Meeting of the Board
13 – 15 December 2016
Apia, Samoa
Provisional agenda item 16(e)

GCF/B.15/13/Add.16/Rev.01

1 December 2016

Consideration of funding proposals – Addendum XVI

Independent Technical Advisory Panel's assessment

Summary

This addendum contains the independent Technical Advisory Panel's assessments of funding proposals (FP028-FP030, FP032-FP037) submitted for the Board's consideration at its fifteenth meeting.

Table of Contents

Independent Technical Advisory Panel's review of FP028

Proposal name:	Business loan programme for GHG emissions reduction
Accredited entity:	XacBank LLC
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

Objective of the funding proposal

1. The funding proposal consists of a USD 60 million business loan proposal submitted by the Mongolian local bank XacBank and is aimed at increasing private-sector participation in the abatement of greenhouse gases (GHGs) by promoting the use and production of energy-efficient and renewable energy oriented products in the domestic market, supporting the process with low-cost, high-efficient loans for micro-, small- and medium-sized enterprises (MSMEs). The GCF loan, amounting to USD 20 million, will be blended with a loan of USD 15 million from the European Bank for Reconstruction and Development (EBRD) and a loan of USD 20 million from the Global Climate Partnership Fund (GCPF), which are current financial sources for XacBank, and a loan of USD 5 million from DWM Securities.

2. In 2013, XacBank received USD 20 million from GCPF and in 2014 it received USD 15 million from EBRD (for the Mongolian Sustainable Energy Financing Facility (MonSEFF)) to establish its own business loan programme for GHG emission reductions of which the proposed GCF programme will be an extension. XacBank's GHG emission reduction programme is ongoing, and XacBank will continue to attract continuous sources of funding to perpetuate this programme. Terms have already been discussed with GCPF to extend the programme beyond the original term of 2017.

3. XacBank started the business loan programme for GHG emission reductions in 2009, but its continuation is more strongly oriented towards both the promotion of women-led MSMEs and the aim of covering the whole end user supply chain.

4. According to the proposal, Mongolia has one of the highest levels of carbon dioxide emissions per capita in the world, at 4.33 tonnes of carbon dioxide equivalent (t CO_2 eq). This is mostly due to excessive dependence on coal (lignite) for electricity and heat generation, old and inefficient infrastructure (characterized by high transmission losses), old energy-intensive equipment in industries, and traffic congestion.

5. The majority of the total electricity supply generated in Mongolia is from lignite, accounting for 90 per cent of power in 2015, with a small share (less than 1 per cent) of wind and hydro power. Further, the country's grid emission factor (EF) is quite high, amounting to 1.129 t CO_2 eq/MWh.

Impact of the funding proposal

6. About 60,000 registered MSMEs in Mongolia, representing 90 per cent of Mongolia's business and currently using outdated and inefficient equipment, could benefit from a low-cost

loan for increasing the energy efficiency of their products and contribute to the Government of Mongolia's energy efficiency and renewable energy programmes.

7. The project will reduce, on average, 149,290 t CO_2 eq of GHG emissions annually, which corresponds to about 1 per cent of the country's GHG emissions from the energy sector in 2015, through mainstreaming energy efficiency and renewable energy in the local MSME market. Further, 1,194,324[1] t CO_2 eq of GHG emissions will be reduced over the project lifetime of eight years.

8. XacBank aims to provide at least 50 per cent of its financing to women-led MSMEs.

9. The project contributes to:

(a) Reducing the national power grid load and the budget spent on energy imports; and

(b) Increasing private-sector participation in the fulfilment of national energy and climate-related priorities, including the Energy Conservation Law and the stated goals of the green economy.

1.2 Paradigm shift potential *Scale: N/A*

10. The paradigm shift element of this programme is that a local bank in the local private sector from a developing country is accredited as a national implementing entity and involved in climate change mitigation, promoting that process through the involvement of the local private sector and, in particular, women-led MSMEs to make their businesses energy-efficient or to generate clean energy from renewable sources. The Eco Banking Department established by XacBank was specially created for this purpose, in support of energy efficiency and renewable energy soft loans, which is not a traditional market for many banks in developing countries.

11. Putting in place a GHG monitoring system is a challenge for most developing countries because of the high additional cost for the government, the private sector and other stakeholders. In the proposed programme, the cost of monitoring energy savings and carbon dioxide (CO_2) reductions will be borne by XacBank, so as to reduce the cost borne by the MSMEs and ensure a standardized monitoring process. This is a precedent which should be broadly supported by the GCF to achieve the ambition of the United Nations Framework Convention on Climate Change. In addition, energy audits of non-standardized and non-certified technologies are also supported by the programme, which is an additional benefit for its clients.

12. Gender balance and gender-sensitive technologies are a particular focus of the programme as its leading objective. Gender-sensitive technologies are interpreted by the programme as those that are designed to benefit both women and men; reduce drudgery; are safe and secure to use; are easy to operate; are economically viable; are socially acceptable and empower women in particular in decision-making processes; and do not place an undue burden on the time, efforts and costs of the end user. In particular, the programme plans to support MSMEs whose products not only reduce GHGs but are also gender-sensitive technologies. The integration of gender-sensitive technology in the funding proposal is an acknowledgement to promote the MSMEs oriented on gender-sensitive technological products regardless the gender of MSMEs leaders. Currently, XacBank does not have the capacity to conduct these assessments, but once readiness support becomes available through the GCF, XacBank plans to apply for funding for capacity-building to enhance these capabilities in order to develop an assessment system.

[1] The expected lifetime emission reduction savings were calculated based on the amount of t CO_2 eq reduced through the leveraging of existing dedicated funds since 2013, then projected over the lifetime of the programme, based on the amount of total financing of sub-projects.

13. The three above-mentioned elements are important patterns of paradigm shift concepts which should be further supported and promoted by the Board of the GCF.

1.3 Sustanable development potential *Scale: N/A*

The project contributes to a range of sustainable development goals

14. The funding proposal states that Mongolia has a strong presence of women in the formal workforce and, in particular, in managerial positions. The project is committed to further promoting women-led MSME participation in the energy efficiency and renewable energy programme of XacBank, offering them loans with a lower rate. One of the main achievements of the project will be strengthening gender issues in climate change and clean energy business, as gender-sensitive technologies will be promoted by the programme, consistent with United Nations Sustainable Development Goal (SDG5).

15. According to the funding proposal, based on a study conducted in 2011 by the World Health Organization, Ulaanbaatar, where half of the Mongolian population lives, ranked as the second most polluted city in the world. Much of this pollution comes from the purchase and use of energy-intensive, inefficient products, in particular for transportation and heating, at both an individual and corporate level. The project will contribute to cleaning the local atmosphere by reducing carbon-intensive energy consumption and increasing the share of renewables (SDG 3).

16. Unlike other programmes financing energy efficiency and renewable energy, this particular programme will access all sectors of the energy efficiency and renewable energy supply chain, from producers to traders, and from installers to end users, which will contribute to sustainable development and increase the sustainability of the project itself.

17. Technological risk (in particular for non-standardized technologies), which is a significant barrier for energy-efficiency and renewable energy projects, is considered and will be tackled by the programme through the provision of technical advice and awareness-raising activities with regard to energy efficiency and renewable energy, and by making clients aware of the extensive testing and risk-reducing measures that are integrated into the programme. Currently, the programme states that it is the borrower's risk in the event of product failure. However, XacBank is investigating the possible integration of a third-party energy savings insurance programme in order to eliminate the burden of technological risk completely, which will increase the number of clients and guarantee the project's success and sustainability.

18. The programme would foster the expansion of the existing appliances market to include renewable energy solutions and energy-efficient products (SDG 7).

1.4 Needs of the recipient *Scale: N/A*

19. In order to achieve the Government of Mongolia's stated goal of a 14 per cent reduction in total national GHG emissions, the country's intended nationally determined contribution (INDC) outlined a number of policies across the energy, industrial, agriculture and waste sectors. The MSME programme falls under the following INDC goal: "increase the share of renewable electricity capacity to 30 per cent of total electricity generation capacity, from 7.62 per cent in 2014".

20. The technology needs assessment (TNA) conducted in Mongolia has revealed the following barriers to the deployment of energy-efficient and renewable energy technologies: price barriers – new energy-efficient and renewable energy technologies have higher costs, and interest rates at commercial banks are high; technical knowledge barriers for the assessment of loan risks from the perspective of lenders; and lack of knowledge on available loans, and on

energy efficiency and renewable energy benefits and technologies from the perspective of borrowers. All these barriers are considered and tackled by the programme.

21. Energy usage regulations have been passed by the Parliament of Mongolia and are beginning to be implemented. Primary among these regulations is the Energy Conservation Law. While the implementation of energy usage law begins with the large energy consumers,[2] mandating them to reduce energy consumption by 15 per cent, as audited by experts, the intention is for the law to trickle down through implementation to all levels of enterprise-related energy use. Based on past success, XacBank is sure that the MSME programme is entering the Mongolian market at precisely the right time. Private-sector entities will be actively seeking financing solutions to comply with these new regulations. XacBank stands to become the go-to partner for enterprises, in order to facilitate the implementation of this regulation.

22. In 2013, the Parliament of Mongolia passed the Green Development Strategic Plan for Ulaanbaatar 2020 (GDSP). The GDSP highlights air pollution as the primary environmental challenge faced by the capital city, and proposes the mitigation measure of increasing efficient utilization of energy, which includes the sub-clause "promote use of energy-efficient technologies in the private sector". The MSME programme would directly support the Ulaanbaatar government in achieving their greening goals by removing market barriers to and lack of knowledge on investing in energy-efficient solutions. Another stated priority is increasing the supply of clean energy in the Mongolian market.

23. Though the key geographic focus of the programme remains Ulaanbaatar, the base of the overwhelming majority of Mongolian MSMEs, it plans to reach the MSMEs in rural areas and other cities as a crucial component of the proposal, as many energy-intensive MSMEs are based outside the city. The programme will cover regional MSMEs as well through its regional offices.

24. Reports by the International Labour Organization, the International Finance Corporation and the Asian Development Bank on the small and medium-sized enterprise (SME) sector all highlight access to financing as the primary market obstacle for Mongolian SMEs. XacBank and other Mongolian banks offer business loans to SMEs at an average interest rate of 22.7 per cent per annum. Therefore, the soft loan proposed by the programme is very important for the implementation of various governmental programmes.

25. Currently, many small producers exist in the local market, but the majority of energy efficient and renewable energy products are imported. The MSME loan programme would foster the expansion of the existing appliances market to include these new market segments, but ensure relevant quality based on national energy efficiency standards.

1.5 Country ownership *Scale: N/A*

26. Country ownership is demonstrated by a no-objection letter provided by the country.

27. The programme will contribute to the achievement of the renewable energy target identified by the country in its INDC, as well as to the GDSP and the implementation of the Mongolian Energy Conservation Law.

28. According to the funding proposal, XacBank has an established relationship with the national designated authority (NDA). The accredited entity has worked closely with the NDA as well as other civil authorities, such as the Ulaanbaatar municipality, on the implementation of

[2] The term "large energy consumers" does not necessarily refer to large enterprises and can encompass MSMEs in energy-intensive industries.

previous projects. Government entities have been consulted at both a formal level, as in the case of the no-objection letter, and at an informal level, as valuable consultative assets.

29. Civil society stakeholders were also intensively consulted.

1.6 Efficiency and effectiveness *Scale: N/A*

30. At a national level, the effectiveness of energy efficiency measures from the perspective of GHG emission reduction very much depends on the grid EF when grid power consumption is reduced, or from the fuel EF if off-grid energy is replaced. The grid EF in Mongolia is quite high, amounting to 1.129 t CO_2 eq/MWh, and as most of the programme's activities are envisaged in the capital city Ulaanbaatar, which obtains electricity from the national grid, the effectiveness of the project is anticipated to be significantly high.

31. Of the total funding for the programme of USD 60 million, USD 20 million would be funded from the GCF, which would allow XacBank to improve its lending terms (longer loan tenor and lower interest rate) through blending with its current energy efficiency and renewable energy funds, including the GCPF GHG emission reduction programme. This soft loan should contribute to increasing the local energy efficiency and renewable energy installations market.

