemenation of communication product (short documentary)

Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched. This output will be achieved by conducting the following activities:

- Activity 1. Design centre of excellence digital platform

- Activity 2. User trial test of the centre of excellence digital platform
- Activity 3. Sub national policy dialogue for identification learning and sharing climate adapatation action plan (district and province)
- Activity 4. Launcing of Sigi District Climate Change Adaptation Centre of Excellence (back-to-back with Closing Ceremony of the Projects)

B. Economic, Social, and Environmental Benefits

Economic and Social Benefits

78. The project will have a direct impact on climate adaptation planning to disaster mitigation and preparedness, economic resilience, and climate-adaptive livelihood. The total direct beneficiaries of this project reached 1,543 peoples with six pilot villages targeted namely Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages. Each village has a specific number of direct beneficiaries, with Bangga having the highest number at 411 households. The project targets both male and female residents, ensuring gender-inclusive benefits.

Village	2022 Population[38]			Direct Beneficiries (identification from Project Outputs)[39]	
	Male	Female	Total	Peoples	Households
Pandere	1345	1312	2657	399	97
Pakuli Utara	769	706	1475	221	54
Simoro	489	466	955	143	35
Bangga	1458	1285	2743	411	100
Sambo	623	612	1235	185	45
Wisolo	632	592	1224	184	45
Total				**1543**	**376**

Table 5. Project Beneficiaries

79. Sigi is also selected for its leadership on the national level LTKL, focusing on accelerating the implementation of sustainable development. In functional level, the project would equip and enable 50 officials in the District Government Agencies/Office in Sigi[40] to implement the climate adaptation regional planning and develop an economic resilience model. When implemented, it would contribute to the growing of sustainable forest or agricultural commodities.

80. The availability of Gender Responsive and Inclusive Climate Risk Profile and the recommendation of priority adaptation actions will help stakeholders (private sector and community) to anticipate climate risks, such as floods and droughts, to

[38]BPS Kabupaten Sigi. (2023). Kabupaten Sigi Dalam Angka 2022.
[39]Consortium assessment based on needs, survey, and Project Outputs 2024
[40]https://sigikab.go.id/index.php/pemerintahan/organisasi-perangkat-daerah.html

secure their business continuity, such as production and distribution of goods and services, distribution of goods, crops, etc. In addition to that, as the program will contribute to the fulfillment of Sigi's Regional Competitiveness Framework[41], it will directly affect the income-generation as it complies with the sustainable investment appetite and sustainable supply chain from agricultural and forestry commodities. It is expected to increase Sigi's gross regional domestic products from the forestry, agriculture, and fisheries sectors beyond 43% of the entire Sigi's GRDP[42].

Environmental Benefits

81. The project will inform the government and other stakeholders to understand the change of nature due to the impact of climate change. This understanding is expected to expand the options on innovative adaptation solutions, especially nature-based adaptation solutions, to respond to the risks, such as, flood and drought in Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages. For the village residents, the project will directly contribute to the district's capacity in water, food, and energy management.

Gender and Vulnerable Group Benefits

82. Building Sigi as a resilient district would impact gender mainstreaming, where the involvement of women and vulnerable groups in various activities is concerned, with a minimum of 30% participation of women. As the primary caregivers, women are responsible for the family's daily subsistence selections but are often not remunerated (Ferrant et al., 2014). However, women are disproportionately affected by the lack of cleaner and affordable energy options (Energia, 2008). Such is the case of Sigi, Central Sulawesi, and with 43 villages left in the dark, maternal mortality rates are high. Despite recognising that women are natural safeguards of natural resources, women in Sigi still lack access to essential services and voice and representation in decision-making. Particularly in rural areas, women play significant roles in small-scale agriculture and informal income-generating activities.

83. The project would integrate women's active participation in key activities in the planning and consultation process both at the strategic level through 30% participation in multi-stakeholder consultation and planning at the district level to the implementation process at the village level. Women's involvement, including women from the indigenous communities, will be accounted as key decision makers and front liners in climate mitigation and adaptation communication to targeted community groups and the wider public. The income-generating activities at the village level will also directly involve women, from deciding which plantation commodities to be cultivated, such as cocoa and coconut, to post-harvest and going to the market activities, including how they decide on how to grow the livelihood into economically valuable products and how they would access financing through cooperatives, VSLA or other community-driven initiatives. Environment safeguarding activities will also involve women, such as ensuring their inclusion as water committee members and/or in community forest

[41]https://www.kabupatenlestari.org/en/document/kerangka-daya-saing-daerah-kdsd-booklet/
[42]https://sigikab.go.id/dokumen%202020/RKPD%20MURNI%202019.pdf

stewardship initiatives and disaster management forum.

84. The Incorporation of gender analysis can increase the effectiveness of measures to protect people from climate variability and change. Gender-sensitive research is needed, including collecting, analysing and reporting sex-disaggregated data. Including gender-relevant considerations will strengthen jurisdictions' climate resilient planning. The availability of a Gender Responsive and Inclusive Climate Risk Profile will help all stakeholders, especially the vulnerable groups, to be able to understand climate risk related to Water-Energy-Food security and to have the capacity to reduce the risks. The project will develop a Gender Responsive and Inclusive Climate Risk Profile to ensure that an effective gender mainstreaming approach is implemented throughout the project design, development, and implementation, where different needs of different gender groups are identified, sensitivities across gender groups are considered, and the interventions are tailored to meet different needs. This profile will be accessible to all stakeholders (i.e., braille version, infographic for those unable to read, etc.).

C. Cost Effectiveness

85. The project aims to enhance climate change adaptation in Sigi District through three main components with specific outputs and outcomes, amounting to a total cost of $998,868

Component 1 focuses on building institutional capacity and effective management instruments, fostering climate risk-proofing of infrastructure, which could lead to sustained economic and environmental benefits while avoiding severe climate impacts.

Component 2 emphasizes the Water-Energy-Food (WEF) nexus approach for village-level adaptation plans, enhancing community resilience and reducing livelihood loss due to climate change.

Component 3 establishes a center of excellence to disseminate knowledge, best practices, and tools tailored to the local context, ensuring informed and effective adaptation strategies. The Center will serve as a hub for knowledge sharing, fostering a community of practice among stakeholders, which helps avoid greater losses in agriculture, livelihoods, and infrastructure due to lack of information and resources.

Beneficiaries of the project are 1,543 individuals living in six villages, namely Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo. These villages are frequently affected by flooding, which significantly impacts their livelihoods. Flooding events occur 2-3 times annually with increasing frequency and intensity, causing extensive damage to infrastructure and reducing agricultural productivity. This is particularly detrimental to the production of key commodities like cocoa and coconut.

The Water-Energy-Food (WEF) Nexus approach aims to enhance the adaptive capacity of vulnerable communities to climate impacts by maximizing added value

and improving cost-effectiveness compared to conventional infrastructure approaches. The construction of embankments, use of concrete and synthetic materials, and riverbed excavation and reinforcement are estimated to cost between $1,700,000 and $4,100,000 per kilometer.

	Conventional Physical Infrastructure	Water Energy Food Nexus
Total cost	$1,700,000 - $3,500,000	$998,868
Protection benefit	Relatively quick to achieve when the construction ends	Provides ecosystem services and socio-cultural viability; supports long-term resilience
Materials	Semen, pasir, kerikil beton, pengendali banjir	Supports natural materials like riparian buffers, wetland restoration, and floodplain reconnection
Adaptability	Low, requires significant modifications for changes	High, adapts to changing environmental conditions
Effect for coastal ecosystems	Limited or potentially negative impacts due to artificial structures	Positive impacts due to nature-based solutions
Socio-cultural viability	Often low, as it may not align with traditional practices	High, as it integrates community practices and sustainable agriculture
Economic retention	High initial cost with potential ongoing maintenance expenses	Enhances long-term economic benefits by sustaining agricultural productivity and reducing repair costs
Regulatory Compliance	Meets strict environmental and sustainability regulations	Requires numerous permits and oversight

D. Consistent With National or Sub-National Sustainable Development Strategies

86. The proposed project will support and align to several key national development strategies and commitments. It corresponds directly with Indonesia's commitment towards climate change mitigation and adaptation, as formalized in the National Determined Contribution (NDC) and the NDC roadmap, the National Medium-Term Development Planning (Rencana Pembangunan Jangka Menengah Nasional/RPJMN) 2020-2024[43] and National Action Plans for Climate Change

[43]Narasi RPJMN 2020-2024, https://old.bappenas.go.id/files/rpjmn/Narasi-RPJMN-2020-2024-versi-Bahasa-Inggris.pdf

Adaptation (Rencana Aksi Nasional Adaptasi Perubahan Iklim/RAN API) by the Ministry of National Planning. The three national strategic documents outline key agendas, especially building the environment and increasing disaster and climate change and economic resilience, including local government and people preparedness by expanding multi-sector partnerships. The strategies focus on the synergy of regional spatial use and the number of regencies and cities with detailed spatial planning for resilience to disaster and climate change, especially on building strength in safeguarding food, water, and energy resources. The consortium, through Component 1, will support the district in developing the action plans for addressing climate change mitigation and adaptation efforts, through Component 2, will support resilient Water-Energy-Food (WEF) independence in 6 selected vulnerable villages namely Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages, as well as through Component 3, will monitors and documents best practices for wider replication.

87. The project would also contribute to the Government of Indonesia's target of the number of regencies and cities with detailed spatial planning for resilience to disaster and climate change from 37 regencies and cities in 2019 to 250 regencies and cities in 2024 stipulated in RPJMN 2020-2024. Regional-level action plans act as building blocks of the national-level action plans and provide locally. The government of Sigi District will develop Sigi District's climate change adaptation plans to align with the national-level strategies.

88. The project also corresponds with The Presidential Regulation on 98/2021, which stipulates the implementation of carbon economic value that emphasizes Indonesia's efforts in climate change mitigation and adaptation, covering multiple priority sectors, such as food, water, energy, health, and ecosystem. This project aims to support the achievement of this commitment by supporting regional climate adaptation planning and implementation through climate change vulnerability and capacity assessment to provide data and information on current and future vulnerable areas that can be used as baseline information. In contrast, the capacity-building element of this project aims to ensure the project's sustainability by ensuring proper implementation carried out by local stakeholders that includes monitoring and evaluation within and beyond the project period. The implementation element of this project will support existing on-the-ground projects that target priority sectors, namely water, food, and energy in Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages.

89. The proposed project will also support the Strategic Plan of the Directorate General of Climate Change of the Ministry of Environment and Forestry (Renstra PPI) through the assessment of local and data-driven climate vulnerability and capacity, which Sigi District can use for developing strategies and action plans to increase its water, food, and energy securities. Proposed implementation elements of this project aim to serve as a model of how adaptation strategies are implemented at the village level, where water, food, and energy security is secured, while aiming to increase economic, social, ecosystem and livelihood resilience in Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages. Such exemplary models will serve as “success stories” that showcase successful village-level transition into becoming climate-adaptive and can be replicated

throughout and beyond Sigi District.

Sub-National and Regional Development Strategies

90. Sigi District's current Medium-Term Development Planning Document (Rencana Pembangunan Jangka Menengah Daerah/RPJMD) covers the district's strategic issues and strategies for 2021-2026. It stated the district's vision to increase its competitive advantages by strengthening its agribusiness sector. One of the missions to achieve this is by pursuing disaster mitigation-based sustainable development, achieved through a decrease in the disaster risk index and an increase in disaster resilience. The proposed project aims to support this mission by providing Sigi District with the data needed to strengthen disaster resilience, including baseline assessment of Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo villages, and stakeholder capacity to develop strategies and action plans to reduce disaster risks and increase the communities' resilience.

91. Besides Sigi District's RPJMD 2021-2026, the project is precisely aligned with Sigi Hijau Vision. As a policy breakthrough initiated by Sigi District, it showcases the Sigi's government commitment to pursue jurisdictional sustainability, achievable through several strategies that include climate change mitigation and adaptation. This proposed project supports exactly this: helping Sigi District develop its regional action plans for climate change adaptation enhanced with capacity and vulnerability assessment and future climate projection modeling to create more comprehensive, adaptive measures. It also offers practical intervention to increase renewable energy, reduce deforestation, and land degradation. The proposed project, which includes a pilot implementation in six selected villages namely Karunia and Dombu villages, aims to improve the local community's economic, social, and ecosystem resilience and supports sustainable, forest-friendly and climate-adaptive agriculture to ensure food and livelihood security.