32. By implementing this programme, it is estimated that XacBank would be able to finance projects to reduce carbon emissions by more than 1.2 Mt over its lifespan of eight years.

33. The cost of 1 t of CO_2 eq savings is USD 50.24 USD/t CO_2 eq for the total cost of the programme, but for the portion funded by the GCF the cost is quite efficient, at USD 16.74/t CO_2 eq.

II. Overall remarks from the independent Technical Advisory Panel

34. The independent Technical Advisory Panel recommends the funding proposal for approval by the Board of the GCF and recommends that the implementing agency:

(a) Investigate the possible integration of a third-party energy savings insurance programme (e.g. the Climate Technology Centre and Network, the TNA, local energy service companies, etc.) to fully eliminate the burden of technological risk, in order to ensure the complete success of the programme.

Independent Technical Advisory Panel's review of FP029

Proposal name:	SCF Capital Solutions
Accredited entity:	Development Bank of South Africa (DBSA)
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. South Africa is ranked the thirteenth largest greenhouse gas emitter although its gross domestic product (GDP) and GDP per capita remain twenty-ninth and seventieth in the world. By 2020 and 2025, the Government of South Africa targets to reduce its domestic greenhouse gas emissions by 34 per cent and 42 per cent, respectively. South Africa's economy has been suffering from the ongoing economic slowdown and the resulting decrease in demands and prices of energy and resources in the global market. It is now the government's strategy to accelerate the transition of its resource- and energy-intensive economy to a 'green economy' by promoting 'green industry' such as renewable energies and energy efficiencies. South Africa has a high level of renewable energy potential, the majority of which is solar and wind.

2. Small- and medium-sized enterprises (SMEs) are the main driver of employment generation and economic development. In South Africa, the number of SMEs is estimated to be between 1 and 3 million and they contribute 50 per cent to the country's GDP and nearly 40 per cent of the jobs in the economy. As part of the support for the sector, the government provides preferential procurement and localization requirements in its public sector programmes. For example, the Renewable energy independent power producer procurement programme requires 30 per cent of inputs to be procured from small businesses. Therefore, the development of the micro-, small- and medium-sized enterprise (MSME) sector is critical for the government in order to promote green industry, and achieve a successful transformation into the green economy.

3. However, the lack of technical and financial resources is identified as the major challenge that MSMEs still face in South Africa. As a result, the government's plan to promote the green economy has been hampered. The proposed supply chain finance programme (hereinafter referred to as the Programme) aims to offer MSMEs in the green sector access to finance that traditional financiers such as banks do not offer. The Programme envisions a portfolio of MSMEs to be largely split into four activities: clean energy generation activities (40 per cent); energy efficiency services (25 per cent), sustainable agricultural services (25 per cent), and other green industry activities (10 per cent).

4. The Programme expects to achieve the reduction of 132,920 tonnes of carbon dioxide equivalent (t CO_2 eq) annually, and 33 million t CO_2 eq during the life of the Programme. Approximately 300 MSMEs will be supported and 30,000 jobs will be created in the green sector. Among them, 138 MSMEs owned by women and 213 owned by previously disadvantaged people. Although GCF involvement lasts for 10 years, the Programme, if successful, will continue and contribute to the reduction of greenhouse gas emissions and the

creation of jobs. Accordingly, the impacts and benefits of the Programme will sustain beyond 10 years.

5. Overall, the independent Technical Advisory Panel (TAP) views the potential impact of the Programme to be high.

1.2 Paradigm shift potential *Scale: N/A*

6. Lack of access to suitable financial services remains one of the primary barriers to MSMEs and green industry development. In South Africa, the involvement of private equity firms, venture capital firms and banks in the MSME sector is limited. For example, the investment of private equity firms in early-stage businesses is only 11 per cent, and the venture capital market in South Africa has declined in general. Furthermore, venture capital firms prefer technology type business such as information and communication technology and life sciences to renewables and energy efficiencies. Commercial banks restrict their exposure to MSMEs, especially those in the green sector where MSMEs remain new and small with a limited operational and credit track record.

7. The Programme intends to support the working capital requirements of MSMEs in the green sector, which are critical to operations and operation expansion. The supply chain finance (SCF), also known as reverse factoring, offers a financial solution to suppliers and buyers through which to efficiently manage capital trapped in the supply chain. It allows the supplier to receive payments earlier and the buyer to extend the maturity of its payment to the supplier. Accordingly, the buyer optimizes working capital and the supplier generates operating cash flow, thus minimizing risk across the supply chain. The Programme is expected to offer MSMEs a new and effective financial modality to expand their engagement in the green sector being promoted by the government.

8. SCF has been introduced and is operational and therefore is not new to developing economies. International financial institutions, including development banks and bilateral agencies, is expanding SCF initiatives to promote the MSME sector in developing countries. However, it is considered unique to have an institution focusing on MSMEs in the green industry as the Programme proposes. Information on best financing parameters for green industry MSMEs will be made available to government agencies, civil societies, and women's associations and will be reflected in future policy design. The Programme, if successful, will attract more MSMEs and financial intermediaries, including banks to engage and expand their operation in the green sector.

9. In this context, the TAP sees the Programme as innovative and its paradigm shift potential is confirmed.

1.3 Sustainable development potential *Scale: N/A*

10. South Africa has been suffering from the consequences of the sluggish global economy and the resulting decreases in demand for and prices of energy and resources. As a result, the official unemployment rate has reached to 25 per cent. It is believed, however, that only 41 per cent of the active population is actually employed. Furthermore, a significant gap is observed in income and welfare even among those employed. Unemployment, poverty and inequality are the three development challenges that the country is facing. Among the three, unemployment is considered to be the major cause of the social problems of poverty, crime, inequality and social unrest.

11. The success of the SME sector is essential for the country to tackle these three development challenges given that the sector is the main driver of employment generation and

economic advancement. The number of SMEs in South Africa is estimated to be between 1 and 3 million. The SME sector presently contributes 50 per cent to the country's GDP and nearly 40 per cent of the jobs in the economy.

12. The Programme will offer financing to over 300 MSMEs and create 30,000 jobs in South Africa's green industry over its 10-year lifetime. In the Programme, start-up companies will represent 20 per cent of the total portfolio. It is also envisioned that 70 per cent of enterprises in the portfolio will be owned by previously disadvantaged individuals, and 35 per cent of all MSME owners will be youths. The Programme will support transactions across a range of environmentally beneficial services, including rural energy, biogas and biofuels, sustainable water management, solar water heating, and sustainable agriculture and agro-processing.

13. The TAP concludes that the sustainable development potential of the Programme is evident.

1.4 Needs of the recipient *Scale: N/A*

14. MSMEs are expected to make a significant contribution to the country's climate change objectives as prescribed in National climate change response as well as economic growth. However, MSMEs are facing various challenges, among which is the limited access to finance, which is reported to be severe. It is reported as well that only 3 per cent of SMEs in Africa is able to finance investment with supplier credit and 8 per cent with bank loans. In fact, 75 per cent of credit applications presented by new business were declined. In addition, SMEs that were able to secure private investments were limited to 2 per cent, and those able to receive loans were also limited to 2 per cent.

15. The Programme offers MSMEs (and green industry in general) a financial solution that allows them to expand their operations with a higher degree of cash flow projection and management. Accordingly, the Programme meets the demand of the MSMEs in the green sector and supports the government's objective to promote green industry and the green economy.

16. The TAP confirms the needs of the recipient.

1.5 Country ownership *Scale: N/A*

17. The Government expects the green economy to generate almost 255,000 jobs in the medium term. A 34 per cent reduction in domestic greenhouse gas emissions by 2020 and a 42 per cent reduction by 2025 are targeted. The Programme is in line with the goals of nine key national environmental and economic policy frameworks, including the National climate change response (greenhouse gas emissions commitments), the National development plan (emissions and energy generation), the Industrial policy action (growth in green industries) and the New growth path (green economy job creation).

18. Being an extension of the pilot phase, the Programme has been developed through broad consultation with various stakeholders, including business incubators, private sector investors and government entities. The government financed the pilot phase through the Development Bank of South Africa (DBSA) and the Small Enterprise Finance Agency (SEFA), the two public sector co-investors of the Programme. The no-objection letter from the South African national designated authority has been received by the GCF.

19. Given the Government of South Africa's policies and strategies to support green industry and to promote the green economy together with its direct commitment to the Programme, the TAP believes the country ownership of this programme is high.

1.6 Efficiency and effectiveness *Scale: N/A*

20. The GCF contributes USD 12.2 million or 36 per cent of the required funding of USD 34.15 million. The DBSA Green Fund (USD 2.2 million), and SEFA (USD 7.4 million) will co-invest in the Programme. A private sector investor will be invited to join the Programme as well with a USD 12.2 million commitment. As a result, the GCF will achieve a co-financing ratio of 1 to 1 with the private sector and 1 to 1.8 as a whole. The Programme has the potential to attract further co-financing once its track record has been established.

21. The amount of SCF transactions that the Programme can support depends on the number of times that the Programme's capital can be turned around. With the average tenor of transactions being 90 days, the total capital of USD 34 million could realize SCF transactions exceeding USD 120 million. Therefore, the GCF investment in the Programme can be regarded to be efficient.

22. The Programme requires concessional financing from the GCF (and its other two public sector co-financiers) in order to offer MSMEs competitively priced supply chain finance and to attract a private sector investor. Therefore, an additional 4.375 per cent of profit share ratio is proposed to be allocated from DBSA, SEFA and the GCF in order to improve the private sector return. Given the limited track record of SCF in the MSME sector in general, and in the green sector in particular, the proposed concessionality can be justifiable. The GCF will be allowed to claw back a part of the return if the Programme is successful.

23. Supply Chain Finance Capital Solutions (SCF Capital Solutions), an investment manager, will manage the Programme. It is an entity established in South Africa in 2015 to focus on the small- and medium-scale enterprise market. SCF Capital Solutions was selected by DBSA and SEFA to manage a SCF programme on a pilot basis with the understanding that the pilot programme, if successful, would be expanded with the participation of new investors (i.e. the Programme). Presently, SCF Capital Solutions is recruiting staff and establishing the new information technology platform required to implement the Programme.

24. As per the funding proposal, the GCF investment of USD 12.2 million will produce approximately 3.4 Mt CO_2 eq reduction. That will result in a cost of USD 3.60 per t CO_2 eq while the GCF participates in the Programme. The Programme will continue to operate after the GCF has exited resulting in further cost reduction.

25. Overall, the TAP believes the Programme's efficiency and effectiveness is high in delivering various impacts and benefits. However, the TAP is concerned about SCF Capital Solutions' short operational track record, and insufficient operational resources available to implement the Programme.

II. Overall remarks of the independent Technical Advisory Panel

26. The Programme addresses the acute needs of the MSME sector in playing a pivotal role in developing green industry in support of the government's strategy to accelerate the transformation of the economy so as to deliver the targeted greenhouse gas emission. The Programme is innovative and will contribute to sustainable development. The Government of South Africa's commitment to the Programme is clear and strong. With the USD 12.2 million contribution, the Programme allows the GCF to mobilize co-financing from both public and private sectors. It is expected that SCF transactions amounting USD 120 million will be supported by the Programme annually.

27. In order to mitigate the operational risk due to SCF Capital Solutions' limited track record and operational resources, the TAP recommends the Board to support the proposed Programme with the following condition:

(a) The proposed GCF financial assistance of USD 12.2 million is to be divided into two tranches of approximately 50%. The disbursement of the second tranche will be contingent upon the satisfactory evaluation of SCF Capital Solutions' operational performance to be confirmed by the accredited entity and the Secretariat, including the utilization of the committed capital of higher than 80 per cent and the level of NPL of lower than 2 per cent of the total exposure in an annual average.

28. The TAP also supports a condition proposed by the Secretariat in its assessment that a commitment letter is to be received by a private sector investor in the amount of no less than USD 12.2 million before the execution of the funded activity agreement.

Independent Technical Advisory Panel's review of FP030

Proposal name:	Catalyzing private investment in sustainable energy in Argentina – Part 1
Accredited entity:	Inter-American Development Bank (IDB)
Project/programme size:	Large

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: High*

1. Renewable energy development in Argentina has been relatively slow over the past few decades when compared with the significant strides recorded through the introduction of renewable energy options into the rich energy mix of neighboring countries, such as Brazil, Chile, Mexico and Uruguay. In spite of Argentina's outstanding renewable energy resource potential, fossil fuel is still constitutes 87 per cent of the country's energy matrix. About a decade ago, the Government of Argentina implemented a call for tender for renewable power projects in the country. Responses to this call were positive, and some projects were awarded a power purchase agreement (PPA) and approved to move to implementation. Of these projects, only 15 per cent reached financial closure due to reasons ranging mostly from non-availability of debt and equity funds owing to the perceived risk profile for investment in Argentina, to poorly conceived project design. Following the improvement in the economic outlook of the country and the reduced perceived negative risk of investment in Argentina, investment funds have started to flow into the economy. The Government of Argentina recently established Renewable Energy Law 27.191 to ramp up the development of renewable energy in the country. As a follow-up to the enactment of this law, a programme titled "Catalyzing private investment in sustainable energy in Argentina – Part 1" has been prepared and is currently being reviewed by the GCF, with the objective of supporting the achievement of the ambitious national renewable energy penetration goals (8 per cent by 2018, 20 per cent by 2025) established by Renewable Energy Law 27.191. The key impact potential of this programme includes:

(a) Greenhouse gas emission reductions

2. The programme has a target of 400 MW of renewable power projects, which amounts to 40 per cent of the total required capacity of the first tender of 1,000 MW under RenovAr program, a renewable power purchasing program announced in 2016. The renewable power projects that will be implemented will yield significant greenhouse gas (GHG) emission reductions when compared with the status quo situation in the absence of the programme. In order to estimate the mitigation potential of the projects that will be implemented through this financing plan, a 75:25 split (in terms of generation capacity) in investment between wind and solar photovoltaic (PV) was assumed by the developer of the programme. This assumption is reasonable given the share of wind and solar PV in the recent bid that was opened in September 2016 and the make-up of the projects in terms of the amount of MW generated, as submitted for consideration by bidders. It has been estimated in the funding proposal that the programme will result in GHG emission reductions of about 614,000 tonnes of carbon dioxide equivalent (t CO_2 eq) per year, or about 15.3 Mt CO_2 eq during the lifetime of the assets.

(b) Catalysing an increase in the penetration of low greenhouse gas emission generation systems in Argentina

3. Another important potential impact of the programme is the successful penetration of renewable energy generation into the status quo mix in Argentina. Prior to the recent enactment of Renewable Energy Law 27.191 (around 10 years ago), the Government of Argentina implemented a call for tender for renewable power projects in the country, which was not successful as only about 15 per cent of the projects approved to proceed to implementation were actually built. A key reason for this failure was the inability of those projects, which were not financially closed, being able to access funding for the implementation of the projects. A key goal of this intervention is the use of funds from the programme to provide implementation funding for at least five renewable power projects that have already been identified from the recent tender for renewable power projects. Part of the funds will also be utilized for the development and strengthening of local capacities for planning and implementation of renewable projects in the country. This will ensure that the five selected projects are built, and also that the necessary local capacity is fostered. These projects will catalyse increased penetration of renewable power generation into the electricity supply system in Argentina.

4. The funding requested from the GCF is expected to catalyse crowd sourcing of funds from other sources and thus contribute to the removal of barriers associated with access to long-term debt funding which has characterized the prevailing situation in the absence of this proposed programme. Given the programme impact potential discussed above, the independent Technical Advisory Panel (TAP) has ranked the scale of the impact to be high.

1.2 Paradigm shift potential *Scale: High*

5. A key consideration in the evaluation of the paradigm shift potential of the activities proposed in the programme is whether this intervention will produce impacts beyond this initial programme. The key paradigm shift potential that is associated with this intervention includes:

(a) The potential to scale up and replicate the success of this initial programme

6. The recently passed Law 27.191 in Argentina set short- and long-term targets for shares of renewable energy in the energy mix of the country. The targets are: 8 per cent by 2017 (measured at the end of 2018); 12 per cent by 2019; 16 per cent by 2021; 18 per cent by 2023; and 20 per cent by 2025. These targets can be considered as the minimum policy and regulatory basis of the minimum expected level of scale-up and replication. The programme, which has now been submitted for GCF funding, has been designed to facilitate the attainment of the 8 per cent 2018 target. The achievement of this target, following the implementation of the programme, will result at a minimum in a replication factor of about 6.6 in the short term and a much larger factor in the medium to longer terms. For example, the 10 GW of energy which the programme aims to achieve by 2025 would represent a replication factor greater than 16, relative to the ~400 MW targeted for support under this programme. The GCF funding will contribute to this scaling up and replication by:

(a) Supporting the success of the first tender, thereby instilling confidence that this type of project can indeed be successfully implemented;

(b) Generating lessons, which can be fed back to relevant stakeholders, to support learning and continued improvement of the RenovAr programme (e.g. regulation, tender/PPA design);

(c) Helping to develop the capacities of local private companies across the supply chain of wind and solar PV projects, which would result in efficiencies and enhance the viability of future projects; and

(d) Supplying supplemental capacity-building support through the technical assistance (TA) fund to the Ministry of Energy and a host of private and public sector stakeholders, as well as providing essential practical skills for the development and financing of sustainable renewable energy projects.

(b) Potential for knowledge-sharing

7. This intervention, which is expected to provide long-term financing for the implementation of renewable power generation projects in Argentina, will create an avenue for 'learning by doing' and knowledge-sharing for relevant local professionals in the Argentine power sector, including engineering consulting, as well as the local construction industry. In addition, the TA component of the funding will be targeted at delivering products (studies and consultancy services) and activities (training), which will deliver supplemental capacity-building support to the Ministry of Energy, other public entities at the national and local levels, and private-sector actors including sponsors, financing institutions and academic institutions. These will provide a venerable platform to build the capacity of local institutions and the local workforce through knowledge-sharing that will enhance the ability of local know-how and institutions to implement subsequent bids for renewable power projects. The technical cooperation products that will be produced as a result of the utilization of the TA grant component have a high potential to fill a significant gap in the country, especially those related to the development of strategic plans, pilot projects on some renewable energy applications, the Center for Renewable Energy, and practical skills for the development and financing of sustainable renewable energy projects.

8. The TAP therefore concludes that if the programme as described in the funding proposal, if implemented as defined, can be described as having a high knowledge-sharing potential through the capacity-strengthening and -building activities that will be carried out.

(c) Contribution to the creation of an enabling environment for the development and implementation of renewable energy projects in Argentina

9. The absence of an enabling environment in Argentina for the development and implementation of renewable energy facilities was reflected in the fact that little success in this endeavour has been achieved to date. Not only were attempts at developing renewable energy projects not particularly successful in the immediate past (only 15 per cent of the projects given the go-ahead to proceed in an earlier bid were built), Argentina lags significantly behind other reference countries in Latin America (e.g. Brazil, Chile, Mexico and Uruguay) in terms of the development and penetration of renewable energy technologies. As at the end of 2015, there was only about 200 MW (out of over 32 GW of installed capacity) of wind and solar generation capacity, with very little financed by private capital in the form of long-term project financing, which has elsewhere generally been the prevailing financing modality used to developed these types of projects. As a result, Argentina has a significant learning curve to undergo in terms of local capacity development, including project design, financing, construction, operation and maintenance, as well as regulation and grid management for adequate integration of renewables, among others. It is therefore highly likely that the proposed intervention through the GCF will create an enabling environment for the implementation of renewable energy projects in Argentina in the following ways:

(a) The loan portion of the GCF facilities will assist in the success of the Inter-American Development Bank (IDB) to crowd source funds from other parties for this and subsequent expansion interventions. This will lead to the creation of a suitable enabling

environment for long-term project financing for the projects funded by this intervention and other projects for subsequent development;

(b) The intervention will provide a veritable opportunity to test the new regulatory regime that was recently introduced by the Government of Argentina to foster the development of renewable energy systems in Argentina. The testing of the regulatory framework will enable the determination of its suitability (adequacy of tender/PPA models and parameters, sufficiency of fiscal incentives, adequacy of the risk mitigation support scheme developed (e.g. the Renewable Energy Trust Fund (Fondo Fiduciario para el Desarrollo de Energías Renovables) (FODER)), interconnection and dispatching arrangements, etc.) and thus lead to the creation of a regulatory environment that will enhance the success of subsequent renewable power projects in the country; and

(c) The first few projects under the proposed programme intervention will help to establish links with international investors, lenders, specialized consultants (engineering, legal, etc.) and equipment suppliers, and further develop the capacities of local partners across the supply chains of the technologies involved in the programme. This will create a stronger environment compared with the status quo ante for the development and successful implementation of renewable power projects in the country.

10. Taking into consideration these impacts, it is apparent that the potential for the creation of an enabling environment in Argentina which will foster the development and implementation of renewable power projects is high.

(d) Contribution to the regulatory framework and policies

11. In addition to a series of fiscal incentives and financial support mechanisms, the new government initiative, RenovAr, also includes regulatory and contractual enhancements aimed at overcoming some of the investment barriers that resulted in the failure of previous government initiatives. Since the programme that is seeking GCF funding is targeted at implementing five of the renewable energy projects identified from a shortlist from the recent renewable power tender by the Government of Argentina, its success will engender a useful test of the regulatory framework associated with RenovAr. In addition, some of the GCF funds (grant), which will be utilized for this project, will be used to provide support for sustainable development of the programme. Key activities of this component, which has relevance for the improvement of the regulatory framework and policies, include:

(a) Strategic environmental and social (E&S) studies[3] and training activities at the national level that will help to enhance regulatory and project implementation capacity with regard to E&S aspects for the development of renewable energy projects;

(b) The local regulatory framework will be enhanced as a result of the activities implemented under this component, such as the strategic study on the biodiversity and migration patterns of birds and bats, and the workshop on E&S impacts and risks of renewable energy projects in Argentina offered to:

  (i) local authorities responsible for issuing permits;

  (ii) local consultants responsible for preparing the impact assessments of projects; and

  (iii) project sponsors responsible for the development and implementation of projects and their mitigation and management measures;

(c) Capacity-building for private contracting and financing of renewable energy projects, which will include the development of project contract models (e.g. PPAs, land lease

[3] General, not project-specific; supplemental to any E&S assessments required by the projects.

agreements) for private contracting of renewable energy, adapted to local regulations, will also contribute to the improvement of the regulatory framework and policies.

12. The TAP can therefore conclude that it is highly likely that this GCF intervention will contribute to the regulatory framework for renewable energy development in Argentina. Given the four paradigm shift areas discussed above, the TAP has ranked the paradigm shift scale of this GCF intervention as high.

1.3 Sustainable development potential *Scale: Medium*

13. With regard to fostering the success of the programme, the proposed intervention also has the following sustainable development potential for the economy of Argentina;

(a) The intervention, if successful, has the potential to contribute to the improvement of the balance of payments of the country's economy. The Government of Argentina spent over USD 13 billion, or approximately 2.5 per cent of national gross domestic product (GDP), to subsidize the energy sector in 2014.[4] This is because a substantial percentage of power generation was generated using natural gas as fuel. Since Argentina is currently a net importer of natural gas (which is the fossil fuel with the largest share in thermal power generation) the national import bills for gas exacerbate the country's balance of payments. The increased generation of renewable energy and a subsequent decline in expensive fossil fuel imports[5] would divert some energy subsidies to other developmental spending programmes, thus contributing to sustainable development;

(b) In addition, the Government of Argentina subsidizes the oil and gas sector for local production. The successful introduction of renewable energy will displace the gas currently used for electricity generation. Despite its own reserves, Argentina's imports of oil and natural gas have been increasing in recent years.[6] With growing energy demand and declining domestic oil and gas production, the energy sector trade imbalance has become worse and Argentina became a net importer in 2011 for the first time since 1984. A higher penetration of renewable energy in the market would reduce dependence on fossil fuel imports, thereby contributing to the sustainable development of Argentina;

(c) The programme seeking GCF funding is expected to create between 4,480 and 6,300 jobs in manufacturing, construction, and installation, and operation and maintenance; and

(d) As stated in the funding proposal, IDB will monitor the underlying projects and track the implementation of the suggested gender activities, including (i) recruiting female students in an internship at the sponsor's corporate location in Argentina; (ii) training and employing unskilled or low-skilled female labour in the construction phase of the project; and (iii) providing the client with an assessment tool for gender equality at the corporate level (i.e. certifications on gender equality) and helping the client to develop an action plan to improve gender equality.