E. Meets Relevant National Technical Standards

92. The project aligns with national policies, district policies, and regulations as follows:

93. **Environmental Protection and Sustainable Management:** Utilizing Law No. 32/2009 on Environmental Protection and Management, which ensures sustainable environmental practices. Additionally, Government Regulation No. 22/2021 on Environmental Protection and Management sets the general guidelines for environmental governance, crucial for any project involving ecosystem restoration or infrastructure development in Sigi. The Minister of Environment and Forestry Regulation No. 4/2021 outlines the list of businesses that require Environmental Permits (AMDAL, UKL-UPL, and SPPL), ensuring that small hybrid infrastructure projects in Sigi adhere to these requirements.

94. **Climate Change Adaptation:** Presidential Regulation No. 98 of 2021 on the Implementation of Carbon Economic Value is central, focusing on climate change mitigation and adaptation strategies to meet Indonesia’s Nationally Determined Contributions (NDC). The Ministry of Environment and Forestry Regulation No. 33/2016 provides guidance for developing local climate change adaptation action

plans, which would be instrumental in mainstreaming climate resilience into the development strategies of Sigi. Additionally, the Program Kampung Iklim (PROKLIM) regulations, outlined in the Ministry of Environment and Forestry Regulation No. P.84/MenLHK-Setjen/Kum.1/11/2016 and the Directorate General of Climate Change Regulation No. P.1/PPI/SET/KUM.1/2/2017, support local climate adaptation initiatives.

95. **Biodiversity and Ecosystem Management:** Law No. 5/1990 on the Conservation of Living Natural Resources and Their Ecosystems supports the conservation efforts in various ecosystems, applicable to the diverse landscapes of Sigi. The inclusion of specific local regulations on forest and coastal management would also bolster efforts to maintain the ecological balance while promoting sustainable land use.

96. **Community Engagement and Social Inclusion:** Inclusivity is ensured through Minister of Home Affairs Regulation No. 52/2014, which supports the recognition and protection of customary law communities. Additionally, Law No. 14/2018 on Public Information Transparency and Presidential Instruction No. 9/2000 on Gender Mainstreaming in National Development highlight the importance of engaging local stakeholders and ensuring that development benefits are equitably shared. Law No. 8 of 2016 on the Inclusion of People with Disabilities ensures that projects consider the needs of all community members.

97. **Local and Regional Policies:** Local regulations such as the Regent of Sigi's Decree No. 198-682 of 2022 on PPMHA Ngata Wisolo and the Regional Regulation of Sigi District No. 15 of 2014 provide specific guidelines and frameworks tailored to the unique needs and contexts of Sigi. These local policies ensure that the adaptation fund project aligns with regional development strategies and community-specific priorities.

98. **Ecological Fiscal Transfers and Financial Management:** Government Regulation No. 12 of 2019 on Regional Financial Management would govern the financial aspects of the project, ensuring that funds are allocated and used in a manner that promotes regional sustainability and ecological fiscal transfers. The Project will also follow Law No. 11 of 2020 on Job Creation, specifically Article 35, which requires businesses and activities to manage and monitor their environmental impact through SPPL if not requiring UKL-UPL.

F. Duplication of Project/Programme With Other Funding Sources

99. Currently, no existing efforts overlap with Kolaborasi projects. However, some efforts would be very good to complement or synergize with Kolaborasi. Sigi District Government is working with 1) Church World Services (CWS) and Yayasan Inovasi Ketahanan Komunitas (INANTA), and 2) Mercy Corps and Yayasan Penabulu. The first project aims to build community resiliency with a focus on livelihood and agriculture in four villages. The second seeks to manage risks through economic empowerment at the village level in 10 villages. Both projects have similar approaches to Kolaborasi: to improve the community's capacity to manage risk through economic empowerment and focus on the village

level. Our project will complement and strengthen those projects by bringing a more comprehensive approach by: 1) providing a stronger foundation for the local government to develop climate adaptation programs, and 2) building a solid showcase for influencing the top-down approach from national to local levels through two critical angles: (i) Water-Energy-Food Nexus approach and (ii) Multi-layered jurisdictional approach (Village – District – Provincial – National).

100. Other initiatives and projects with jurisdictional approaches to sustainable business models and supply-chain development are also available to be synchronized with Kolaborasi. They are GIZ SASCI+ project, particularly in the biosphere reserve context for Lore Lindu National Park, mainly focuses on enhancing sustainability and value-added components in the agricultural supply chain in Indonesia, The GIZ Forclime Project, in collaboration with the Ministry of Agriculture and the local agriculture technology research agency (Balai Pengkajian Teknologi Pertanian/BPTP), focuses on coffee and cocoa certification and commodities research and development, Sigi District government is pursuing agrarian reform and the issuance of customary forest and community forests surrounding Lore Lindu Biosphere Reserve to reduce deforestation and land degradation. The to-be-established multistakeholder forum will act as a coordinating and collaboration body at the district level to ensure all the initiatives and interventions are synergized and complementary to each other.

G. Learning and Knowledge Management

101. The project aims to produce several critical products targeted to capture process, results and lessons learned from the project – namely (i) a summary of the process translated into a decision-tree infographic, (ii) work-sheet(s) as guidance for process replication and (iii) case-study examples for each segment of the process. These products serve as practical learning tools for adults in government settings based on the consortium's previous experience.

102. Following previous successful learning methods, the consortium will disseminate such tools through (i) workshops with opportunities for district participants to participate online and (ii) targeted coaching clinics for interested districts to participate offline under their resources. Aside from working with the provincial government of Central Sulawesi to target other districts in the province for replication, the district of Sigi is also a founding member of LTKL since 2017. This membership provides a more significant opportunity for replication and learning across the eight other district members of LTKL and other active members of APKASI throughout Indonesia.

103. We aim to work closely with key national ministries/government institutions during the implementation process, including the National Disaster Agency, National Planning Agency – LCDI Secretariat and Ministry of Environment and Forestry. Hence, the plan is to integrate results better, learn from the projects as policy recommendations from subnational experience, and achieve greater replication potential across the country.

104. From a communication perspective, we plan to collaborate with the

Communication and Information Agency and the Public Relations Agency of Sigi District to establish a micro-site connected to the district's official website documenting the process, results and lessons learned. The micro-site can be an information portal for Sigi District on climate adaptation issues and will be mirrored on social media platforms of the district government and consortium members.

H. Consultative Process

105. As a preparation stage for this proposal, we have begun the consultation with key stakeholders and vulnerable groups from a multifaceted angle. In environmental studies, science technology, especially for climate and disaster studies or other ecological studies, we consulted academic institutions focusing on disaster resiliency and forest protection, including Tadulako University, UIN Datokarama Palu and UIN Palu at the Central Sulawesi level.

106. The district government is also a part of the consortium and has received feedback from the Regional Development Planning Agency (BAPPEDA), Regional Disaster Agency (BPBD), Regional Environmental Agency (DLH) and Village Planning and Empowerment Agency (PemDes), based on the consultative process summarized in the table below. Further endorsement has also been given by the Head of Sigi District and formalized in the endorsement letter attached to this concept note.

107. Consultation processes were also carried out with key stakeholders at the civil society organizations, including Nemubuku, Forum Sudut Pandang, Ibu Foundation, Mercy Corps, Sikola Mombine Foundation and development partners, including GIZ SASCI+. There is also a strong opportunity to work with youth groups that have been developing initiatives on disaster resilience, including Earth Hour Palu, Macaca Rangers, Historia Sulteng, Sikola Pomore, Jaga Palu Official, Satu Buku Anak Palu, Ini Sigi, Like Sigi, Tadulako Desainer, Taman Baca Todea, Nobalu, Banua Risigi, and KPL Jambeana.

Date	Consulted Stakeholders	Consultation Techniques	Consultation Findings	Incorporation of Findings into Project Design
11 April 2022	1.Mohammad Irwan S.Sos.MSi. Head of Sigi District 2.Dr.Samuel Yansen Pongi,M.Si Deputy Head of Sigi District 3. Muh.Basir Secretary of Sigi District 4. All Head of Sigi DIstrict Working Unit (OPD)	FGD and Working Session (32 Male, 18 Female)	Successfully obtained Head of District's further commitment to pursue Sigi Hijau into achievable programs and initiatives. Discussed green development work plan which can be integrated in joint collaboration and program synergy across OPD and development partners in Sigi. Agreed on manifesting the work plan and collaboration through the establishment of Multistakeholder Forum.	Agreement and Commitments achieved became the Enabling Conditions for the Project.

23-28 May 2022	Drs. Sutopo Sapto Condro, MT Head of Sigi District's Development Planning and Research Agency	Conference participation, FGD and Media Gathering for the 2022 Global Platform for Disaster Risk Reduction	Interest from Development Planning and Research Agency of Sigi to better link disaster risk reduction with enhance district's resilience on climate adaptation	The baseline for Project Theory of Change to link disaster risk reduction with enhance district's resilience on climate adaptation through an integrated plan
28 Juni 2022	Head and Representing Officer of Tourism Office, Office of Communication and Information Technology, Environment Office, Office of Cooperatives & MSME, Office of Integrated Service for MSME, Office of Industry & Trade, Office of Investment & One-Stop Integrated Licensing, Regional Research and Development Planning Agency, Horticulture and Plantation Food Crops Office, Disaster Management Agency, Civil Service Police Unit, Community and Village Empowerment Service.	Workshops and Group FGD (65 participants (17 female, 48 Male)	Acceleration of green development program in Sigi District. Synchronization of Sigi district's working units/ office programs in RKPD Perubahan 2022 and RKPD 2023 document (District Annual Work Plan) including the projected budget allocation in each unit/ office.	Integration of the project plan and implementation into the Amendment District Annual Work Plan 2022 and District Annual Work Plan 2023
29 Juni 2022	1.Mohammad Irwan S.Sos.MSi. Head of Sigi District 2.Dr.Samuel Yansen Pongi,M.Si Deputy Head of Sigi District 3. Muh.Basir Secretary of Sigi District 4. All Head of Sigi DIstrict Working Unit (OPD) 5. Central Sulawesi Forestry Department 6. Central Sulawesi Environment Department 7. FIscal Policy Agency, Ministry of Finance RI 8. Head of Lore Lindu National Park.	Workshop, FGD Participants (36 Male, 18 Female)	Identifying climate adaptation and disasters risk reduction should be aligned with methods to ensure better livelihood options, particularly in vulnerable area of the district	Identifying that the main components of the project should include (i) macro planning document co-creation, (ii) implementation planning document co-creation and (iii) implementation model
1 Juli 2022	Drs. Sutopo Sapto Condro, MT Head of Sigi District's Development Planning and Research Agency	Semi-structured interview	Sigi District is planning to develop Regional Action Plans for Climate Change Adaptation (RAD-API) RAD-API is aligned with the Sigi Hijau regulation and budgeting	Development of RAD-API and integration of it into regional development and planning

27 June 2022; 8 July 2022	Afit Lamakarate, ST.,M.Si Head of Sigi District's Environmental Agency	Semi-structured interview	Sigi District is planning to develop Regional Action Plans for Climate Change Adaptation (RAD-API), but has been unable to do so due to limited budget and capacity RAD-API is aligned with the Sigi Hijau regulation and budgeting Many villages in Pipikoro and Kulawi Sub-districts are vulnerable towards climate change as they are prone to floods, have high population density, have limited access to electricity and water supply and rely on the agriculture sector Lonebasa Village in Pipikoro sub-district is among these vulnerable villages	Development of RAD-API Selection of Lonebasa Village as one of the areas for pilot implementation
6 Juli 2022	Johansyah Halman, ST Secretary of Sigi District's Disaster Management Agency (Implementing Department)	Semi-structured interview	Sigi District is prone to natural and man-made climate disasters Bolapapu Village in Kulawi Sub-district is prone to flash floods	Selection of Bolapapu Village as one of the areas for pilot implementation
8-9 November 2023	District agencies Local communities NGOs Academician Provincial Government	Workshops and Group FGD	12 villages in 4 sub-districts fulfill the indicators such as demography, accessibility, commodity, and level of climate change vulnerability There are inputs on the proposed program that has been planned, such as climate change adaptation policies that support adaptation measures need to be detailed in the technical documents and carried by a multistakeholder forum; for the showcasing, it suggested to highlight women empowerment and youth engagement through capacity building and eco-labeling as the product from Lore Lindu Biosphere Reserve	Identifying village selection through agreed criteria and gathering insight for proposed program

I. Justification for Funding Requested

108. The Implementing the Adaptation Fund (AF) project in Sigi District is crucial

due to the significant climate vulnerabilities and socio-economic challenges faced by the local communities. Without the project, plantation areas in highly vulnerable villages remain susceptible to flood damage, reducing productivity and overall resilience. The absence of technical capacity in climate adaptation, water management, food, energy, and policy hinders communities from effectively coping with climate impacts. Additionally, the lack of a climate information system limits farmers' ability to make informed decisions, while local communities struggle to identify and access markets for their commodities. Adaptation strategies are fragmented and lack integration of community-based knowledge, leaving villages without formal engagement in climate resilience programs and minimal participation of women in adaptation processes. This situation underscores the urgent need for the AF project to enhance local capacities, develop climate information systems, and promote inclusive, community-based adaptation strategies to build resilience against climate impacts.