[4] International Energy Agency. 2015. Energy subsidies data in 2014. Available at <http://www.worldenergyoutlook.org/resources/energysubsidies/>. GDP in 2014 was USD 529.73 billion (World Bank; see <http://data.worldbank.org/country/argentina>).

[5] Argentine Renewable Energy Chamber. 2015. Available at <http://www.energiaestrategica.com/wp-content/uploads/2015/10/Reporte-Ejecutivo.pdf>.

[6] Reuters. 2016. *Argentina's Energy Needs Draw Fuel Tankers from Around the Globe*. Available at <http://www.reuters.com/article/us-argentina-oil-imports-idUSKCN0YU2HN>.

14. All these actions will contribute to the sustainable development of the economy of Argentina. Many of these contributions to sustainable development are indirect effects and, as such, the TAP has ranked the scale as medium.

1.4 Needs of the recipient *Scale: Medium*

15. The recipients of the output of this power project are: the companies who will invest in the project, implement the project and own and operate the project; and the consumers who will have access to the electricity.

16. The owners of the projects, in the absence of this proposed programme, will face a financing gap, since Argentina access to international financial markets has been limited, with a few exceptions for some large companies. This will make implementation of these projects impossible. The successful programme will address the financing gap to achieve nearly 40 per cent of the targeted installed capacity in the first tender, thereby meeting the needs of these recipients, which are to successfully implement their projects.

17. The other recipients of this programme, electricity consumers, will not only be the recipients of the improved economic sustainability, but also of the reliable supply of electricity as a result of the diversification of the energy mix. According to information obtained from other sources, in most summers, consumers in Argentina usually experience rationing due to a combination of low water at the hydroelectric dams and also, on occasion, to the uncertain fossil fuel supply. Diversification of the energy mix will be achieved through the successful implementation of this intervention. The TAP ranks these investment criteria as medium impact, given the indirect nature of most of the effects.

1.5 Country ownership *Scale: High*

18. The primary evidence of country ownership of this programme is the no-objection letter issued by the Government of Argentina for this project. Given the strategic importance of RenovAr, the national designated authority (NDA) of Argentina has expressed support for the programme and issued a no-objection letter.

19. In addition, the programme has been designed to be linked with the recently launched renewable power tender process. The investment funds generated from this programme will be utilized to implement a minimum of five projects from the tender. Further, the grant portion will be utilized to strengthen the capacity of local stakeholders and the country's regulatory framework. Also, it is important to note that the project is consistent with the following policies and framework of Argentina: the country's national climate strategy and priorities – a key aim of the strategy is the diversification of the country's energy matrix and the promotion of the rational and efficient use of energy; Argentina's intended nationally determined contribution, which set emission reduction targets and a conditional goal of a 30 per cent reduction in emissions by 2030 compared to 'business as usual' emissions in the base year; and Law 27.191, passed in September 2015, which sets out short- and long-term renewable energy shares: 8 per cent by 2018, 12 per cent by 2019, 16 per cent by 2021, 18 per cent by 2023, and 20 per cent by 2025. These are indications of the country ownership of the programme seeking GCF funding.

20. There is little evidence in the submission of the level of interaction with relevant stakeholders (with the exception of the NDA, the Ministry of Energy, and the Ministry of Finance) during the design and development of the programme. The TAP has, however, ranked the country ownership of this project as high.

1.6 Efficiency and effectiveness *Scale: High*

21. The TAP has considered the efficiency and effectiveness of this intervention according to the following metrics:

(a) The structure of the programme funding: The fact that the average leverage ratio between the public and private co-financing and the GCF financing is 4:1, and the fact that loans have sufficiently long tenors and guarantees for local banks will make the projects viable over the programme lifetime. When coupled with other funding sources, this will make the GCF intervention effective.

(b) The estimated cost per t CO_2 eq that will result from the GCF funding of USD 130 million: It has been estimated that the cost per t CO_2 eq for the GCF funding of USD 130 million will be about USD 8.5/t CO_2 eq, indicating low-cost, efficient investment.

(c) The tenor of the senior loans is 15 years for renewable energy projects, to be awarded with up to a 20-year PPA. This would allow a sufficient cushion for the GCF to ensure the financial soundness of the programme and the effectiveness of the intervention.

22. From the point of view of the efficiency and effectiveness of the intervention for which funding is being requested from the GCF, the scale has been assessed to be high.

II. Overall remarks from the independent Technical Advisory Panel

23. The TAP recommends that the Board of the GCF should approve the programme titled "Catalyzing private investment in sustainable energy in Argentina – Part 1", for funding by the GCF as requested by IDB.

Independent Technical Advisory Panel's review of FP032

Proposal name:	Enhancing women and girls adaptive capacity to climate change in Bangladesh
Accredited entity:	United Nations Development Programme (UNDP)
Project/programme size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Medium*

1. Bangladesh is one of the most climate-vulnerable countries in the world, facing risks from sea level rise, more intense cyclones, storm surges and exacerbated drought conditions. Increasing land salinization threatens groundwater sources and agriculture-based livelihoods. The south-west part of the country, known as the Ganges Dependent Area, is the most affected region. Around 12 million people along nine districts are severely short of fresh water, where almost all freshwater sources, including surface water and groundwater are contaminated with a salinity level beyond acceptable limit.

2. The proposal from the United Nations Development Programme (UNDP) seeks GCF financing of USD 67.22 million to enhance the adaptive capacity of women and adolescent girls (and by extension, their families), who are in extreme poverty, in six districts that are constantly exposed to cyclones, tidal flooding and salinity. Specifically, GCF resources will be used to enable the Ministry of Women and Children Affairs of Bangladesh (MoWCA) as the executing agency to implement investment activities in order to empower targeted vulnerable women and girls to increase their current economic and social situation with the aim of reducing vulnerability to climate change for themselves and the communities to which they belong.

3. The project is structured along three components or outputs: (1) the expansion of climate resilient drinking water supply benefiting 1.27 million people directly and 3 million indirectly; (2) support for the adaptive livelihoods of women and adolescent girls through direct cash transfers benefiting 40,000 women and 17,000 adolescent girls from income support and livelihood diversification; and (3) strengthening the institutional capacity within MoWCA to monitor, evaluate and report on adaptive social protection.

4. Providing drinking water to vulnerable communities is an effective adaptive measure. It could change the life of women and adolescent girls and their communities. However, there are technical issues that have not been addressed in the proposal and which will render water systems ineffective (see explanation below). Because of the choice of technology, the rainwater harvesting in tanks and delivery from single point, the beneficiaries will only receive drinking water a few months per year (late May until mid October) and in almost all cases, the rainwater storages will be exhausted within weeks after the last monsoon rainfall. Therefore, the impact of component one has been designed to be limited to a few months, whereas other technological choices could have provided drinking water throughout the year. The impact potential of the proposed project thus is deliberately kept limited.

5. On the other hand, direct cash transfers to communities will contribute to increasing adaptive capacity, if real assistance and opportunities are given to women and adolescent girls

so as to allow them to have better technical skills, leadership opportunities and options to support their livelihoods. There is a risk that individual household interventions without community ownership and upscaling could have very minor effects on the adaptation of women and adolescent girls to climate change, but could rather act as any other social welfare project.

6. The component to strengthen MoWCA is essential if it will take climate change adaptation as a central priority to support women and adolescent girls' social safety nets. However, there is a question as to why MoWCA should be the ministry leading water infrastructure, instead of relying on the capacity of the Department of Public Health Engineering of Bangladesh, which is the traditional agency to deal with drinking water by supporting local government institutions in fulfilling their responsibilities to citizens regarding drinking water and sanitation. Instead, the Department of Women (DWA) within MoWCA in partnership with 118 Union Parishads (union councils of Bangladesh) will establish and manage rainwater harvest units by establishing four multi-ministry committees at different levels. As explained in the next section, the water component of the project that accounts for 67 per cent of the project's resources lacks a feasible technical design that could put at risk the expected impacts of the project.

1.2 Paradigm shift potential *Scale: Medium*

7. Working on a unique project for poor women and girls in Bangladesh is a paradigm shift, as most of the projects only mention women as part of the 'gender component'. The target group of women and adolescent girls belong to the hard to reach, ultra-poor women and girls in six of the most affected areas in Bangladesh.

8. However, there are some technical and practical questions that need to be addressed to make the project successful and ensure that the objective to make poor women and girls more resilient to climate change is achievable.

9. The theory of change presented in the project could have better interconnections between the three components of the project and stronger evidence of the impacts in the medium and long terms.

10. The first project component to ensure clean water availability, has four main technical problems:

11. **First, there is no indication whatsoever of how rainwater is going to be collected in the harvesting tanks.** The proposed tanks do not 'capture' or 'harvest' rainwater, they only store water. These tanks, being part of a rainwater harvesting system, require roofs (the roof of the tank is minuscule as a rainwater collection surface, so it needs a much larger surface area to collect the water to be stored). There is no indication in the proposal of whether there are roofs near to these tank locations.

12. The calculations of the independent Technical Advisory Panel (TAP) indicate that each of the 450 tank areas proposed will need approximately 2,000 m^2 of roof surface area to collect the water to be stored in these tanks. The funding proposal presents no proof that these roofs exist in the 450 locations. Neither has any capital investment been undertaken related to the collection and conveyance of the rainwater harvested from such roofs to the proposed storage tanks (adequate piping will be needed for this). In addition to this, there is no indication of whether the roofs (if existent) would be suitable for collecting rainwater in a safe way. Also, the proposal does not indicate if the 450 locations proposed have available areas in which to locate the proposed tanks. (At an average of three tanks and a total of 1.8 million litres of total storage volume per location, finding adequate areas in which to place these tanks may prove to be a challenge if they are to be located close to existing built areas with adequate roofs.) Upon being questioned on this issue, project proponents responded that 200 m^2 were needed according to

their calculations (see the first set of responses to questions from the TAP), this was subsequently changed to 500 m^2 (during a conference call with the TAP), and finally the figure was changed to 1,500 m^2 (see the last set of documents submitted to the TAP). The different responses led the TAP to believe that project proponents have not considered these issues for each of the locations, which poses a considerable risk to the sustainability of the project.

13. Even if they could collect rainwater from rivers (as was mentioned as a possibility in the set of responses sent to the questions of the TAP, which, however, is highly unlikely due to presence of high salinity in river waters in the target areas of Bangladesh), the water quality of those rivers will be very different from that of rainwater, even unsuitable for drinking purposes. Collecting rainwater from a clean and well-maintained roof provides a much different quality of water than collecting it from a river in an area with no sewerage system (as it is indicated in the proposal). The proposed treatment system for the water collected in the tanks will not be applicable to river water, since river water has considerable salinity. In order to treat salinity reverse osmosis treatment will be needed, which is not considered in the current proposal.

14. **Second, the proposal contains no indication of how are the potential users are going to access the water** stored in these 'rain harvest' tanks. Will women and adolescent girls walk there? Will water be transported to their homes? If water is going to be transported, how and who is going to finance, build and operate such a transportation system (water tank trucks, pipes, animals carrying water tanks, etc.)?