Without Project AF	With Project AF
Plantation areas in 6 villages with high vulnerability remain susceptible to flood damage, reducing productivity.	50 ha plantation area in 6 villages with high vulnerability have flood resilience, maintaining plantation productivity.
Communities lack technical capacity in climate adaptation, water management, food, energy, and policy.	Communities have enhanced capacity in climate adaptation technical aspects, water management, food, energy, and policy through the Water-Energy-Food Nexus.
No climate information system exists, limiting farmers' ability to make informed decisions.	Sigi District will have a climate information system providing climate and weather data beneficial for agricultural farmers.
Local communities have limited ability to identify and access markets for their commodities.	Local communities can map key commodities, markets, demands, and potential products for national/international markets such as cocoa, coconut, and other agricultural products.
Adaptation strategies are fragmented and lack community-based knowledge integration.	Water-Energy-Food nexus-based adaptation identified as community-based knowledge to tackle climate impact.
Villages lack formal engagement in climate resilience programs.	6 villages will be encouraged and participate in PROKLIM.
Women's participation in climate adaptation processes is minimal.	At least 30% women participants are involved in the planning, implementation, monitoring, and learning process of the Water-Energy-Food Nexus.

J. Sustainability of The Project/Programme Outcomes

109. The project exit strategy to ensure the sustainability of its outcomes focuses

on building institutional capacity (OPDs) and creating adaptive management instruments for climate change adaptation in Sigi District. By training local stakeholders on the Water-Food-Energy (WFE) nexus and establishing a district-level working group, the project embeds climate adaptation knowledge and practices within existing local governance structures. This working group, supported by the district multistakeholder forum, will continue to spearhead adaptation efforts, ensuring that the enhanced capacity and awareness achieved through the project are maintained and further developed beyond the project's lifespan.

110. To support the effective implementation of climate adaptation efforts, the project will develop and operationalize management instruments tailored to the needs of various stakeholders, including government agencies, farmers, universities, and schools. The creation of a one-stop web portal will provide a centralized platform for accessing climate data, management tools, and best practices, fostering ongoing learning and adaptation. The portal's development will be informed by comprehensive assessments and stakeholder consultations, ensuring that it meets local needs and can be sustainably managed by local authorities and institutions.

111. At the village level, the project’s sustainability strategy involves developing participatory WFE nexus-based adaptation action plans that are integrated into local governance and funding mechanisms. By involving community members, village leaders, and local governments in the planning and implementation process, the project ensures that adaptation measures are locally relevant and community-owned. This approach not only enhances the resilience of village-level systems but also builds local capacity to continue these efforts independently, leveraging village funds and external resources such as the Adaptation Fund.

112. Economic, social, and livelihood resilience are critical components of the project’s sustainability strategy. The project will conduct supply chain mapping and market demand analysis for leading commodities, developing plans to enhance their value through derivative products. By providing training and tools for producing value-added products, the project equips local farmers with the skills and resources needed to diversify and sustain their livelihoods. The establishment of village enterprises (BUMDes) and linkages with local government agencies will further support the continuity and scalability of these livelihood activities, ensuring long-term economic benefits for the community.

113. The creation of a center of excellence for climate change adaptation will serve as a hub for knowledge dissemination, capacity building, and best practice sharing. This center will develop and distribute learning and communication tools based on the project’s monitoring, evaluation, and learning (MEL) outcomes, this platform will be maintained by Coaction Indonesia to ensure sustainability. By leveraging digital platforms for broader outreach and maintaining ongoing engagement with local and regional stakeholders, the center will ensure that the lessons learned and successful practices from the project are replicated and scaled up, contributing to sustained climate resilience in Sigi District and beyond.

K. Environmental and Social Impacts and Risks

114. The implementation of the project will involve several environmental and social impacts and risks that require careful assessment and management. While the project aligns with Indonesia's laws and policies, such as the Minister of Environment and Forestry Regulation and the Law on Environmental Protection and Management, it must also ensure equitable access and benefits for all community members, especially marginalized and vulnerable groups. Gender equality and women's empowerment are crucial, necessitating thorough assessment and compliance during implementation. Indigenous peoples' issues, public health impacts, and protection of natural habitats and biodiversity also require careful consideration and compliance. By addressing these principles, the project aims to enhance local resilience and sustainable development through a Water-Energy-Food nexus approach while minimizing adverse effects on the environment and society.

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law	V	
Access and Equity	V	
Marginalized and Vulnerable Groups	V	
Human Rights	V	
Gender Equality and Women's Empowerment	V	
Core Labour Rights	V	
Indigenous Peoples	V	
Involuntary Resettlement	V	
Protection of Natural Habitats	V	
Conservation of Biological Diversity	V	
Climate Change	V	
Pollution Prevention and Resource Efficiency	V	
Public Health	V	
Physical and Cultural Heritage	V	
Lands and Soil Conservation		V

Ouput	Triggers of 15 Principles ESP (Yes/No)	Description
Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place	No	No significant risks identified. This activity aims to enhance awareness and understanding of key district-level stakeholders on climate change adaptation. Target: 6 district-level stakeholders.
Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum	No	No significant risks identified. This working group will lead and coordinate climate change adaptation efforts in the district.
Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach	No	No significant risks identified. This assessment will provide critical understanding of the district's vulnerability to climate change. This project will targeting district-wide climate change vulnerability assessment report for being used by key stakeholders.
Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated	No	No significant risks identified. This activity will enhance the technical capacity of relevant stakeholders on climate change adaptation. Involving 50 stakeholders (OPDs and Academics)
Output 1.2.1. Need assessment analysis of effective management instrument available	No	No significant risks identified. This analysis aims to identify the needs for effective management instruments with involving local farmers.
Output 1.2.2. Climate change adaptation management instrument developed	No	No significant risks identified. This management instrument will assist in decision-making related to climate change adaptation.
Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration	No	No significant risks identified. This PROKLIM registration can strength climate adaptation action at village level
Output 2.1.1. Village level climate change risks and vulnerability assessment developed	No	No significant risks identified. This assessment will identify climate change risks and vulnerabilities at the village level. The project will cover up to 6 assessment reports for all villages.
Output 2.1.2. WEF nexus-based adaptation options indentified by target group (vulnerable groups, farmers, village government staffs)	No	No significant risks identified. This activity will identify suitable WEF-based adaptation options for target groups. The project will laveraging numbers of options each for adaptive water, food/agriculture, and renewable energy management.
Output 2.1.3. Village WEF nexus-based adaptation action plan developed	No	No significant risks identified. This action plan will help villages develop WEF-based adaptation strategies. Target: 6 village action plans.
Output 2.1.4. Village-based adaptive water management and physical infrastructure development	Yes, Principle 15 Lands and Soil Conservation	Risks related to land and soil conservation. The physical construction of adaptive water infrastructure may cause changes to soil and land conservation. The physical construction of adaptive water infrastructure, including NbS knock-down levees along the river (500 meters), ponds, and a mini nature-based water treatment plant & distribution pipe, may affect soil and land conservation. Risks include potential impacts on soil quality, which must comply with Undang-Undang No. 32 Tahun 2009, requiring an Environmental Impact Assessment. Additionally, these activities may influence the hydrological system, necessitating adherence to Peraturan Pemerintah No. 37 Tahun 2010 to manage river

		basins and prevent floods, erosion, and sedimentation. To mitigate these risks, the project will implement Nature-Based Solutions (NbS) for water management, enhancing resilience while aligning with regulatory frameworks.
Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development	No	No significant risks identified. This activity will improve adaptive agriculture management and develop physical infrastructure in villages. This output will be improve resilience covers 50 hectares plantation areas, that beneficiaries around 200 farmers.
Output 2.1.6. Village-based adaptive renewable energy management	No	No significant risks identified. Village-based renewable energy management will support climate information systems. This output targetting 1 climate information system. Involving 90 stakeholders (OPDs).
Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available	No	No significant risks identified. Supply chain mapping and development plans for leading commodities will help understand market demands, by targeting 1 supply chain and market demand analysis. This output will be involving academics, OPDs, civil society, vulnerable peoples, and farmers.
Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers	No	No significant risks identified. These options will help farmers increase the value of their commodities through derivative products, by produce 1 document each for options to improve commodities value, derivatives products, and efficient commodities distribution. This output will be involving academics, OPDs, civil society, vulnerable peoples, and farmers.
Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place	No	No significant risks identified. Enhancing technical capacity and providing tools/machinery for farmers will help them produce value-added products. Target: 60 farmers with technical capacity and access to tools/machinery.
Output 3.1.1. IEC materials and tools design based on local context developed	No	No significant risks identified. IEC materials and tools designed based on local context will help disseminate knowledge. Target: IEC materials and tools design. This output will be involving local champion, OPDs, government agencies (K/L), local journalist, and civil society.
Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched	No	No significant risks identified. The Center of excellence digital platform will disseminate knowledge, lessons learned, and best practices developed during the project. This output will be involving OPDs, government agencies (K/L), and civil society.

115. Based on the risk assessment above, the consortium acknowledges the potential risks of the proposed project. It considers minor, small scale (limited impacts and not widely spread), reversible, and easily mitigated risks. Therefore, the project can be categorized as “Category B” about Adaptation Fund’s Risk

Categorization. The Environmental and Social Management Plan Document describes the potential direct, indirect, transboundary and cumulative risks and impacts and their respective mitigation measures in more detail.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Arrangements for Project/Programme Implementation

116. Konsorsium Lingkungan Adaptif, Berketahanan, Inovatif, dan Partisipatif (Kolaborasi) consists of 4 (four) organizations: (1) Yayasan Koaksi Indonesia, as the Lead Organisation; (2) Lingkar Temu Kabupaten Lestari (LTKL); (3) Earth Innovation Institute (EII); and (4) Alliance for Water Stewardship Indonesia (AWS Indonesia).

117. Yayasan Koaksi Indonesia or Coaction Indonesia is a non-profit organization that acts as a network and knowledge hub. Coaction's target is to realize sustainable development throughout the archipelago by accelerating the energy transition from fossil-based energy to renewable energy through three approaches: advocacy work, public campaigns, and strategic partnerships. Coaction collaborates with policymakers, the private sector, academia, community organizations, and youth activists in providing answers to the challenges of the energy transition through policy breakthroughs, funding, technology, and human resources. Established on March 16, 2017, some of Coaction's flagships include: 1) Influence Indonesia's biofuel policy; 2) Encourage safeguards for strategic renewable energy technologies developed in Indonesia, 3) Open access to renewable energy to areas that are considered underdeveloped, frontier, and outermost regions; 4) Increase conversation and discourse on Green Jobs as a critical intervention for renewable energy to reach youth in the energy transition wave, 5) Amplify just climate action voices from local to national, 6) Develop learning exchange platforms for civil society organizations on climate and energy issues, 7) Deliver systemic change from strategic partnerships with several coalitions, alliances, and associations, such as Bersih Indonesia (with 30 civil society organizations), Voices for A Just Climate Actions (with 18 civil society organizations), and is a partner of the Sustainable District Platform (LTKL).

118. Lingkar Temu Kabupaten Lestari (Sustainable District Association in English) is an association of district governments formed and managed by the district government in order to realize sustainable land-use at subnational level that protects the environment and improves community welfare through partnership and collaborations. LTKL was established in July 2017 as a caucus for sustainable development under the Association of Indonesian Regency Government (APKASI). Currently, LTKL has 9 active member districts, including Sigi District, in 6 provinces in Indonesia and works side by side with 21 multi-stakeholder partner networks. LTKL General Assembly in 2019 decided that sustainable commodities, including sustainable products utilizing natural resources, were a priority for LTKL members to achieve national targets to obtain quality investment, create jobs and prevent disaster risks. As a forum, LTKL functions as an aid for district members in developing implementation strategies, connecting with the right partners to increase capacity and acquire incentives for sustainable development efforts, and sharing the opportunities and challenges for sustainable development to the public.