15. If water is not going to be transported, and instead it is planned to distribute it to people who approach the tank farm area, who will operate the tank and be in charge of water distribution? Each of the 450 tank locations proposed will serve an average of 2,800 people, so it cannot be a 'serve-yourself-any-amount-of-water-you-need' type of arrangement. The project estimates that a water management group composed of seven women representatives will be established for a year for every water system (tank). However, it is not clear how these groups of women will operate the system in practical manner. Available literature has reflected effectiveness of only the household-based water harvesting systems; there is hardly any literature that suggests that community based similar systems have been successfully implemented in the target areas. Available literature suggests that the generally weak management of these systems is the root cause of failure of such systems. The management mechanism suggested by the proposal appears particularly weak, especially in view of occasional replacement of filters and ultraviolet radiative bulbs – both being parts of the equipment which have to be managed by the management unit. It is most likely to be overwhelming for the management system presented in the proposal.

16. **Third, the proposed project has not made any allocation for the operation and maintenance** of the roofs, rainwater conveyance system, tanks, filters, and ultraviolet (UV) disinfection. As opposed to what the proponents indicate, the operation and maintenance of the proposed system will not be inexpensive. Filters and UV lamps need to be cleaned and replaced periodically. Roofs get dirty easily. If not cleaned and maintained, the first flush or rainwater, which is usually diverted, becomes proportionally more and more important (i.e. water loss). Operations and management staff will be needed to protect, operate and maintain the rainwater collection system, storage tanks, filters and UV lamps. An insignificant budget of USD50 per tank per annum has been allocated to this, which appears completely inadequate to meet the management demand.

17. **Fourth, there is no reason for having only one brand name of tanks specified.** The specifications for the equipment proposed is written in such a way that makes it look like only the company Rhino could provide it. When this was put to the proponents, they mentioned that this brand was the only supplier which presented cost estimates. Water storage tanks have existed for millennia. There are hundreds of suppliers of water tanks, dozens of suppliers of UV

disinfection and water filters. It is important to liaise with different suppliers, including on technical options and costs.

18. In terms of the second component, direct cash transfers to individual women and adolescent girls will not necessarily lead to behavioural change from non-climate resilient livelihoods to climate resilient livelihoods.

19. The Government of Bangladesh engages MoWCA to offer cash transfer under one of its many social safety net programmes – the Vulnerable group development programme. The cash will be useful in creating income opportunities. As has been observed through the Vulnerable group development programme of government of Bangladesh (i.e. MOWCA), vulnerable women and girls, if successful, utilize the training for skills enhancement and the cash (often start-up cash) to find modest means by which to create self-employment.

20. The cash transfer programme will be contingent upon two conditions: (1) the development of a household adaptive livelihood plan, which will be supported by non-governmental organizations (NGOs); and (2) the completion of skills training. A cash grant will be provided to implement the specific adaptive livelihood plan for extremely poor women and girls who are at the fringes of society and outside any other type of support.

21. The MoWCA programme will be supported by NGOs and their facilitators to ensure climate smart investments. In order to reach 57,000 woman and adolescent girls, the project proposes to have one facilitator for every 30 woman involved in the project. That is 1,900 trained facilitators able to assist women and girls in their decisions regarding investing their cash transfer. However, it is difficult to understand from the project how these facilitators will understand and help women and girls designing adaptive plans, ensuring investments that will lead to adaptive livelihoods. The experience of MoWCA is mostly related to poverty alleviation safety net programmes.

22. The investments should be supported with clear ideas and technical capacity support so as to use the resources thoughtfully. Poor women and girls are not aware of resilience and they have too many needs to allow them to select only smart adaptive investments that will change their lives. Moreover, aggregated impacts or economies of scale should be thought to ensure cost-effective measures for climate adaptation. For example, if a woman or girl decides to buy and raise ducks, it is better to have several women or girls in the programme in order to access better prices, or if they decide to fix their houses, it would be more cost-effective to buy materials for several women and girls and provide technical solutions to make houses secure in an aggregated manner.

23. The programme needs further analysis to ensure that the earned income provided to women or girls builds ‘financial capital’ in order to enhance ‘adaptive capacity’ to fight climate change induced added vulnerability. As stated in the proposal, behavioural change for the implementation of resilient livelihoods will be reinforced not just with the cash transfer, but also through a combination of the transfer of cash, skills and knowledge. However, the knowledge transfer programme to enhance their adaptive skills is not clearly described in the proposal, especially when it needs a very innovative approach towards climate resilience.

1.3 Sustainable development potential *Scale: Low to Medium*

24. Effective water systems will have co-benefits in terms of health and sanitation and in general increasing the quality of life of poor communities. However, as presented in the paradigm shift section, the sustainability of the water systems will rely on the design of a more integrated water solution that incorporates water harvest options (roofs), maintenance of the facilities and long-term management.

25. The project's gender-sensitive development impacts are clear. However, graduating from poverty with short-term cash transfers is difficult. It relies on the level of cash transfer provided to women and adolescent girls and the support (knowledge services and direct support by facilitators) given to help them to invest the resources into smart options. It will also rely on the future availability of microcredit or other forms of financial sustainability to further advance the economic progress made by beneficiary graduates.

26. If the investments are effectively managed, they could lead to women and girls being brought out of perpetual poverty and being more prepared to fight climate risks.

27. The project relies on the capacity of NGOs to conduct the Household Adaptation Livelihood Profiles - HALPs and support beneficiaries. Livelihood options are merely named in the proposal (seed preservation, duck rearing, etc.) all of which will need economies of scale to work, and not just isolated individual interventions.

28. The NGOs selected will themselves go through a training programme, led by MoWCA, supported by UNDP, to ensure that the right type of information is conveyed to the beneficiaries. A training-of-trainers type approach will be used for this purpose. The training programme and materials must be well thought out and designed to support women and girls in changing their behaviours towards climate change risks. Moreover, there should be a pre-feasibility phase covering efficient individual investments that could lead to enhance livelihoods and self-resilience options, based on the knowledge of the proponents of the climate risks existing in the six districts and possible solutions by individual households.

29. Long-term sustainability depends on job availability, microcredit facilities and facilitating access to markets among other options. The project proposal needs to further elaborate on the transition to make these options available to women and girls after project completion.

1.4 Needs of the recipient *Scale: High*

30. Bangladesh is very vulnerable to climate change. The United Nations University Institute for Environment and Human Security World Risk Report 2015 identified Bangladesh as the sixth most natural disaster prone country among 173 countries in the world, mainly due to the unfortunate combination of extreme exposure and high vulnerability.

31. Gender sensitivity is well stated, as women are normally the most affected from climate change. The project elaborates that access to clean water is one of the main necessities of the communities. Tackling the solution to this problem is therefore a known necessity, and ensuring that women can have clean water for their livelihoods will also have health co-benefits. However, as mentioned above, the project needs to develop an effective and lasting solution.

32. Selecting the beneficiaries of the cash transfers will be difficult in a country with millions of poor people in need of resources. Only 40,000 women and 17,000 adolescent girls will receive financial assistance of USD 385 and USD 325 per beneficiary per cycle, respectively. Upscaling these benefits will require more resources. Ensuring that cash transfers will make these selected women and girls' livelihoods more resilient to climate change depends on smart investments, and a well-designed and focused programme.

33. There is a need to strengthen the understanding of the Ministry of Woman and Children Affairs of climate change so as to be able to deliver the project. There is also a significant need to strengthen other institutions in the country to ensure that climate change and gender issues are an integral factor in all socioeconomic activities.

34. The project was designed in full consultation with the Ministry of Finance (national designated authority), MoWCA and relevant stakeholders. The final project document was

presented in a multi-stakeholder consultation meeting organized by the Ministry of Finance, DWA, MoWCA and UNDP. Organizations like the World Food Programme, the European Union, the United Nations Entity for Gender Equality and the Empowerment of Women, the Department for International Development (United Kingdom), International Centre for Climate Change and Development, Action Aid, and other government and civil society organizations provided their feedback on the project proposal.

35. According to the proposal, four consultations with women, adolescent girls and members of the targeted communities were carried out. Local government representatives and local NGOs also participated in discussions on the barriers, challenges and adaptation gaps. Each consultation took place over a period of three days so as to provide ample time for communities to discuss critical aspects of the challenges they face and explore how an initiative such as the one proposed could provide the most impactful support.

1.5 Country ownership *Scale: High*

36. The proposed project is aligned with Bangladesh's national adaptation programme of action, which is part of the Bangladesh climate change strategy and action plan. Bangladesh is also innovating in establishing a gender and climate change cell within Bangladesh's Department of Women's Affairs, ensuring that this unit interacts with other ministries. In this context, climate change will be mainstreamed into Bangladesh's national social protection programme.

37. The project will be executed by MoWCA through DWA. MoWCA is engaged in the formulation and implementation of policies and programmes related to the welfare and development of women and children. MoWCA coordinates development activities related to women (e.g. Women in development) of different ministries. Overall, MoWCA works for the establishment and preservation of the legal and social rights of women and children.

38. However, one big question about the project is how this Ministry could be able to design and manage water facilities instead of an institution more related to water and infrastructural management. The project has shown no indication that MoWCA will seek technical assistance from the usual authority for supplying drinking water, the Department of Public Health Engineering (DPHE), who has institutional memory and experience in provisioning of drinking water for the people of the target region. The accredited entity has cited the project's Technical Quality Assurance Committee, including a representation from the Department of Public Health Engineering and the Department of Disaster Management, as a mitigating factor. However, the water solution presented needs to be further elaborated, and will therefore need a closer look by specialized personnel within the DPHE Department of Public Health Engineering, together with the local governments and 118 Union Parishads on a case-by-case basis.

39. In terms of the cash transfers, MoWCA will rely on the selection of NGOs to deliver the project. As this project is different from the normal cash transfers already in place in Bangladesh to support those suffering from extreme poverty, it will need further elaboration to ensure that it provides a climate resilient component that is effective, involving the different stakeholders.

1.6 Efficiency and effectiveness *Scale: Low*

40. The project cost is USD 67.220 million, including co-financing of USD 7.844 million from Bangladesh's Ministry of Women and Children Affairs, the executing entity. This is a modest ratio of 0.12.

41. For the water component, the budget of USD 42,370 million is associated with the implementation of the water harvest tank units, with an estimated cost of USD 30,000 per unit. These estimates are based on quotations by only one supplier (Rhino), and therefore a better assessment of solutions and suppliers is needed. There is very little information on the costs of additional investments such as proper roofing to collect water, the management of water tanks, etc.

42. The project proponents assured the TAP that a total number of 118 local government institutions (Union Parishads) have already agreed to pay the cost of maintenance from their own domestic budgetary allocations. They also stated that based on in-depth discussions during the design phase, the amount required for maintenance, outlined in the feasibility study, is a manageable amount for them and that commitments have been secured already by the local institutions. However, since the water systems need further elaboration to include the management of roof systems and other technical specifications, the estimates of the costs for maintenance will need to be further elaborated.

43. The proposed cash transfers for beneficiaries at USD 385 for women and USD 325 for adolescent girls per beneficiary per cycle is based on previous experiences. The total cost of this component is estimated in USD 22,707 million. The continuation of this component will depend on acquiring more resources to support more woman and girls, lacking a real sustainability proposal. The sustainability at the individual level of these cash transfers will depend on the success of the programme in graduating women and girls from poverty and providing them with other options to sustain their livelihood plans (microlending, markets, etc.).

44. Project Management Unit costs for the project total USD 3,890,936, which represents 5.2 per cent of the total project costs. The level of project management costs appears reasonable for the project, although such costs have not been intended to cover micro-management of the operation of water harvesting units.

45. Three separate economic models were developed for the adaptive livelihoods cash transfer, rainwater harvesting and disaster preparedness activities, respectively. The internal rates of return for each model ranges from modest to very high (14-42 per cent; 10-37 per cent; and 36-94 per cent, respectively). However, the assumptions of the rate of return are totally overestimated as for example there is an assumption that cash transfers of 2 years will ensure benefits of 20 years, well beyond the two-year cash transfer period. Similarly, the economic modelling for the early warning system volunteer teams (activity 2.3) assumes 20 years of economic benefits.

46. There limited engagement of the private sector across the components of the project, particularly in the water supply component where only one company is repeatedly referred to.

47. Sustainability of the cash transfers will depend on those institutions which are able to support the female 'graduates' that can advance into other forms of financial sustainability like microlending. Therefore, it is essential to involve well-known institutions that provide these services in Bangladesh from the beginning of the project so as to ensure that they also understand the climate change aspect of the proposal and can support the female graduates in their efforts to be resilient to climate change in the future.

II. Overall remarks from the independent Technical Advisory Panel

48. The TAP understands that the project objective to enhance the adaptive capacity of women and adolescent girls in a very vulnerable country to climate change is very important and necessary. However, the project needs a complete revision of the water component in order to ensure its effectiveness, and further elaboration of the cash transfer scheme and the foreseen livelihood investments.

49. The TAP recommends the approval of the project subject to the following conditions:

Conditions to be met prior to the execution of the funded activity agreement:

(a) A revised water system model, including:

(i) a complete analysis of effectiveness of available technologies to provide for drinking water throughout the year;

(ii) a re-evaluation of the design of the rainwater harvesting system for every location, including the availability of sufficient roof areas to collect water;

(iii) estimates of water harvest per tank per year;

(iv) the plan to operate, maintain and manage each of the 450 tank farms, including annual cost estimates and equitable systems to deliver water to users;

(v) specific agreements with each of the Union Parishads, including concrete plans and authorizations on the location of the tanks and roof systems and arrangements for their management and maintenance, including estimated budget allocations; and

(vi) a new budget for the water component, including quotations for the tanks, the harvest system and the maintenance costs.

(b) A harmonized approach to cash transfer allocations, including;

(i) pre-feasibility studies on foreseen investments (activities) that would enhance the adaptive livelihoods of women and girls;

(ii) a concrete scheme to select beneficiaries, ensuring equitable allocation and avoiding political interventions;

(iii) the design of the training the trainers course for NGOs and possible facilitators of the project;

(iv) the identification of entry points for normative and behavioural change in providing educational, training and livelihood opportunities for women and girls; and

(v) financial sustainability options to ensure that the activities developed with cash investments are sustained after the two-year period of grant disbursement.

Independent Technical Advisory Panel's review of FP033

Proposal name:	Accelerating the transformational shift to a low-carbon economy in the Republic of Mauritius
Accredited entity:	United Nations Development Programme (UNDP)
Project/programme size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Medium*

1. The main objective of the funding proposal (FP) is to smoothly shift the country's energy sector to a low-emission pathway through the implementation of the submitted proposal aimed at increasing the Mauritian grid absorption potential of intermittent renewable energy (component 2 of the FP), in particular solar and wind.

2. The Mauritian energy sector is heavily reliant on fossil fuels. The grid emission factor of Mauritius is significantly high and is equal to 1.01 tonnes of carbon dioxide per megawatt hour (t CO_2 per MWh) due to the prevalence of imported coal (39 per cent) and fuel oil (38 per cent) in the electricity generation mix.

3. The FP is based on three main components targeting the Mauritian renewable energy sector and in particular the grid potential to dispatch renewable energy (RE). These components are: (i) institutional strengthening for renewable energy; (ii) improving grid absorption capacity followed by photovoltaic (PV) system deployment; and (iii) improving the maintenance capacity of PV mini-grids on the outer island of Agalega.

4. The leading component of these three is component 2 which has to ensure the accommodation of a total of 185 MW of intermittent RE by the grid at the end of phase I. The recent absorption potential of intermittent RE of the national grid is 60 MW

Anticipated impact of the funding proposal

5. The project demonstrates a high potential to have multidimensional positive impact on the country.

6. The project contributes to **greenhouse mitigation** and has direct and indirect impact on emission reduction (ER). Assessment of the ER potential of the project by 2025 is 681,000 t CO_2 eq annually taking into account direct and indirect effects anticipated after the successful implementation of the project. In this assessment the project assumptions are that: the total 185 MW absorption capacity of the grid is fully utilized; the installation of smart grid elements yields an annual reduction of 33,000 t CO_2 eq; component 3 is implemented; the total emission reduction potential is based on PV ER potential of 1 MW. This amount of emission reduction is around 16 per cent of emissions projected for the energy sector of Mauritius by 2030 (total 7 Mt CO_2 eq is reported in the intended nationally determined contribution of Mauritius by 2030 from which 62 per cent is assumed to be the energy sector share if the current share of the sector will not be changed).

7. The project contributes to **intended nationally determined contribution implementation** as it results in expansion in solar, wind and biomass energy production and

other renewable energy sources as well as the modernization of the national electricity grid through the use of smart technologies among the other priority activities.

8. The project contributes to the fulfilment of the key overall target set out in the long-term energy strategy (LTES) of the country which is **35 per cent renewable energy on the grid by the year 2025**. The 25 MW of small- and medium-scale PV cells that will be installed through component 2 will directly provide an incremental 2 per cent of renewable energy. Through the grid strengthening component of the GCF programme, the Central Electricity Board will be able to accept the full 35 per cent of intermittent renewables.

9. As a result of this project, a total of 129,500 households are expected to have access to low-emission energy.

10. The project contributes to the **energy independence** of the country having 84 per cent of its primary energy requirements met from imported fossil fuels.

11. The project contributes to the **technology transfer** process importing and implementing smart grid technologies, improving the maintenance skills of locals to ensure the sustainability of imported renewable technologies.

12. The project contributes to improving the **macroeconomic parameters** of Mauritius through reducing the importation of fuel.

13. Finally, the project contributes to the **adaptation** of Mauritius's vulnerable to climate change energy system through reducing the diesel demand from outer islands which are not reachable during the climate change related extreme weather events.

1.2 Paradigm shift potential *Scale: High*

14. The paradigm shift offered by this proposal demonstrates that planning the increase of intermittent renewable energy should start with the improvement of grid absorption potential at least in parallel with project preparation and investment mobilization. There is still a significant amount of strategies and action plans developed for the countries with high potential for renewable energy but most of the grids in developing countries have limited capacities to absorb such renewable energy. The project has a strong technology transfer component which contributes to this paradigm shift process. The experience gained in improving grid preparedness should be spread more broadly through GCF projects.

15. Once the enabling environment, in the form of grid strengthening and institutional strengthening (operationalization of the Mauritius Renewable Energy Agency (MARENA)), has been created, the already existing demand from independent power producers (IPPs) for an additional 39 MW of renewable energy will be able to move forward. The Central Electricity Board estimates that an additional 185 MW of renewable energy generating capacity will be required over the coming 10 years (2015–2025) to meet energy demand and national RE targets.

1.3 Sustainable development potential *Scale: High*

16. The sustainable development potential of the project is also high based on the contributions listed in section 1: technology transfer; the increased sustainability of low-emission electricity supply; strengthening the system and structures for the promotion of renewable energy; making savings in the state budget; creating 2,000 new, eco-jobs; reducing local pollution when reducing diesel consumption, promoting local IPPs; and providing training in the maintenance of new technologies.

1.4 Needs of the recipient *Scale: High*

17. Mauritius is one of the small island developing States but has a fast growing economy dependent on imported coal and fossil fuel. At the same time, the country has a significant amount of its own renewable resources (mainly solar and wind, bagasse is already utilized at its maximum), which are not fully utilized because of the limited absorption capacity of the national grid for intermittent renewable energy. The LTES of Mauritius plans for 35 per cent renewables in the grid by 2025. The FP states that there is currently 39 MW of IPP solar and wind generation that is not realized because of the limited capacity of the grid to absorb this volume of intermittent RE, while the annual increase of electricity demand is around 3 per cent.

18. For the stabilization of its economy and to ensure the sustainable supply of low-carbon electricity to industry and the population, the country needs an intensive technology and knowledge transfer process in order to increase the national grid absorption capacity and local maintenance skills for dealing with state-of the–art/modern technologies for renewable energy. This technology transfer process will be ensured through components 2 and 3 of the proposal. Component 2 is responsible for the modernization of the national electricity grid through the use of smart technologies, which is a prerequisite to accelerate the uptake of renewable energy.

19. On the other hand, there is a need to strengthen local structures, regulations, strategic planning and the promotion of local IPPs in the renewable sector. Therefore another target set by the Government of Mauritius for the LTES is the establishment of MARENA to coordinate the rapid uptake of renewable energy. Component 1 of the project is dedicated to the establishment and operationalization of MARENA.

20. However, the role of MARENA after full operationalization in phase I of the project is **not clearly demonstrated in the submitted FP**. The role of MARENA in the successful implementation of components 2 and 3 is crucial. In particular, by the end of phase I of the FP, an action plan should be developed demonstrating the role of MARENA in the facilitation of the realization of the pending 39 MW of renewable energy developed by IPPs.

21. The vulnerability of the Mauritius energy sector (particularly on the outer islands) to climate change patterns such as cyclones, sea level rise and trade winds impeding the transportation of fuel to the outer islands will be targeted by component 3 contributing to the reduction of diesel demand on these islands.

1.5 Country ownership *Scale: High*

22. The project is fully in compliance with government policies and strategies for the energy sector (increasing the share of renewable energy to 35 per cent by 2025), in particular, for the renewable energy (promotion of solar and wind energy installations through IPP) and energy efficiency (smart grid) sub-sectors, and is focused on the strengthening of the local regulations for increasing the utilization of local renewables (through the establishment and strengthening of the capacities of MARENA) as planned by the strategy. It is also in compliance with climate change mitigation (reduce the dependence of the national grid on imported fossil fuel) and adaptation (increase the resilience of the national grid) strategies.

23. All three components of this FP clearly demonstrate their role in the fulfilment of the government's commitments as stated in the Mauritian nationally determined contribution action plan, approved by the Cabinet of Ministers in March 2016.

24. Country ownership is well demonstrated through various studies dedicated to the grid absorption capacity, renewable market, strengthening local capacities, etc., conducted by different international organizations upon the country's request and which are provided as annexes to the FP.

1.6 Efficiency and effectiveness *Scale: Medium*

25. Overall, the project will result in a reduction in greenhouse gas emissions of 4.27 million t CO_2 eq over the lifetimes of the investment/grant of USD 28.21 million provided by the GCF (USD 6.6/t CO_2 eq). The cost of ER is deemed to be effective.

26. Currently, 16–19 per cent of fuel imports, amounting to more than USD 1 billion per annum. Given that the energy sector is a major consumer of fuel, the GCF project will bring about a considerable reduction in fossil fuel over the lifetime of the PV. Foreign currency savings are assessed to be the range of USD 500 million over the project lifespan.

27. The GCF project will offer USD 40.91 million of GCF grant resources to Mauritius and will directly unlock USD 163.18 million of co-finance.

28. Overall, these grant resources will represent just ~6 per cent of the total investment cost associated with the expected 185 MW of renewable energy to be installed by 2023. In addition to the upfront grant provided by GCF resources, the Agence Française de Développement (AFD) will, if the GCF project is approved, establish a loan scheme for PV adopters under small scale distributed generation Phase 4 so that the residual (post-grant) purchase price of the PV systems can be borrowed and then repaid in installments. The AFD loan will be at 2.86 per cent assuming current Euro Inter-bank Offered Rate levels.

29. While the GCF project is not specifically focused on adaptation, it will nonetheless offer the government key adaptation benefits in the form of a more stable grid, reduced reliance on energy imports, and a more energy-secure outer island population. The project will deliver benefits that are fully aligned with the National climate adaptation framework of Mauritius (2012). The project is also clearly aligned with the Mauritian nationally determined contribution and the accompanying action plan which requires investment of the order of USD 5.2 billion, of which the proposed GCF project comprises a small contribution with high impact if successful.

II. Overall remarks from the independent Technical Advisory Panel

30. It is recommended that the Board approves the funding proposal, subject to the following condition:

Condition precedent for disbursement for phase 2:

(a) Provide an action plan, demonstrating continual operation of MARENA during the entire lifespan of the project, as part of phase 1 evaluation report".