119. EII is a non-profit, applied research and policy institute with a mission to promote climate-friendly rural development through innovative, jurisdictional approaches to sustainable agriculture, forestry and food systems in tropical regions around the world. EII provides direct technical, strategic and convening support to governments, companies, indigenous peoples' organizations and farmers in support of jurisdictional REDD+ and low-emission, low-deforestation rural development. EII has established itself as an international organization working across several geographies to support tropical nations and states that are striving to lower their greenhouse gas emissions from land use as they conserve biodiversity and water resources, secure food and agricultural production systems, and strengthen traditional and indigenous claims on natural resources. EII helps lay the groundwork for a transition to sustainable, productive rural development by building multi-stakeholder consensus in support of this agenda, identifying opportunities within government programs and policies to foster good land management through proper planning and land classification, a plantation licensing process, environmental monitoring, and law enforcement.

120. AWS Indonesia is a foundation established to grow and strengthen the leadership of stakeholders in Indonesia in caring for and managing water resources convincingly and reliably that preserve the implementation of the social, cultural, and economic values of water. Yayasan AWS Indonesia wants to inspire users and managers of water to actively participate in maintaining and taking care of water resources on the land of Indonesia. The foundation was established for humanitarian purposes, specifically in growing and strengthening the leadership of stakeholders in Indonesia in caring for and managing water resources convincingly and reliably that preserve the implementation of water values not only in the economic aspect but also in socio-cultural and environmental. AWS water stewardship approach is embodied in the International Water Stewardship Standard (AWS Standard). The AWS Standard is an ISEAL standard and a globally applicable framework that drives, recognizes, and rewards good water management practices. Since 2019, AWS Indonesia has been an active promoter of good water stewardship and become a partner of Alliance for Water Stewardship. AWS Indonesia also works together with Water Stewardship Asia Pacific to promote water stewardship.

121. In conducting the proposed project, the consortium will work closely with a variety of local stakeholders. These include relevant governmental institutions, such as the Development Planning and Research Agency (Badan Perencanaan Pembangunan, Penelitian dan Pengembangan Daerah or BP3D), Environmental Agency (Dinas Lingkungan Hidup) and the Disaster Management Agency (Badan Penanggulangan Bencana Daerah or BPBD); all of which had been consulted during the process of concept note development and had expressed the utmost support for this project. The consortium will also work closely with the district-level working group for climate change adaptation, involving it from the commencement of the project and ensuring adequate capacity for project implementation within and beyond the project period.

122. The communication strategies for project coordination, reporting, monitoring and evaluation will include regular coordination meetings, with daily

communication done through project management platforms, emails and online messaging platform

B. Financial and Project/Programme Risk Management

123. The implementation of the project carries several financial and management risks, each with corresponding mitigation strategies. Institutional risks include differing knowledge within the team and personnel changes, which can be mitigated through the internalization of organizational culture via SOPs and accessible documentation. The risk of not meeting program outcomes is significant but can be managed through regular monitoring, evaluations, and monthly meetings. Financial risks, such as currency exchange fluctuations and disbursement delays, are significant and require careful planning and transparent countermeasures. Social risks include ensuring gender equality and legal access for community management, addressed by inclusive participation and facilitation efforts. Environmental risks involve potential adverse effects on living organisms and the environment, which necessitate thorough risk assessment and mitigation. Political risks, such as leadership changes due to elections, require ongoing updates and renewed government endorsements.

Categories	Potential Risk	Level	Mitigation Strategy
Institutional	Different knowledge in the team and changes in personnel	Moderate	Internalization of organizational culture through SOPs Institutional documentation is stored in project reports and accessible storage, such as Google Drive as cloud-based storage and sharing management
	The targeted program's outcome and output are not met by the end of the grant cycle	Significant	A monitoring and evaluation mechanism is established and utilized regularly by the team Monthly meetings and reports are conducted to identify bottlenecks and solutions in the program implementation
	Multiple compressed schedules due to some overlapped activities	Moderate	Each activity is organized and handled by different key PICs so the preparation of overlapped activities can still be carried out simultaneously
	Changes in organizational planning or strategy due to the long ongoing COVID-19 pandemic	Moderate	Communicate actively with partners during the Covid-19 pandemic situation to find a broader perspective in making the best decisions in activities Health is our priority. The working mode is determined dynamically according to the current situation and conditions associated with the provisions of restrictions from the government, both national and local, when working in the field, following the requirements of the health protocol Each activity has a contingency plan to accommodate the worst-case scenario if one or more team members are infected with the Covid-19 virus

			All our teams are required to have national health insurance (BPJS/JKN-KIS) Hold regular check-in to listen to staff needs for motivation and mental health awareness
Financial	Changes in currency exchange rate lead to changes in the proposed budget items and the impact on the budget proposed for activities in the work plan	Significant	Using the currency exchange rate according to: The trend before proposal submission The exchange rate according to the time of disbursement Readjustment of budget after the disbursement
	Delays in disbursement will hinder the process of implementation and its impact on the outputs' achievement	Significant	Funding and financing countermeasures
	Disbursement schemes that require initial financing	Significant	This disbursement scheme needs to be known in advance so that countermeasures can be made, especially among the consortium members. The issue of transparency is critical in financing.
Social	The involvement of communities in several activities does not refer to gender equality and inclusive manners	Significant	Needed to ensure the involvement of representatives from the vulnerable groups in every activity possible, mainly on-the-ground activities
	Obtained organizational and legal access to communities to manage programs sustainably	Significant	Community facilitation to obtain organizational and legal access that is suitable and agreed by the community, either through the existence of village-level enterprise or cooperation
	No channels play the role of a multistakeholder forum to accelerate climate change adaptation efforts	Significant	Join the regional and local Disaster Risk Reduction Forum of Central Sulawesi as the caucus for climate change adaptation accelerator
Environmental	Availability of actual or potential threat of adverse effects on living organisms and environment by effluents, emissions, wastes, resource depletion, etc., arising out of project activities. The threat would result in financial loss that occurs due to: 1.) Liability for personal injury and property damage; 2.) Liability for the remediation of environmental impacts; 3.) First party loss arising from an environmental impact. (e.g. owned property damage and restoration, business interruption, etc.) 4.) Civil fines and penalties as well as compensation for impaired natural resources.	Significant	Environmental risk identification, assessment, and evaluation. These efforts involve determining the magnitude of identified risks (the combination of likelihood and consequence) and making decisions about whether they are acceptable or whether they warrant treatment.
Political	Change in leadership due to the election results in 2024	Significant	Updating the latest relevant leadership and renew the endorsement from the government based on the existing letter given for the project

C. Environmental and Social Risk Management

124. As the project is more toward strategic planning and programming, the possibility of negative environmental and social impacts and risks are very minimal.

125. Collaboration with different stakeholders across different stakeholder groups in the district will also enable the identification of risks across different sectors, along with preventive measures to be taken as early as possible to ensure that the potential environmental and social risks are minimized. Safeguarding policy from each organization and for the project must be made clear to avoid any breach of the safeguard policy.

Environmental and Social Principles	Description of Risks	Risk Category (H/M/L)	Risk Mitigation Strategy
Lands and Soil Conservation	The physical construction of adaptive water infrastructure, including NbS knock-down levees along the river (500 meters), ponds, and a mini nature-based water treatment plant & distribution pipe, may affect soil and land conservation.	Medium	This project component will comply with Undang-Undang No. 32 Tahun 2009, requiring an Environmental Impact Assessment. Additionally, the project will follow Peraturan Pemerintah No. 37 Tahun 2010 to manage river basins and prevent floods, erosion, and sedimentation. The implementation of NbS for water management will be monitored to ensure minimal impact on soil and land conservation.
	Impact on Soil Quality: Construction activities may lead to soil erosion and degradation, impacting agricultural productivity and local ecosystems.	Low	To mitigate soil erosion and degradation, NbS such as the creation of riparian buffers and vegetative swales will be implemented. These solutions are supported by studies showing their effectiveness in stabilizing soil and improving water quality. Regular monitoring and maintenance will be conducted to ensure soil quality is preserved.
	Influence on Hydrological System: The construction of water infrastructure might disrupt the natural hydrological system, leading to issues such as altered water flow, increased flood risk, and reduced water quality.	Low	In accordance with Peraturan Pemerintah No. 37 Tahun 2010 and Undang-Undang No. 11 Tahun 1974, the project will employ NbS like wetland restoration and floodplain reconnection. These methods have been shown to enhance flood resilience and improve water quality by mimicking natural hydrological processes (Source: Water Research, 2019).

D. Monitoring and Evaluation Arrangements

126. Monitoring and Evaluation of Climate Change Adaptation (M&E) consist of these components (1) Strategy and objectives; (2) Achievement Indicators; (3) Implementation of Activities; (4) Financial Use, which refer to:

a. Compliance (compliance); whether the project implementation follows existing standards and procedures
b. Examination (auditing); whether the resources and services intended for certain parties (target audience/beneficiaries) are accountable
c. Reports (accounting); generating information or proof of evidence to measure the social changes based on the financial traceability

d. Explanation (narrative); generating storytelling to justify that the project implementation is consistent with the planning and below or beyond the target.

127. M&E is carried out throughout the planning, implementation, and reporting stages based on the availability of 1) Activity Report or Back-to-officer Report (field visit), 2) Quarterly/Progress Reports, 3) Annual Reports, and 4) Final Report.

a. **Activity Report:** The reporting process will take place after every activity is carried out. These reports identify who attends the activity and points of discussion/actions. The pieces should also include documentation and financial statements.
b. **Quarterly Reports:** The consortium members will report every three months to summarize achieved activities and output levels that contribute to the expected results.
c. **Annual Reports:** Annual reports consist of progress and achievements within a year of implementation and whether the project has succeeded in harvesting the planned outcome.
d. **Final Report:** The Project Final Report is intended to summarize the project's outcomes and is the final document of the Kolaborasi Project. Relevant stakeholders can use the report to document project successes, lessons learned, and performance to signal future project delivery improvement.

E. Results Framework

128. The Results Framework for the project in Sigi District is structured into three main components.

Component 1 focuses on strengthening the enabling environment to support adaptation policy implementation, aiming to improve the institutional capacity of local stakeholders through training, establishing working groups, and developing climate change vulnerability assessments and technical capacity building.

Component 2 applies the Water-Energy-Food (WEF) nexus approach to enhance the effectiveness of the district's Climate Change Adaptation Action Plan at the village level. This involves developing participatory adaptation action plans, vulnerability assessments, and implementing adaptive water, agriculture, and renewable energy management strategies.

Component 3 establishes a Center of Excellence for climate change adaptation at the district level. This component focuses on developing and disseminating learning and communication tools for replication, creating digital platforms to share knowledge, lessons learned, and best practices from the adaptation projects, ensuring wider stakeholder engagement and public access.

Outcome/Output	Indicator	Baseline	Target	Source of Verification	Risk and Assumption	Activity
Component 1. Strengthened enabling environment to support Adaptation policy implementation in Sigi District						

Outcome 1.1. Improved institutional capacity of local stakeholders at district-level on WEF nexus-based climate change adaptation	**Number of district-level stakeholders trained on WEF nexus-based climate change adaptation**	**The institutional capacity of local stakeholders in Sigi District for planning and implementing climate change adaptation measures is unknown and capacity improvement has not been conducted**	**6 district-level stakeholders**	**Assessment reports, activity reports, decision letters, documentation**	**Assumption: Sigi district government is committed to improved its understanding and capacity on climate change adaptation** **Risks: Capacity building might successful at individual level but not institutional/systemic level**	
Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place	Number of climate change adaptation champions identified and appointed for each relevant stakeholders	0	10 champions from 6 relevant stakeholders (OPD & academics)	Appointment letter from the agencies	Assumption: Key stakeholders willing to nominate the their champions Risks: Staff rotation	Activity 1. Establish comprehensive (baseline,mid,endline) understanding of current institutional awareness on WEF Nexus-based climate change adaptation
						Activity 2. Develop a detailed awareness programme on WEF Nexus-based Climate Change Adaptation
						Activity 3. Workshop on climate change adaptation - WEF approach
						Activity 4. Awareness Video/Photo/Poster competition among relevant district-level stakeholders and for public on WEF Nexus-based Climate Change Adaptation
Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum	Number of district-level working group for climate change adaptation established for spearheading climate change adaptation efforts in the district	0	1 district-level working group for climate change adaptation established and operating	Activity report, documentation, Team development decision letter (SK pembentukan tim atau Surat Tugas)	Assumption: Head of District supports the establishment of working group under the district multistakeholder forum Risks: SK for working group not issued/takes time to be issued	Activity 1. Brainstorming on the idea of working group establishment (role, function, workplan of draft working group)
						Activity 2. Drafting decision letter (SK) of Working Group
						Activity 3. Launching working group (discuss and agree on working group work plan)

Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach	Availability of vulnerability assessment report on climate change adaptation	0	1 district-wide climate change vulnerability assessment report	Copy of assessment report	Assumption: There is a high interest from the Sigi District Governemnt to understand the critical vulnerability of the district aganst climate change Risk: Limited information (inputs) for the management instrument (database management)	Activity 1. Climate change vulnerability assessment through secondary data and FGD Activity 2. Develop climate change vulnerability assessment report
Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated	Number of representatives of relevant stakeholders participating in technical capacity building	0	50 representatives	Modules, documentation, training certificate	Assumption: Willingness to participate is high Risks: Number of representatives from relevant stakeholders is low	Activity 1. Conducting need Assessment on Climate Change Adaptation Preparedness Activity 2. Develop a detailed training program and set of modules of technical training Activity 3. Workshop and technical training on climate change adaptation Topic 1. Climate hazard & impact (Climate rationale) Topic 2. Adaptive water management Topic 3. Adaptive food management Topic 4. Adaptive energy management Topic 5. Socio economic resilience Topic 6. Policy development (background study) Topic 7. Climate registry national (SRN) & inventory GHG (SIGN SMART-IGRK) Topic 8. GEDSI mainstreaming Activity 4. Technical assistance and facilitation for background study for Climate Change Adaptation Action Plan (RAD-API)

Outcome 1.2. Management instruments to support effective implementation of climate change adaptation efforts at Sigi District developed and operationalized	**Number of users (OPD, farmers, university, public)**	**Non-existing**	**5 OPD 5 Farmers group 5 Universities 10 Senior High School**	**Management instrument engagement statistic report (website analytics report)**	**Assumption: There is a need for OPD, farmers, university and public to have management instruments Risk: 1. Limited information (inputs) for the management instrument (database management) 2. Limited internet access**	
Output 1.2.1. Need assessment analysis of effective management instrument available	Availability of need assessment report on management instrument	0	1 Assessment report	Assessment document	Assumption: There is a high demand on management instrument to help in making-decision Risk: Limited information (inputs) for the management instrument (database management)	Activity 1. Initial assessment with interview and desk-analysis
						Activity 2. Consultation with Focus group discussions on management instruments with multistakeholders platform
Output 1.2.2. Climate change adaptation management instrument developed	Number of climate change adaptation management instruments	0	3 management instruments	One stop web portal	Assumption: There is a high demand on management instrument to help in making-decision Risk: Limited information (inputs) for the management instrument (database management)	Activity 1. Design management instrument
						Activity 2. Development of management instruments
						Activity 3. User trial test of management instruments
						Activity 4. Dissemination & training of management instrument
						Activity 5. Climate awareness goes to schools (trainings)
Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration	Number of villages registered under PROKLIM	0	up to 100 climate communities	PROKLIM registration documents, reports from facilitators	Assumption: Community and local authorities are willing to participate and cooperate Risk: Lack of awareness or understanding about PROKLIM; potential resistance from local	Activity 1. Workshop, training, and socialization PROKLIM at village level
						Activity 2. PROKLIM registry assistance with enumerators

					authorities or communities	
Outcome/Output	**Indicator**	**Baseline**	**Target**	**Source of Verification**	**Risk and Assumption**	**Activity**
Component 2. WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan						
Outcome 2.1. Participatory WEF nexus-based adaptation action plan developed & applied at village level	**Number of villages developing WEF nexus based adaptation action plans**	**0**	**6 villages**	**WEF Nexus-based Adaptation Action plan, report, feedback**	**Assumption: There is a high demand on from village to develop WEF Nexus-based Local Adaptation Plan** **Risk: Limited data & information (inputs) to develop action plan**	
Output 2.1.1. Village level climate change risks and vulnerability assessment developed	Availability of village level climate change risks and vulnerability assessment	0	6 assessment reports	MoM of FGDs, assessment reports	Assumption: There is a high demand on from village to develop WEF Nexus-based Local Adaptation Plan Risk: Limited data & information (inputs) to develop action plan	Activity 1. Focus grup discussions (preparedness and awareness on climate change risk and vulnerability assessment) Activity 2. Develop rapid assessment on climate change risks and vulnerability Activity 3. Diseminate result of rapid assessment to all village stakeholders
Output 2.1.2. WEF nexus-based adaptation options indentified by target group (vulnerable groups, farmers, village government staffs)	Number adaptation options identified	0	2 options on adaptive water management 2 options on adaptive food/agriculture management 2 options on adaptive renewable energy management	FGDs reports IEC (information, education, and communication) materials of options	Assumption: There is a high demand on adaptation options from village Village already has adaptation options (local wisdom) Risk: Adaptation options are not suitable for village context	Activity 1. Develop pre-material on adaptation options Activity 2. Facilitate FGDs on adaptation options Activity 3. Develop IEC materials of identifed adaption options (WEF Nexus)
Output 2.1.3. Village WEF nexus-based adaptation action plan developed	Number of action plan	0	6 village action plan	Action plans and Report	Assumption: There is a high demand on from village to develop WEF Nexus-based Local Adaptation Plan Risk:	Activity 1. Develop action plan Activity 2. Support village to propose identified actions to be financed by village fund and by Adaptation Fund

					Limited data & information (inputs) to develop action plan	Activity 3. Workshop on viillage climate adaptation plan
Output 2.1.4. Village-based adaptive water management and physical infrastructure development	Number of household with improved resiliency against flood and improved resiliency on safe access to water and sanitation during drought/dry season	0	150 household with improved resilience against floods or drought	Construction reports, field survey reports	Assumption: Village community and village staff willing to contribute and involved in the construction as part of the on-the-job-training for capacity building of the community Risk: 1. Community reluctant to be involved 2. Safety for community and all people involved in physical construction	Activity 1. Strengthen water adaptive management village task force
						Activity 2. WASH household-based e-Survey
						Activity 3. Develop activity plan for adaptive water management, physical construction, operation & maintenance, and monitoring/evaluation
						Activity 4. Evidence-based planning and budgeting for village WASH program
						Activity 5. Physical construction of adaptive water infrastructure (NbS knock-down levee along the river 500 meter)
						Activity 6. Physical construction of adaptive water infrastructure (ponds)
						Activity 7. Physical construction of adaptive water infrastructure (mini nature-based water treatment plant & distribution pipe)
						Activity 8. Physical construction of adaptive water infrastructure (household water and sanitation facility)
Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development	-Number of plantation areas with improved resiliency aginst flood -Number of plantation areas with sustainable irrigation	0	50 hectares plantation areas (flood)	Construction reports, field survey reports	Assumption: Village community and village staff willing to contribute and involved in the construction as part of the on-the-job-training for capacity	Activity 1. Strengthen adaptive Agriculture management village task force (Kelompok Tani)
						Activity 2. Survey of flood prone agriculture areas

	during drought/long dry season				building of the community Risk: 1. Community reluctant to be involved 2. Safety for community and all people involved in physical construction	Activity 3. Develop activity plan for adaptive agriculture management & physical infrastructure
						Activity 4. Build demonstration plot nursery to produce seedlings for the establishment of plantations
						Activity 5. Improvement/construction of agriculture irrigation/drainage system
						Activity 6. Flood plain development
						Activity 7. Retention well construction in flood prone areas of plantations
Output 2.1.6. Village-based adaptive renewable energy management	Number of climate information system that rely on renewable energy system	0	1 climate information system that rely on renewable energy system	Module documentation, installation reports, user feedback, attendance records, certificates	**Assumption:** Continued support from local authorities and stakeholders **Risk:** 1. Community reluctance to participate 2. Unforeseen logistical and environmental challenges affecting project implementation	Activity 1. Development module of efficiency and energy management
						Activity 2. Solar PV installment for climate impact information
						Activity 3. Climate IoT tools and software development for supporting sustainable agriculture
						Activity 4. Improving internet access for climate resilience information
						Activity 5. Capacity building to build the technical skills related to the installation and use of solar PV systems and climate IoT tools
						Activity 6. Conducting FGD for Community-driven climate resilience information sharing
						Activity 7. Conducting for Workshop Community

						awareness on energy efficiency and management
Outcome 2.2. Increased economic, social, livelihood, resilience in the local community	**Number of farmers with increased income due to project intervention**	**0**	**60 farmers**	**Assessment reports, activity reports, documentation**	**Assumption: There is a high willingness from farmers to revisit the business model of their comodities and its derivative products** **Risk: Farmers reluctant to develop derivatives products**	
Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available	Availability of supply chain and market demand on leading commodities and derivative products	Non-existing	Supply chain and market demand analysis for leading comomodities and derivative products is available	Analysis report, sustainabale commodities development plan	Assumption: High demand on the leading commodities and derivative products Risk: Low demand on the leading commodities and derivative products	Activity 1. Conduct supply chain analysis on leading commodities Activity 2. Conduct market demand and distribution analysis on leading commodities and derivative products Activity 3. Develop sustainable commodities development plan
Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers	-Number of options to improve commodities values -Number of derivatives products with higher value to be added as additional products of farmers -Availability of analysis of efficient commodities distribution	Non-existing	1 document about options to improve commodities value 1 document about derivatives products 1 analysis of efficient commodities distribution	Activity report, Documentation	Assumption: High demand on the leading commodities and derivative products Risk: Distribution of the leading commodities and derivative products might still be too expensive	Activity 1. Identification of preferable derivative products to be further developed to increase income of farmers Activity 2. Conduct identifed derivative products distribution analysis to ensure product reaching the right market at the right time (including identinfying buyers)
Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place	-Number of farmers with technical capacity to produce value-added products -Number of farmer with access to tools/machinery to produce derivative products	Non-existing	60 farmers with technical capacity to produce derivative products 60 farmers with access to tools/machinery to produce derivative products	Activity report, Documentation	Assumption: High demand on the leading commodities and derivative products Risk: Tools/machinery is not easy to operate	Activity 1. Training of trainers for farmers on value-added commodities production Activity 2. Developing appropriate Processing Tools/Machinery/Technology for the farmers (to be

	-Availability of tools/machinery to produce derivative products		1 tools/machinery to produce derivative products available			granted to Village enterprise/BUMDes)
						Activity 3. Training for village enterprises to develop business model e.g. market, distribution, and Return of Investment (RoI)
						Activity 4. Workshop on increasing on economic, social, livelihood, resilience in the local community
Outcome/Output	**Indicator**	**Baseline**	**Target**	**Source of Verification**	**Risk and Assumption**	**Activity**
Component 3. Center of excellence of climate change adaptation at district level						
Outcome 3.1. Learning and Communication Tools targeted for replication developed based on Monitoring, Evaluation & Learning (MEL) throughout the process	**Availability of IEC materials and tools**	**Non-existing**	**IEC materials and tools available**	**Activity report, Documentation**	**Assumption: IEC materials and tools are easily accessible through online** **Risk: Onlice access to IEC materials and tools is limited**	
Output 3.1.1. IEC materials and tools design based on local context developed	Availability of IEC materials and tools design based on local context	Non-existing	IEC materials and tools design based on local context developed	Activity report, documentation	Assumption: Local experts to provide insgihts on the local context are available Risk: Local context wisdom/value is not supporting climate change adaptation principle	Activity 1. Identify local context on adaptation efforts for designing IEC materials and tools
						Activity 2. Developing IEC materials and tools design based on local context and lessons learned from the project
						Activity 3. Public consultation on the IEC materials and tools
						Activity 4. Finalization of IEC materials and tools design based on local context
						Activity 5. Development of project lessons learned

						Activity 6. Develop communication strategy
						Activity 7. Create short documentary about community based climate adaptation
						Activity 8. Dissemenation of communication product (short documentary)
Outcome 3.2. Disseminated knowledge lesson learned and best practices for further replication by District	**Availability of knowledge, lessons learned and best practices of the adaptation projects that is accessible by publics**	**Non-existing**	**Knowledge, lessons learned and best practices of the adaptation projects that is accessible by publics is available**	**Activity report, Documentation**	**Assumption: Centre of excellence digital platform is prefered as effecitve and efficient tools for dissemination to wider stakeholders** **Risk: Disemination efforts frequency is limited Other adaptation projects knowledge, lessons learned and best practices are not submitted to the same centre of excellence platform**	
Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched	Availability of centre of excellence on climate change adaptation in Sigi District	Non-existing	Center of Excellence digital platform to disseminate knowledge, lessons learned and best practices available and launched	Activity report, Documentation	Assumption: Centre of excellence digital platform is prefered as effecitve and efficient tools for dissemination to wider stakeholders Risk: Disemination efforts frequency is limited Other adaptation projects knowledge, lessons learned and best practices are not submitted to the same centre of excellence platform	Activity 1. Design centre of excellence digital platform
						Activity 2. User trial test of the centre of excellence digital platform
						Activity 3. Sub national policy dialogue for identification learning and sharing climate adapatation action plan (district and province)
						Activity 4. Launcing of Sigi District Climate Change Adaptation Centre of Excellence (back-to-back with Closing Ceremony of the Projects)

F. Project/Programme Aligns With The Results Framework of The Adaptation Fund

129. The project objectives align with the Adaptation Fund Result Framework through various indicators and outcomes. It aims to improve adaptive capacity in water, food/agriculture, and energy management. This includes appointing climate change adaptation champions to enhance local awareness (Outcome 3, Indicator 3.1) and establishing district-level working groups to bolster institutional capacity (Outcome 2, Indicator 2.1). The availability of vulnerability assessments and technical capacity building further reduce exposure to climate-related hazards (Outcome 1, Indicator 1.1). Additionally, action plans and improved resiliency in households and plantation areas enhance adaptive capacity within development sector services (Outcome 4, Indicator 4.2). Diversification of livelihoods through technical training and renewable energy initiatives supports increased resilience and sustainable income for vulnerable populations (Outcome 6, Indicators 6.1 and 6.2). The establishment of a Center of Excellence and dissemination of innovative adaptation practices foster broader adaptation efforts (Outcome 8, Indicator 8.1).