Independent Technical Advisory Panel's review of FP034

Proposal name:	Building resilient communities, wetland ecosystems and associated catchments in Uganda
Accredited entity:	United Nations Development Programme (UNDP)
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. Wetlands and the forest ecosystems in the adjoining catchments of those wetlands in Uganda are facing both environmental degradation and the adverse impacts of climate variability and change. While the maintenance of the prevailing wetlands and adjacent forest ecosystems has already become difficult, additional stresses resulting from climate variability and change induced impacts have been threatening the long-term sustainability of both wetlands and the adjacent forest ecosystems. Against that backdrop, the livelihoods of the majority of the rural population living in and around those areas are based on the goods and services related to these dwindling ecosystems. The proposed project is conceptually oriented towards:

(a) addressing ecosystem restoration for long-term sustainability;

(b) creating a buffer zone around the ecosystems and associated catchments so that sources of goods and services for the poor, climate-affected population do not decline drastically;

(c) increasing the number of farmers who are provided with support to find alternative livelihoods so that stresses on the remaining ecosystems and associated catchments do not escalate rapidly; and

(d) providing people with early warning regarding climate-induced hazards so that they are empowered to take risk reduction measures.

2. Moreover, farmers in those areas will be provided with training and know-how on conservation agriculture and support to link them with market systems, in order to ensure an increase in both production and income. The project is, therefore, in line with the funding criteria of the GCF.

3. The proposed project is highly ambitious in terms of target beneficiaries and areas where ecosystem and catchment restoration will take place. The proposal states that 800,000 people will directly benefit from the project, while the number of indirect beneficiaries will be as high as 4 million. The project will aim at restoring an area of 760 km^2 spread over six and nine districts in south-western and eastern Uganda, respectively. The delivery of the project will require eight years to complete its implementation.

4. The high ambition exhibited in determining the number of target beneficiaries is based on a methodology which appears rather weak and unspecific. The logic framework provides for detailed numbers of beneficiaries who will be provided with specific skills enhancement and/or support. However, it is unclear whether each of the different types of benefits will be provided

to the same household. The independent Technical Advisory Panel (iTAP) finds that there is a significant overestimation in the number of beneficiaries.

5. The proposed project is expected to generate and use climate information in decision-making, which, by definition, will not only be used for the population living in the target areas, but will also be made available for use by the entire country. While such efforts are highly useful, early warning systems and advance climate advisory systems can also reach out to a far bigger audience. This requires a clear definition of the benefit streams against the specific activities in the logic framework, which needs to be revised in order to further clarify the method used to estimate the benefit streams and number of beneficiaries. However, efforts must also be made to avoid any possibility of double counting of beneficiary households.

6. The ecosystem-based adaptation (EbA) project[7] aims to restore above-mentioned ecosystems and associated catchments in a significant area of 760 km^2, which is commendable. While such restoration will lead to considerable mitigation co-benefits, such benefits are neither quantified nor highlighted in the proposal. Since wetlands in Uganda sustain livelihoods and provide ecosystem services, a complete assessment of the potential adaptation and mitigation co-benefits of the project could have made the proposal more attractive.

7. This small-sized project requests GCF funding amounted to USD 24.14 million, leveraging estimated total co-financing of USD 20.122 million, predominantly from the Government of Uganda and the accredited entity (AE), the United Nations Development Programme (UNDP). The Government of Uganda has requested maximum concessionality (100 per cent grant resources) owing to the perceived creation of public goods and services by means of project interventions. Moreover, the project does not expect to generate revenue or cost-recovery, but rather seeks to contribute to the sustainability of the adaptation approaches through the creation of an enabling environment and through co-financing.

8. Overall, the iTAP finds that the project will have a positive impact. However, the numbers provided in the proposal appear to be rather optimistic. Actual delivery, therefore, needs to be closely monitored in order to avoid potential double-counting and overestimation.

1.2 Paradigm shift potential *Scale: N/A*

9. The project is primarily based on the proven track record of a pilot project titled "Extending Wetland Protected Areas through Community Conservation Initiatives (COBWEB)". Therefore, it is not as such innovative in terms of adaptation approaches. Promoting resilient agricultural practices and enhancing agriculture-based livelihoods, as contained in component 2 of the proposal, are activities which will help to maintain productivity, and may even help to increase agricultural productivity, in spite of climate change. However, such gains will not be sufficiently significant to eliminate the climate change related risks of farming communities. Alongside conventional implementation of adaptive measures, the project would bring about a modest transformational approach in terms of integration of value chain in agricultural production, which is likely to link current subsistence farmers with market mechanisms. However, this project may only initiate the process of market integration, particularly in the absence of an enabling policy or the required institutional and behavioural environment comprising various stakeholders (e.g. State institutions, regulatory mechanisms, policy, farmers/producers/cooperatives, agribusinesses and consumers) involved in the agricultural value chains.

[7] The project also has clearly defined approaches towards building livelihood resilience and disaster risk reduction, in a bid to address both long and short-term adaptation goals, including spreading climate risks and building resilience.

10. The project will have a positive effect in terms of creating an enabling environment. Not only is such an environment likely to be created for agricultural product value chains, but inter-institutional arrangements will also have to be formed and maintained in order to ensure the generation and subsequent utilization of climate information services and networks – an essential element towards addressing unpredictable weather patterns in relation to climate variability and change.

11. The opportunities created by the issuance of early warnings will perhaps result in a significant change in risk reduction approaches. This particular component of the project would gain from effective collaboration with the ongoing efforts of the Africa-wide Weather Forecasting System involving a number of neighbouring African countries.

12. The project itself is a result of scaling up activity, based on previous pilot activities. However, it will still have replication potential given the size of the targeted population and area. EbA activities alone may be scaled up from the proposed 20 per cent of wetlands areas to their maximum potential. However, the capacity of the institutions and beneficiaries involved needs to be enhanced significantly for any future replication. The proposal as such has not provided for adequate analysis of how it will foster the achievement of such replication potential.

13. The theory of change emphasizes the achievement of the rather ambitious targets; however, it also needs adequate plans for periodic monitoring and evaluation. There exists a significant opportunity for lessons learned and knowledge outreach. The project offers training and capacity-building towards both institutional strengthening and community resilience building. The opportunities for lessons learned in other aspects of the project must be tapped and institutionalized so that it contributes to the formulation of policies and regulatory frameworks towards ecosystem restoration, conservation agriculture, delivery mechanisms for early warning systems and agricultural advisories.

1.3 Sustainable development potential *Scale: N/A*

14. Since the project simultaneously addresses EbA and livelihoods resilience, it is well suited to serve a number of the United Nations Sustainable Development Goals (SDGs) (namely, **SDG 6, SDG 13** and **SDG 15**, among others). Although not estimated, the environmental co-benefits are obvious if ecosystem restoration and the establishment of buffer zones are achieved through the project. The hydrological restoration in the associated catchment areas will, inter alia, ensure long-term ecosystem health, contribute to soil quality (particularly top soils), and improve the water cycle. Since wetlands are likely to be restored, the project will contribute to increase flora and fauna biodiversity. These will be direct benefits, which will provide for both local and global public goods and services.

15. The alternative livelihoods created as a result of the project (through skills enhancement and trainings) will help farming households to spread their climate risks, with the potential to contribute to a higher level of income, thereby contributing to poverty reduction goals. Diversified crop production together with agricultural conservation practices will enhance production, which will be useful for small-scale farmers in maintaining their household food security in spite of climate change. Early warning systems and agricultural advisories will enable all parts of the population to plan for avoiding certain exposure to extreme weather conditions and optimize production, in spite of increasing climate variability. These elements will have the potential to reduce the burden of loss and damage of affected households and communities and will reduce pressure to offer social 'safety net' services.

16. The most significant element of the project is the target to involve at least 50 per cent women as primary beneficiaries. This will enable women to exercise greater gender equity and

rights, starting at the household level. Higher productivity among women-headed households and improved water quality, even if it is only a modest improvement, will significantly contribute to the gender sensitivity of the project outcomes. This element is fully consistent with SDG 5.

1.4 Needs of the recipient *Scale: N/A*

17. In Uganda, rural poor and subsistence farmers, of which a significant proportion is women-headed households, are indeed vulnerable to climate variability and change. The proposal therefore rightly identifies the target population. Moreover, as the proposal describes, the target population belong to the poorest communities within Uganda, relative to the national average income within the country. Uganda, as one of the least developed countries (LDCs), deserves special treatment within the purview of **Article 4** of the United Nations Framework Convention on Climate Change (UNFCCC). It is therefore justified that Uganda and its climate-vulnerable poor people receive financial support from the GCF. Since the entire project is designed to create public goods, the request for maximum concessionality is also justified.

18. As indicated above, the proposal envisages to advance benefit streams to women as they will constitute at least 50 per cent of the beneficiaries. The design is therefore likely to serve at least 400,000 women, which is laudable.

19. The target beneficiaries depend on ecosystem services involving the wetlands and also the associated catchment areas, even for maintaining agricultural production. With the increasingly erratic nature of available rainfall and the higher probability of drought and floods, the climate vulnerabilities faced by the population are well documented and justified for provisioning of support. Such references are also found in Uganda's submissions to the UNFCCC secretariat in the form of the national adaptation programme of action and national communications.

20. Subsistence farmers are currently beyond the reach of climate information and knowledge domains. Their production systems are scarcely linked to mainstream markets, even if the linkages exist; however, proper market orientation and opportunities for economic exploitation are unavailable, particularly in the absence of a properly understood value chain approach and market regulation. This project aims to address some of these barriers, perhaps for the first time in relation to several of the issues. Moreover, the early warning system will forge inter-institutional collaboration, which will create opportunities to optimize efforts and gain experience from a range of stakeholders, while collectively serving Ugandan communities more effectively. These factors indicate the importance of the role the project may play, if administered in a concerted manner.

21. Overall, the iTAP finds the needs of the recipient undoubtedly high and well justified to tap GCF resources.

1.5 Country ownership *Scale: N/A*

22. The specific objectives set out by the proposed project are completely in line with the policies of the country. While the project finds synergies with the nationally appropriate mitigation actions, the national communications to the UNFCCC, national adaptation plans and/or equivalent documents, the capacity-building sub-components are also in strong alignment with the technology needs assessment for the country. The project will build national capacity to offer climate information and advisories in a sustainable manner, embedding the entire operation through an inter-institutional collaborative framework, which demonstrates high country ownership.

23. The project proponent has developed the project in consultation with appropriate national institutions, sought institutional buy-ins from respective partner institutions and incorporated concerns and suggestions from various stakeholders including representatives of beneficiaries and civil society organizations.

24. The Government of Uganda is keen to undertake the project, as demonstrated through its significant co-financing and strong commitment to continue with its climate information and knowledge system.

25. The selected executing entities (EEs) have their respective roles in the project. Since the project has been built on a previous pilot project involving institutions in wetlands management, ownership at the EE level is also envisaged. This is further justified through the involvement of the Uganda National Meteorological Authority in the project component dealing with early warning systems and climate information management.

26. Overall, country ownership of the project is high, as exhibited in the proposal.

1.6 Efficiency and effectiveness *Scale: N/A*

27. An estimated amount of USD 24.14 million is being sought as a grant from the GCF. The project, following its 8-year implementation period, is expected to generate benefits worth USD 61.4 million over a 25-year project lifetime, with an internal rate of return of 22.6 per cent. The analysis takes into consideration only directly attributable services, such as wetlands ecosystem provisioning services (e.g. sugar cane, coco, yam, cassava production benefits), not indirect and regulating services (i.e. benefits emanating from flood control, surge control, water quality improvement, etc.), which is why the estimation of benefits is conservative. However, the internal rate of return appears significantly attractive. Even in the case of an increase in the estimated economic costs and a decrease in the estimated economic benefits, the sensitivity of the net present value of the project appears robust, indicating that the project is financially attractive.

28. However, the analysis of benefits from wetlands restoration uses values observed in other countries (e.g. South Africa, the United States of America), and a few cases outside of the target areas within Uganda. On the other hand, the project costs are estimated based on experience elsewhere, which lacks context specificity. Therefore, the methodological weakness in estimating the costs and benefits of the project makes the analysis questionable. Moreover, the benefits from the generation of early warnings and advisories are not fully understood, which makes it difficult to appraise the economic effectiveness and efficiency of the project.