Project Objective(s)	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
Improve adaptive water, energy, and food (WEF) management capacity	Number of climate change adaptation champions identified and appointed for each relevant stakeholders	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level	3.1. Percentage of targeted population aware of predicted adverse impacts of climate change, and of appropriate responses	$44.787
	Number of district-level working group for climate change adaptation established for spearheading climate change adaptation efforts in the district	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	$10.882
	Availability of vulnerability assessment report on climate change adaptation	Outcome 1: Reduced exposure to climate-related hazards and threats	1.1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	$4.782
	Number of representatives of relevant stakeholders participating in technical capacity building	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	$183.398
	Availability of need assessment report on management instrument	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	$3.949
	Number of climate change adaptation management instruments	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	$22.843
	Number of villages registered under PROKLIM	Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.1. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	$22.320

	Availability of village level climate change risks and vulnerability assessment	Outcome 1: Reduced exposure to climate-related hazards and threats	1.1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	$20.852
	Number adaptation options identified	Outcome 1: Reduced exposure to climate-related hazards and threats	1.1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	$21.949
	Number of action plan	Outcome 5: Increased ecosystem resilience in response to climate change and variability- induced stress	5.1. Ecosystem services and natural resource assets maintained or improved under climate change and variability-induced stress	$42.033
	Number of household with improved resiliency against flood and improved resiliency on safe access to water and sanitation during drought/dry season	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	$125.060
	-Number of plantation areas with improved resiliency aginst flood -Number of plantation areas with sustainable irrigation during drought/long dry season	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	$118.220
	Number of climate information system that rely on renewable energy system	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.2. Physical infrastructure improved to withstand climate change and variability-induced stress	$41.366
	Availability of supply chain and market demand on leading commodities and derivative products	Outcome 4: Increased adaptive capacity within relevant development sector services and infrastructure assets	4.1. Responsiveness of development sector services to evolving needs from changing and variable climate	$11.185
	-Number of options to improve commodities values -Number of derivatives products with higher value to be added as additional products of farmers -Availability of analysis of efficient commodities distribution	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.2. Percentage of targeted population with sustained climate-resilient alternative livelihoods	$5.792
	-Number of farmers with technical capacity to produce value-added products -Number of farmer with access to tools/machinery to produce derivative products -Availability of tools/machinery to produce derivative products	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.1. Percentage of households and communities having more secure access to livelihood assets	$50.190
	Availability of IEC materials and tools design based on local context	Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8.1. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level	$80.164
	Availability of centre of excellence on climate change adaptation in Sigi District	Outcome 8: Support the development and diffusion of innovative adaptation practices, tools and technologies	8.1. Innovative adaptation practices are rolled out, scaled up, encouraged and/or accelerated at regional, national and/or subnational level	$23.385

130. The project aims to enhance the capacity of local stakeholders at the district level on WEF Nexus-based climate change adaptation by training district-level stakeholders (Outcome 1.1), developing and operationalizing management instruments (Outcome 1.2), and creating participatory WEF nexus-based adaptation action plans at the village level (Outcome 2.1). Additionally, it seeks to increase economic, social, and livelihood resilience within local communities (Outcome 2.2). The project also focuses on developing and disseminating learning and communication tools for replication (Outcome 3.1) and ensuring that knowledge, lessons learned, and best practices are accessible to the public (Outcome 3.2). The project aligns with several Fund Outputs, including strengthening capacity to disseminate knowledge (Output 3.2), enhancing the capacity of centers and networks to respond to extreme weather events (Output 2.1), fortifying vulnerable sector assets (Output 4.1), bolstering community livelihood strategies (Output 6.1), and promoting viable innovations (Output 8.1).

Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	Grant Amount (USD)
Outcome 1.1. Improved institutional capacity of local stakeholders at district-level on WEF nexus-based climate change adaptation	Number of district-level stakeholders trained on WEF nexus-based climate change adaptation	Output 3.2: Strengthened capacity of national and subnational stakeholders and entities to capture and disseminate knowledge and learning	3.2.1 No. of technical committees/associations formed to ensure transfer of knowledge	**$243.849**
Outcome 1.2. Management instruments to support effective implementation of climate change adaptation efforts at Sigi District developed and operationalized	Number of users (OPD, farmers, university, public)	Output 2.1: Strengthened capacity of national and sub-national centers and networks to respond rapidly to extreme weather events	2.1.2 No. of targeted institutions with increased capacity to minimize exposure to climate variability risks (by type, sector and scale)	**$49.112**
Outcome 2.1. Participatory WEF nexus-based adaptation action plan developed & applied at village level	Number of villages developing WEF nexus based adaptation action plans	Output 4.1: Vulnerable development sector services and infrastructure assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by sector and scale)	**$369.480**
Outcome 2.2. Increased economic, social, livelihood, resilience in the local community	Number of farmers with increased income due to project intervention	Output 6.1: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts, including variability	6.1.2. Type of income sources for households generated under climate change scenario	**$67.167**
Outcome 3.1. Learning and Communication Tools targeted for replication developed based on Monitoring, Evaluation & Learning (MEL) throughout the process	Availability of IEC materials and tools	Output 8.1: Viable innovations are rolled out, scaled up, encouraged and/or accelerated	8.1.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	**$80.164**
Outcome 3.2. Disseminated knowledge lesson learned and best practices for further replication by District	Availability of knowledge, lessons learned and best practices of the adaptation projects that is accessible by publics	Output 8.1: Viable innovations are rolled out, scaled up, encouraged and/or accelerated	8.1.2. No. of key findings on effective, efficient adaptation practices, products and technologies generated	**$23.385**

G. Detailed Budget

131. The project has a total budget allocation of $833,157. The budget is divided among three main components. Component 1 Strengthened enabling environment to support Adaptation policy implementation in Sigi District has a budget of $292.961. This includes enhancing institutional capacity and developing management instruments. Component 2 WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan has a budget of $436.647, focusing on developing and applying adaptation action plans at the village level. Lastly, Component 3 Center of excellence of climate change adaptation at district level is allocated $103.549 for creating a center of excellence and disseminating knowledge and best practices.

Outcome/Output	Activity	Budget (US$)	Total Budget
Component 1. Strengthened enabling environment to support Adaptation policy implementation in Sigi District			**$292.961**
Outcome 1.1. Improved institutional capacity of local stakeholders at district-level on WEF nexus-based climate change adaptation			**$243.849**
Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place	Activity 1. Establish comprehensive (baseline,mid,endline) understanding of current institutional awareness on WEF Nexus-based climate change adaptation	$26.745	$44.787
	Activity 2. Develop a detailed awareness programme on WEF Nexus-based Climate Change Adaptation	$4.400	
	Activity 3. Workshop on climate change adaptation - WEF approach	$7.610	
	Activity 4. Awareness Video/Photo/Poster competition among relevant district-level stakeholders and for public on WEF Nexus-based Climate Change Adaptation	$6.032	
Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum	Activity 1. Brainstorming on the idea of working group establishment (role, function, workplan of draft working group)	$7.650	$10.882
	Activity 2. Drafting decision letter (SK) of Working Group	$1.616	
	Activity 3. Launching working group (discuss and agree on working group work plan)	$1.616	
Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach	Activity 1. Climate change vulnerability assessment through secondary data and FGD	$2.949	$4.782
	Activity 2. Develop climate change vulnerability assessment report	$1.833	

Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated	Activity 1. Conducting need Assessment on Climate Change Adaptation Preparedness	$3.476	$183.398
	Activity 2. Develop a detailed training program and set of modules of technical training	$7.998	
	Activity 3. Workshop and technical training on climate change adaptation	$57.720	
	Activity 4. Technical assistance and facilitation for background study for Climate Change Adaptation Action Plan (RAD-API)	$114.204	
Outcome 1.2. Management instruments to support effective implementation of climate change adaptation efforts at Sigi District developed and operationalized			**$49.112**
Output 1.2.1. Need assessment analysis of effective management instrument available	Activity 1. Initial assessment with interview and desk-analysis	$2.233	$3.949
	Activity 2. Consultation with Focus group discussions on management instruments with multistakeholders platform	$1.716	
Output 1.2.2. Climate change adaptation management instrument developed	Activity 1. Design management instrument	$10.284	$22.843
	Activity 2. Development of management instruments	$1.716	
	Activity 3. User trial test of management instruments	$900	
	Activity 4. Dissemination & training of management instrument	$1.783	
	Activity 5. Climate awareness goes to schools (trainings)	$8.160	
Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration	Activity 1. Workshop, training, and socialization PROKLIM at village level	$10.301	$22.320
	Activity 2. PROKLIM registry assistance with enumerators	$12.019	
Outcome/Output	**Activity**	**Budget (US$)**	**Outcome/Output**
Component 2. WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan			**$436.647**
Outcome 2.1. Participatory WEF nexus-based adaptation action plan developed & applied at village level			**$369.480**
Output 2.1.1. Village level climate change risks and vulnerability assessment developed	Activity 1. Focus grup discussions (preparedness and awareness on climate change risk and vulnerability assessment)	$5.519	$20.852

	Activity 2. Develop rapid assessment on climate change risks and vulnerability	$11.200	
	Activity 3. Diseminate result of rapid assessment to all village stakeholders	$4.133	
Output 2.1.2. WEF nexus-based adaptation options indentified by target group (vulnerable groups, farmers, village government staffs)	Activity 1. Develop pre-material on adaptation options	$8.568	$21.949
	Activity 2. Facilitate FGDs on adaptation options	$6.814	
	Activity 3. Develop IEC materials of identifed adaption options (WEF Nexus)	$6.567	
Output 2.1.3. Village WEF nexus-based adaptation action plan developed	Activity 1. Develop action plan	$16.000	$42.033
	Activity 2. Support village to propose identified actions to be financed by village fund and by Adaptation Fund	$22.000	
	Activity 3. Workshop on viillage climate adaptation plan	$4.033	
Output 2.1.4. Village-based adaptive water management and physical infrastructure development	Activity 1. Strengthen water adaptive management village task force	$10.320	$125.060
	Activity 2. WASH household-based e-Survey	$21.910	
	Activity 3. Develop activity plan for adaptive water management, physical construction, operation & maintenance, and monitoring/evaluation	$20.895	
	Activity 4. Evidence-based planning and budgeting for village WASH program	$4.360	
	Activity 5. Physical construction of adaptive water infrastructure (NbS knock-down levee along the river 500 meter)	$29.031	
	Activity 6. Physical construction of adaptive water infrastructure (ponds)	$14.170	
	Activity 7. Physical construction of adaptive water infrastructure (mini nature-based water treatment plant & distribution pipe)	$10.453	
	Activity 8. Physical construction of adaptive water infrastructure (household water and sanitation facility)	$13.921	
Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development	Activity 1. Strengthen adaptive Agriculture management village task force (Kelompok Tani)	$11.372	$118.220
	Activity 2. Survey of flood prone agriculture areas	$20.894	

	Activity 3. Develop activity plan for adaptive agriculture management & physical infrastructure	$1.227	
	Activity 4. Build demonstration plot nursery to produce seedlings for the establishment of plantations	$31.927	
	Activity 5. Improvement/construction of agriculture irrigation/drainage system	$17.400	
	Activity 6. Flood plain development	$20.000	
	Activity 7. Retention well construction in flood prone areas of plantations	$15.400	
Output 2.1.6. Village-based adaptive renewable energy management	Activity 1. Development module of efficiency and energy management	$1.667	$41.366
	Activity 2. Solar PV installment for climate impact information	$6.667	
	Activity 3. Climate IoT tools and software development for supporting sustainable agriculture	$15.000	
	Activity 4. Improving internet access for climate resilience information	$4.986	
	Activity 5. Capacity building to build the technical skills related to the installation and use of solar PV systems and climate IoT tools	$4.793	
	Activity 6. Conducting FGD for Community-driven climate resilience information sharing	$3.460	
	Activity 7. Conducting for Workshop Community awareness on energy efficiency and management	$4.793	
Outcome 2.2. Increased economic, social, livelihood, resilience in the local community			**$67.167**
Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available	Activity 1. Conduct supply chain analysis on leading commodities	$7.180	$11.185
	Activity 2. Conduct market demand and distribution analysis on leading commodities and derivative products	$2.194	
	Activity 3. Develop sustainable commodities development plan	$1.811	

Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers	Activity 1. Identification of preferable derivative products to be further developed to increase income of farmers	$3.984	$5.792
	Activity 2. Conduct identifed derivative products distribution analysis to ensure product reaching the right market at the right time (including identinfying buyers)	$1.808	
Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place	Activity 1. Training of trainers for farmers on value-added commodities production	$9.196	$50.190
	Activity 2. Developing appropriate Processing Tools/Machinery/Technology for the farmers (to be granted to Village enterprise/BUMDes)	$36.666	
	Activity 3. Training for village enterprises to develop business model e.g. market, distribution, and Return of Investment (RoI)	$3.345	
	Activity 4. Workshop on increasing on economic, social, livelihood, resilience in the local community	$983	
Outcome/Output	**Activity**	**Budget (US$)**	**Outcome/Output**
Component 3. Center of excellence of climate change adaptation at district level			**$103.549**
Outcome 3.1. Learning and Communication Tools targeted for replication developed based on Monitoring, Evaluation & Learning (MEL) throughout the process			**$80.164**
Output 3.1.1. IEC materials and tools design based on local context developed	Activity 1. Identify local context on adaptation efforts for designing IEC materials and tools	$2.986	$80.164
	Activity 2. Developing IEC materials and tools design based on local context and lessons learned from the project	$5.585	
	Activity 3. Public consultation on the IEC materials and tools	$8.545	
	Activity 4. Finalization of IEC materials and tools design based on local context	$6.431	
	Activity 5. Development of project lessons learned	$12.341	
	Activity 6. Develop communication strategy	$3.333	

	Activity 7. Create short documentary about community based climate adaptation	$17.000	
	Activity 8. Dissemenation of communication product (short documentary)	$23.943	
Outcome 3.2. Disseminated knowledge lesson learned and best practices for further replication by District			**$23.385**
Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched	Activity 1. Design centre of excellence digital platform	$14.145	$23.385
	Activity 2. User trial test of the centre of excellence digital platform	$4.454	
	Activity 3. Sub national policy dialogue for identification learning and sharing climate adapatation action plan (district and province)	$2.027	
	Activity 4. Launcing of Sigi District Climate Change Adaptation Centre of Excellence (back-to-back with Closing Ceremony of the Projects)	$2.759	
Project Activities Cost [IE] (A)			**$833,157**
Project Execution Cost: 9.5% (B)			**$87,459**
Implementing Entity Fee: 8.5% (C)			**$78,252**
Total Project Cost (A+B+C)			**$998,868**

H. Disbursement Schedule

132. The project is structured into three main components with a total budget of $998,867, distributed over two years. Component 1, focused on strengthening the enabling environment for adaptation policy implementation, has a total allocation of $249,253, with disbursements $69,167 (Mid-term 1) and $54,137 (Mid-term 2) periods of Year 1; and $89,383 (Mid-term 1) and $36,566 (Mid-term 2) periods of Year 2. Component 2, which applies the Water-Energy-Food (WEF) nexus approach, is the largest with a total budget of $480,361, allocated $91,553 (M1Y1), $196,628 (M2Y1), $155,797 (M1Y1) and $36,383 (M2Y2). Component 3, aiming to establish a center of excellence for climate change adaptation, has a budget of $103,545. The overall project activities, including project execution and implementing entity fees, are budgeted at $833.159, $87,457, and $78,252, respectively.

Project Objective/Components	Output	Time-bound Milestones Disbursement Schedule per Objective - Cost				
		Year 1		Year 2		Total
		Mid-term 1	Mid-term 2	Mid-term 1	Mid-term 2	

Component 1. Strengthened enabling environment to support Adaptation policy implementation in Sigi District	Output 1.1.1. Awareness and understanding of key stakeholders at district level on climate change adaptation based on Water-Energy-Food Nexus is in place Output 1.1.2. A district-level working group for climate change adaptation established under the district multistakeholder forum Output 1.1.3. Climate change vulnerability assessment using district level data and indicators and climate modeling based on water-energy-food (WEF) nexus approach Output 1.1.4. Tailored technical capacity building on climate change adaptation for relevant stakeholders facilitated Output 1.2.1. Need assessment analysis of effective management instrument available Output 1.2.2. Climate change adaptation management instrument developed Output 1.2.3. Target villages are facilitated to prepare PROKLIM registration	$ 66.895	$ 69.463	$ 104.707	$ 51.896	$ 292.961
Component 2. WEF nexus approach applied to improve the effectiveness of District's Climate Change Adaptation Action Plan	Output 2.1.1. Village level climate change risks and vulnerability assessment developed Output 2.1.2. WEF nexus-based adaptation options identified by target group (vulnerable groups, farmers, village government staffs) Output 2.1.3. Village WEF nexus-based adaptation action plan developed Output 2.1.4. Village-based adaptive water management and physical infrastructure development Output 2.1.5. Village-based adaptive agriculture management and physical infrastructure development Output 2.1.6. Village-based adaptive renewable energy management Output 2.2.1. Supply chain mapping of leading commodities and commodities development plan is available Output 2.2.2. Options to improve leading commodities value through its derivative products are identified and implemented by farmers Output 2.2.3. Technical capacity of and tools/machinery for farmers to produce value-added products is strengthened and in place	$ 72.836	$171.628	$ 155.800	$ 36.383	$ 436.647

Component 3. Center of excellence of climate change adaptation at district level	Output 3.1.1. IEC materials and tools design based on local context developed Output 3.2.1 Center of excellence digital platform to disseminate knowledge, lessons learned and best practices developed and launched	$34.594	$10.885	$2.027	$56.043	$103.549
Project Activities Cost [IE] (A)						**$833,157**
Project Execution Cost: 9.5% (B)						**$87,459**
Implementing Entity Fee: 8.5% (C)						**$78,252**
Total Project Cost (A+B+C)						**$998,868**

Schedule	Upon Signature of agreement	One Year After Project Start	Total
Schedule Date	April 2025	March 2026	
Program Cost	$ 426.302	$ 406.855	$ 833.157
Project Execution Cost (PEC)	$ 45.059	$ 42.400	$ 87.459
Implementing Entity Fee	$ 40.065	$ 38.187	$ 78.252
Total	$ 511.426	$ 487.442	$ 998.868

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

A. Record of Endorsement on Behalf of The Government

MINISTRY OF ENVIRONMENT AND FORESTRY
DIRECTORATE GENERAL OF CLIMATE CHANGE

Manggala Wanabakti Building Block VII 12th Floor, Jalan Gatot Subroto – Senayan, Jakarta 10270
Phone +62 21 5730144 Fax. : +62 21 5730194
Website : http://ditjenppi.menlhk.go.id

Our Ref. : S.280/PPI/API/PPI-0/8/2022
Attachments :
Subject : **Letter of endorsement**

Jakarta, 5 August 2022

To:
The Adaptation Fund Board
c/o Global Environment Facility
Mail stop: N 7-700
1818 H Street NW
Washington DC 20433, USA

Dear Board Member,

Directorate General of Climate Change Ministry of Environment and Forestry as the National Designated Authority of Adaptation Fund in Indonesia through *Kemitraan* – Partnership for Governance Reform as the National Implementing Entity, have received and appraised 37 incoming concept notes.

After a thorough assessment process of the incoming concept notes, we come to the decision that the following 10 (ten) concept notes from 10 (ten) different organizations have met and are in accordance with the national priorities in the implementation of adaptation programs and activities to increase adaptive capacity and to reduce the impact and risks of climate change in vulnerable regions in Indonesia:

1. Yapeka: *Ecosystem-based Adaptation to Support Climate Resilience in Coastal and Small Islands of Rote Ndao and Sabu Raijua Districts in the Savu Sea*
2. TLKM; *Sustainable Landscape Governance: Towards Climate Resilience of Community in Tempe Lake Ecosystem*
3. KAPASITAS; *Adaptation to climate change through integrated forest management and sericulture business to achieve ecosystem resilience to food security for the Lake Tempe Catchment Area Community*
4. Garis Biru; *Strengthening the Adaptive Capacity of Coastal Village Communities in Supporting Food Security as a Response to Climate Change Through Stakeholder Elaboration Actions in West Sulawesi Province*
5. Sajogyo Institute; *Collaboration for the Conservation of Cimandiri WatershedLandscapes through the Potential of Silvopasture and Community Agroforestry*
6. KOAKSI; *Building Climate Resilient District in Indonesia: Case of Sigi District*
7. KEMITRAAN; Village Based Coastal Adaptation and Resilience in Lombok Province of West Nusa Tenggara
8. HUMA; *Change Climate and Adaptation in the Buffer Area of the New National Capital*
9. Mitra Aksi; *Increasing the resilience of smallholders from climate impacts through Smart Agriculture based on Livelihood Diversification in Indonesia*
10. KUAT (KARSA); *Strengthening Community Adaptation toward Climate Change trough ProKlim in Ecoregion Neck of Sulawesi Island*

With this consideration, and in my capacity as the National Designated Authority of Adaptation Fund in Indonesia, I recommend the above proposals be granted support from the Adaptation Fund Board. All those programs will be executed by each of the submitting entities under the supervision of *Kemitraan* – Partnership for Governance Reform.

Sincerely Yours,

Laksmi Dhewanthi
Director General of Climate Change
Ministry of Environment and Forestry
as Indonesia Designated Authority of Adaptation Fund

Copy to:
Kemitraan (Partnership Governance Reform in Indonesia)

Mohamad Irwan Lapatta, S.Sos,M.Si ***Head of Sigi District***	Date: July 13, 2022
Dr. Samuel Yansen Pongi, SE.,M.Si ***Deputy Head of Sigi District***	Date: July 7, 2022
Drs. Sutopo Sapto Condro, MT ***Head of Sigi District's Development Planning and Research Agency***	Date: July 1, 2022

Afit Lamakarate, ST.,M.Si ***Head of Sigi District's Environmental Agency***	Date: June 27, 2022
Johansyah Halman, ST ***Secretary of Sigi District's Disaster Management Agency*** ***(Implementing Department)***	Date: July 6, 2022

B. Implementing Entity certification[44]

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 (President Decree No. 16/2015; P.13/MENLHK/Setjen/OTL.0/1/2016; P.33/MENLHK/Setjen/Kum.1/3/2016; Indonesia Intended Nationally Determined Contribution/INDC; COP 21; Paris Agreement signed by Government of Indonesia; Book and Map of Information System of Vulnerability Index Data (SIDIK); Climate Change Adaptation National Action Plan) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social 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.	
 *Laode M Syarif* *Executive Director of Kemitraan* Implementing Entity Coordinator	
Date: July 15, 2022	Tel. and email: +62-21-2278-0580 Laode.syarif@kemitraan.or.id
Project Contact Person: Eka Melisa	
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[44]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

ANNEX

Gender Analysis - Building Resilience District: Case of Sigi District

Project Background

Sigi District, based on the Index and Vulnerability Data Information System (Sistem Informasi Data Indeks dan Kerentanan/SIDIK), is an area that is quite vulnerable to the impacts of climate change. Based on SIDIK, 66% of the villages are considered to have a moderate vulnerability to climate change. Villages located further from the district capital in the Sigi Biromaru sub-district tend to have a higher vulnerability to climate change.

According to the head of Sigi District Agency for Disaster Management, almost all area of Sigi District is vulnerable to disaster, mainly flood and landslide. Based on the result of the rainfall analysis in the past 37 years, there is an increasing trend in the number of rainy days >50 mm/day (extreme) per year. This indicates that there is a threat of increasing rains with extreme intensity in the future, which would cause floods and landslides that could submerge houses and agricultural land, and damage other public infrastructure, such as roads, fresh water, and electricity.

Sigi District has developed its disaster risk assessment in 2020. The assessment has not covered many types of disasters and will need to be detailed down to be able to provide critical recommendations for mitigation and adaptation strategy. Mitigation and adaptation are the two strategies for addressing climate change. Mitigation is an intervention to reduce the emissions sources or enhance the sinks of greenhouse gasses. Adaptation is an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities[45].

As climate risks are increasing, the Sigi government should be aware of which risks can be mitigated and which risks are not possible and will need to be approached through an adaptation framework. In terms of adaptation, there are several basic elements as the basis of developing a comprehensive adaptation strategy, which are water and air. Due to the intensive climate variability occurrences in the region, the water cycle in many regions is changing drastically. These changes are impacting the catchment water balance, which further affects the irrigation regime, energy production through hydropower dams, distribution of goods and services through the river networks, and other economic and development activities. In addition, the increasing occurrences of floods and long periods of droughts would be more threatening to the livelihoods of local communities, and business and economic continuity in the region.

[45]Bruno Locatelli, Climate Change and Forests in the Congo Basin: Synergies between Adaptation and Mitigation: https://www.cifor.org/fileadmin/fileupload/cobam/ENGLISH-Definitions&ConceptualFramework.pdf

Gumbasa	Dolo Selatan
Floods	Floods
Cocoa, coconut, candlenut	Cocoa, coconut

Based on the context above, this proposal is focused on building a climate resilient district through water-energy-food nexus with Sigi District as the pilot.

Context and relevance

Sigi District faces heightened vulnerability to extreme hydrometeorological events, particularly floods. Deforestation for agriculture and mining exacerbates this vulnerability. The significant 2018 earthquake, causing soil liquefaction, resulted in 289 fatalities, 116 missing persons, and 807 injuries. Thirteen out of 15 sub-districts experienced severe damage, affecting homes, schools, health facilities, roads, bridges, power grids, irrigation, and telecommunication networks. The Disaster Risk Study (2017-2021) indicated Sigi's overall low preparedness for extreme weather events and other disaster risks.

The earthquake and the COVID-19 pandemic (2020 – 2022) led to widespread unemployment in Sigi, prompting residents to seek work in sectors like mining. Many women became heads of households due to spousal loss, and numerous youths dropped out of school for uncertain jobs. The economic instability also contributed to a rapid increase in the number of persons with disabilities (PWDs). PWDs faced exacerbated challenges during the pandemic, with limited government support and difficulties accessing information. Main income sources for PWDs include subsistence farming, small-scale trading, construction, and sewing. Stigma and limited access to education hinder stable employment for PWDs.

In Sigi, women primarily work in agriculture or labour-intensive jobs. Financial dependence on the main breadwinner limits women's economic engagement. The absence of educational opportunities for women results in minimal participation in socio-economic development, with women often confined to meeting participation quotas. Inter-community conflicts, surprisingly given shared ethnic and religious backgrounds, stem from trivial personal disputes escalating into territorial identity conflicts. Historical records indicate 60 documented conflict incidents in Sigi in 2012, attributed to various factors such as historical settlements, intergenerational traditions, low demands, low employment participation, and misinformation distortion.

Sigi confronts a multifaceted array of challenges, encompassing natural disasters, economic instability, marginalization of vulnerable groups, and inter-community conflicts. Implementing the project requires a holistic, sustainable approach, integrating community empowerment, economic development, and conflict resolution strategies.

Assessment objectives

The objective of gender assessment is to:

a. identify gender differences and providing empirical evidence in the form of qualitative and quantitative data.
b. analyse gender roles, activities, needs, and available opportunities and challenges or risks for men and women within the project context.

Field Survey

Field survey was conducted in 13 villages (Pandere, Pakuli Utara, Simoro, Bakubakulu, Bobo, Bunga, Kurnia, Bangga, Sambo, Wisolo, Lewara, Dombu and Wayu). Based on the survey data, an initial gender assessment has been done to identify gender inequalities and the challenges and opportunities to improve gender equality.

Gender Assessment framework: The Social Relation Approach[46]

The Social Relations Approach is a method of analysing existing gender inequalities in the distribution of resources, responsibilities, and power, and for designing policies and programs which enable women to be agents of their own development. The framework uses concepts rather than tools to concentrate on the relationships between people and their relationship to resources and activities - and how these are re-worked through 'institutions' such as the state or the market.

Social relations describe the structural relationships that create and reproduce systemic differences in the positioning of different groups of people: These relationships determine who we are, what our roles and responsibilities are, and what claims we can make; they determine our rights, and the control that we have over our own lives and those of others. Social relations produce cross-cutting inequalities, which ascribe everyone a position in the structure and hierarchy of their society. Gender relations are one type of social relation; others include those of class, race, ethnicity, and so on.

Institutional analysis is required: The underlying causes of gender inequality are not confined to the household and family but are reproduced across a range of institutions, including the international community, the state, and the marketplace. Institutions ensure the production, reinforcement, and reproduction of social relations and thereby create and perpetuate social difference and social inequality. It is useful to think of four key institutional realms - the state, the market, the community, and family.

Social relation approach uses these 5 elements to assist in gender assessment:

1. Rules (How things get done): Institutional behaviour is governed by rules, which may be official and written down. Ask: What is done? How is it done? By whom is it done? Who will benefit?

[46]https://www.equilo.io/gender-analysis-framework-social

2. Activities (What is done?): Institutions do things; they try to achieve goals by following their own rules. These activities can be productive, distributive, or regulative. Ask: Who does what? Who gets what? Who can claim what?
3. Resources (What is used and produced?): Institutions also mobilize and distribute resources. These may be human resources (for example, labour, education, and skills), material ones (food, assets, land, or money), or intangible ones (information, political, clout, goodwill, or contacts).
4. People (Who is in, who is out, who does what?): Institutions deal with people and are selective about: who they allow in and whom they exclude; who is assigned various resources, tasks, and responsibilities; and who is positioned where in the hierarchy.
5. Power (Who decides, and whose interests are served?): Institutions embody relations of authority and control. Few institutions are egalitarian, even if they profess to be so. The unequal distribution of resources and responsibilities, together with the official and unofficial rules which promote and legitimize this distribution, ensures that some institutional actors have authority and control over others.

Gender Assessment in Sigi and Pilot Villages

Power relation, rules, resources and roles

In many villages in Sigi, the power relation between male and female is highly influenced by the local customary law. While in some villages, such as Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo, gender equality mainstreaming is taking place, the customary law still has high influence over several social aspects. Aspect such as early marriage, family inheritance, land tenure, economic decision within household, access to education and employment are among the most influenced aspects. In general, the male has more power over these aspects.

For example, a woman cannot determine the amount of dowry in a marriage as it must be decided by the head of the tribe or from the male's family[47]. Early marriage is still practiced caused by, among others, the decision of parents to be free of the economic burden and religious reasoning. Another example is the access to land tenure. Based on the survey in 12 villages, in average 30% of woman can own land, but not for their own benefits but rather for the benefit of the family or children. Public participation is also limited due to the general assumption that women cannot contribute much to the discussion. This assumption is built due to the generations of social practice where women are not encouraged to pursue higher education due to their embedded role as the caretaker of domestic matters.

With limited access to knowledge, embedded social role and the influence of the environment, the power relation between male and female in most of the villages, especially those villages that still in pure rural area, has been inequal. In principle, most of the time, women do not have the same access to education, resources, public meetings, land tenure and employment. In several

[47]https://kemitraan.or.id/en/publication/talkhow-hari-ham-2023-perempuan-adat-dan-hak-kelola-tanah/

villages such as Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo, women do not have the chance to assume leadership position and their voices are unheard of.

In the six villages of Sigi Regency—Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo—GEDSI issues reveal a strong influence of religion and cultural customs on defining social roles for men and women, particularly evident in Pandere, Pakuli Utara, and Simoro. In Bangga, Sambo, and Wisolo, cultural norms significantly limit women's roles in decision-making during traditional events.

People with disabilities

There are not many people with disability (PWD) in the pilot village (only Dombu village has 3 PWD and Karunia village has none). Official data on people with disabilities and their livelihoods are limited in Sigi Regency and its sub-districts. Many people with disabilities do not even have regular employment. The main obstacles are social stigma and a lack of access to education and vocational training. This is not only due to physical access barriers. Multi-inequalities are often faced by women with disability or children with disability. Their disadvantages as women and children when coupled with disability has deprived them in severe way from basic access.

Inclusion of PWD needs to be started by raising the awareness of the community leaders that everyone has a voice that must be heard. Being part of vulnerable group should not limit the equal access to many aspects of social life. Access to employment, public participation, decision-making process, and so forth must be provided to the most needed. A change of mindset of the community leaders will be a great help to the change of the status quo. Working with local organizations that has expertise on the inclusion of PWD will help the project to implement its GEDSI interventions in the most effective and efficient way.

Women and environmental – socio – economic risks

In Sigi Regency, women predominantly work in agriculture or as manual labourers. However, in most families, there is significant financial dependence on the primary breadwinner. With a lack of educational opportunities and programs to encourage women's involvement in the environmental – socio - economy, women, so far, play a minor role in the environmental-socio-economic development of their communities.

Active participation by women in the planning and decision-making processes in their village regarding the environmental and social issues is also lacking. Their involvement is mostly limited to meeting participation quotas in strategic forums and is not recognized as a fundamental element in achieving community development goals. Women’s contribution simply not recognized due to embedded social assumption that women lack of understanding of the environmental-socio-economic issues. Consequently, political planning outcomes and decision-making processes often fail to meet the genuine needs of the target groups. On the other side, women’s lack of education and information have led women less eager to participate in in public

participation and to hand over it to their spouse. This situation will further worsen the inequalities if not addressed.

Women's role in agriculture as farmers or manual labourers actually allow women to understand issues from their own perspectives and therefore their own proposed solutions. The main barrier to voice out their perspectives and solutions basically centred around the low self-willingness, reluctancy and social acceptance. Here the local customary law, social perception and possible religious law increase the challenges to maintaining the status quo.

Gender responsive actions

In order to break the cycle of inequalities, there are several initial steps that could be taken:

a. **Raise awareness on environmental-socio-economic issues and opportunities**. Awareness leads to understanding, understanding leads to options, options lead to results. It is important for women and vulnerable group to understand the issues and how they think about the issues.
b. **Ensuring that all voices are heard of**. Environmental and social issues and impact should be discussed with everyone. If the situation is not possible using public participation, individual approach, or segregated meetings for male and female can be organized at the suitable time for each group.
c. **Negotiating power relation**. Basic life access such as education, training and employment, health, and land tenure are to be promoted to the social system. Strategic approach to those who have the power to change the rule of the game must be developed and implemented.
d. **Showcasing lessons from other communities**. Other communities often speak the same frequency with other communities from another village in the same region. Best practices from other villages nearby can help to increase the probability of acceptance by local leaders and the community. However, this step is not possible if the conflict between village is high, which is the case in several regions of Sigi District.

In the case of the pilot villages–Pandere, Pakuli Utara, Simoro, Bangga, Sambo, and Wisolo–, it is important to take the first two steps (a & b) to show to the communities and key stakeholder that hearing everyone's voice and inputs will help to provide better understanding of situation related to the environmental-socio-economic issues and also the alternative solutions from different perspectives. These alternatives solutions can be considered as options that could lead to results. The more options the more possibility of results. This is better than having only the same options over and over again.

The first to steps (a & b) shall not be conducted without proper mapping of the vulnerable groups. Vulnerable groups must be identified based on sex, age, accessibility, race and other category that could help for information sharing without any concern. Once identified, the method to facilitate discussion can be arranged.

As each individual in each category has his/her own interests and thinking, it is suggested to start the facilitation by identifying shared risks, goals and opportunity to bring the group together. This is always the most effective way to guide the discussion away from contentious discussions and more to a collaborative discussion.