29. In the absence of due understanding, an enhancement in the income of farmers through income-generating activities and livelihood diversification may be expected. The non-estimated ecosystem stock values, the benefits of empowering women and the potential revenues generated through climate information services provide a relatively good justification for the project, in spite of the weak economic analysis. Given that the project is based on a proven pilot project, despite the absence of a complete economic analysis, it can be inferred that the GCF investment will not be wasted.

30. The project does not envisage revenue generation. However, by means of market integration and the promotion of agriculture-based value chains, some revenues will eventually be generated. There exists potential for generating revenues from climate information based products and services, if an adequate policy environment is created.

31. Despite high country ownership (as indicated above), the current capacity of the Government of Uganda needs to be assessed in view of the high ambition exhibited in the proposal. The targets of the proposal far exceed the activities implemented by the Government

of Uganda between 2011 and 2015, which enabled the restoration of a modest 94 km^2 and demarcated 443.3 km of wetlands boundaries for conservation. This indicates that project delivery efficiency in Uganda will be stressed if the targets are to be achieved within the project period.

II. Overall remarks from the independent Technical Advisory Panel

32. Based on the findings of this assessment, the iTAP recommends that the Board of the GCF approves this project, subject to the following covenants:

(a) The accredited entity shall ensure that the logical framework is revised, clearly articulating targets for each activity, thereby avoiding any potential scope for double counting the number of beneficiary households, and submit it to the GCF Secretariat prior to the execution of the funded activity agreement (FAA), in a form and substance satisfactory to the GCF Secretariat;

(b) The accredited entity shall develop and deliver to the GCF, in a form and substance satisfactory to the GCF Secretariat, a monitoring and evaluation plan, no later than six months after the first disbursement; and

(c) Taking into consideration the written support of the Government of Uganda towards establishing an Operations and Management and Sustainability Unit and its commitment to finance the unit, the accredited entity shall ensure that the long-term sustainability of the functioning of the early warning system, including the management of climate information, is integrated into an operation and Maintenance plan to be submitted to the GCF Secretariat, prior to the second disbursement, in a form and substance satisfactory to the GCF Secretariat.

Independent Technical Advisory Panel's review of FP035

Proposal name:	Climate Information Services for resilient development in Vanuatu (Van CIS RDP)
Accredited entity:	Secretariat of the Pacific Regional Environment Programme (SPREP)
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. Vanuatu, composed of 80 islands, is one of the most vulnerable countries to climate change worldwide, including climate-related natural disasters and the effects of slow-onset events such as sea-level rise and ocean acidification.

2. The proposed project will strengthen the country's technical capacity to harness and manage climate data; develop and deliver practical Climate Information Services (CIS) tools and resources; support the enhanced coordination and dissemination of tailored information; enhance CIS information and technology infrastructure; and support the application of relevant CIS through real-time development processes, for more resilient outcomes.

3. The project will provide information services in five targeted development sectors: tourism, agriculture, infrastructure, water and fisheries. It has a focus on addressing information gaps and the priority needs of targeted beneficiaries at the national, provincial and local community levels across the five above-mentioned priority sectors[8].

4. The project will deliver:

(a) Enhanced capacity and capability of national development agents in order to understand, access and apply CIS;

(b) Enhanced CIS communications, knowledge products, tools and resources for practical application in development processes;

(c) Enhanced reliability, functionality, utility and timeliness of underlying CIS delivery systems and data collection infrastructure; and

(d) Enhanced scientific data, information and knowledge of past, present and future climates so as to facilitate innovated and resilient development.

5. The project is expected to directly enhance the resilience of 60 per cent of the population of Vanuatu, with 30 per cent of the population benefitting directly through the delivery of the project activities. The project estimates direct beneficiaries of around

[8] The South Pacific Regional Environment Programme intends to replicate similar (CIS RDP) approaches in additional Pacific Island Centres within a GCF programme to leverage regional efficiencies and other benefits.

87,000 people and indirect beneficiaries of 174,000, at least 55 per cent of whom are expected to be women.

6. There have been several projects addressing climate risks, including information services. The Australian Government-funded the Pacific Climate Change Science Programme/Pacific–Australia Climate Change Science Adaptation Planning and the Climate and Ocean Support Program for the Pacific programmes have provided Capacity-building to Pacific meteorological agencies, including Vanuatu, along with other regional climate programmes, including the Finnish Pacific Project and the Republic of Korea–Pacific Islands Climate Information and Prediction Services. The project proponents have seen that most of these projects have been regional in nature and as it is written in the proposal "the ability to mainstream these CIS products and associated capacity with decision-making in partner Pacific Island countries including Vanuatu is limited. Where it has occurred, it is fragmented and incomplete to the extent that there has been limited uptake and on-ground impact at sector and local community level". However, there is not a clear understanding of the current information services in place that could be used for the proposed project.

7. The project proposal specifies that for these systems to be applied in practice, they need to be operationalized in the form of tailored CIS for specific, real-time, in-country sectoral applications in collaboration with end users at the national and subnational levels, and at the same time building the capacity of these end users to routinely apply such CIS in decision-making.

8. However, even though there was a project readiness component through which to undertake some consultations with sectors and municipalities, the project's current emphasis is on top-down technological intake. Tackling real issues from the sectors and territories on the ground and elaborating on the knowledge, attitude and behavior of the community before and after the dissemination of climate information is necessary.

9. Moreover, for the project to have an impact, it needs to ensure that information-technology personnel remain in Vanuatu ensuring local ownership and avoiding perpetual dependency on international institutions and resources in order to maintain the information system. For this to happen, it needs adequate budgetary and human resources from the government after project completion. It also needs a plan from the South Pacific Regional Environment Programme (SPREP) to gradually phase out the project team and make the system operational within the country.

1.2 Paradigm shift potential *Scale: N/A*

10. Creating information systems is not a paradigm shift per se. What could be innovating is the way in which information is used on the ground by communities in order to make them more resilient and prepared for climate change events. Also with the potential for innovation is how information and early warnings are 'understood' by end users.

11. The project was originally designed as a regional project to tackle climate information needs in the Pacific. However, a decision was taken to start with Vanuatu and upscale information systems to other islands.

12. The project is aiming to transform the provision of climate services in the country. The ambition is to cover five sectors of the economy. However, the project is unclear on the ability of users to uptake information based on their current and future needs. Proper management and transfer of technology are not evident. For example, it is not clear how farmers would understand and use climate projection models for their own needs in a format that is useful for all.

13. The project does not have a clear theory of change. It presents a simple design to elaborate on how the climate information system would relate to end users. Some gaps and needs in the five sectors were addressed in the consultations. However, there seems to be a disconnection between them and the technical projected platform.

14. The potential for upscaling the project from a technical side is clear, since the project was designed from a technical perspective as a regional climate information project. However, the potential to upscale it from the social and practical end user side is not evident.

15. The sustainability of the project depends on the ability of the Vanuatu Government and especially the provinces to understand the climate information and to transform it into relevant policy decisions and tools for territorial and sectorial resilience planning.

16. Long-term sustainability also depends on the management and monitorial arrangements after project completion. However, besides some training components (seminars) and capacity-building in the form of scholarships for local people that could end up in technological knowledge transfer, there is no evidence of how the system would be maintained after the four years of project disbursements.

1.3 Sustainable development potential *Scale: N/A*

17. When the system is in place and end users are able to make decisions based on relevant information, the project could benefit five sectors and territories in many social, environmental and economic aspects, including (1) avoiding infrastructure loss, (2) improving agricultural planning and resilience, and ecosystem services including water management, (3) ensuring healthier coral systems and fisheries, and (4) improving economic benefits by avoiding risks in the tourism sector which provides an important part of the national income. According to the proposal, the economic sub-benefits will be validated under the outcome of subactivity 3.6.

18. Of the project beneficiaries, 55 per cent are women. The project includes a gender action plan with gender responsive activities/actions and gender performance indicators. The project design included women in the consultations and the project expects to have a gender perspective in communications and training. However, interventions at the community level are still weak in the proposal at large, and there is much room for improvement, including gender needs and future actions.

19. The project activities include many advisory services in the form of foreign consultants designing and planning the information system. There is not a clear estimate of the amount of resources that will be devoted to international consultancies versus in-country consultancies. The only way to ensure social, economic and environmental co-benefits is to use as much resources as possible in capacity-building and knowledge-sharing in Vanuatu. Long-term sustainability will depend on country ownership as stated below.

1.4 Needs of the recipient *Scale: N/A*

20. Vanuatu, like all the Pacific islands, is very vulnerable to climate change and sea level rise. The country is a medium income country that depends mostly on tourism. The project is expected to directly enhance the resilience of 60 per cent of the population of Vanuatu, with 30 per cent of the population (87,000) benefitting directly through the delivery of the project activities. The specific CIS gaps and needs of priority sectors and associated next/end user in Vanuatu were further elucidated as part of the recently completed GCF readiness project stakeholder consultations. However, further elaboration needs to be undertaken in order to ensure that the information system is designed from the bottom up, to ensure that the concrete sectoral and territorial needs are integrated with the technical design of the information system.

Cross-sectoral and territorial needs will have to be addressed from a technical standpoint, and periodical outcomes and information services should be communicated accordingly.

21. The country has received support from other funders to undertake an information and climate risk related project. However, there is a need to update information systems and equipment, including radar, and to ensure that the country has the internal capacity to use them for risk management.

22. More than a standard climate information system, the country needs to build the capacity to update and use climate information in a systematic manner in all five sectors, including the use of communication and knowledge-sharing tools that are easily accessible to all relevant stakeholders.

1.5 Country ownership *Scale: N/A*

23. The project has been developed on the basis of the Vanuatu Framework for Metrological Services (and the Global Framework for Metrological Services) and validated through a series of in-country consultations at the national, provincial and sectoral levels.

24. The project is aligned with Vanuatu's Climate Change and Disaster Risk Reduction Policy 2016–2030, which aims to effectively replace all previous climate adaptation plans and strategies, including the previous national adaptation programme of action and climate change strategies in 2007 and 2011. The project will allow for the provision of policy and risk measures in order to drive strategic decisions in the development pathway of the country.

25. The proposed interventions are aligned with the strategic priorities to address key climate change impacts, for example the establishment and strengthening of institutional structures in order to effectively undertake their functions, driving strategic decision-making through contemporary legislation and policy frameworks, meeting international climate change and disaster risk reduction obligations, among others.

26. All relevant national (National Meteorological Services, sectors) and subnational/community level stakeholders in Vanuatu will need to be engaged in the project. There will be a GCF national designated authority/national climate change focal point that will be coordinated via SPREP as the accredited implementing entity. While the Secretariat of the Pacific Regional Environment Programme (SPREP) has a well-known capacity related to information and scientific products and regional coordination and policy, there is less evidence of its capacity to deliver and manage infrastructure and equipment at the national level, ensuring that the systems are well-managed in the longer term. Furthermore, the GCF secretariat has identified several risks concerning the capacity of the national executing entity – Vanuatu Meteorological & Geohazard Department (VMGD)– to manage climate information. Joint execution could have benefits in terms of technology transfer. However, the project needs to phase out international services so as to ensure that the country is in full capacity to manage and update the information systems after project completion, including budgetary and human resources.

27. GCF readiness support was provided for this project to undertake stakeholder's consultations at the national and local levels. The stakeholders which were consulted include national and provincial governors, sectoral specialists, and local community stakeholders. Much more work and evidence is needed to demonstrate that national processes, policies and investments fit into the project outcomes.

28. The Government of Vanuatu provides co-financing of USD 1.5 million equivalent to the upper limit of the executing agencies capacity. Country support for supporting the future management of the information system is weak. There is a need for stronger evidence that

investing GCF resources in meteorological and information services will result in proper uptake and maintenance by the Government of Vanuatu.

29. Retaining the three people that will receive the scholarships funded by the project resources (one Doctor and two Masters degree students) will require a specific clause in the agreement so as to ensure a minimum number of years working directly within the scope of the project activities. Further arrangements need to be put in place in order to bring new personnel on board or to ensure the in-country technical capacity to manage the project in the long run.

1.6 Efficiency and effectiveness *Scale: N/A*

30. The project requests a USD 22.953 million grant from the GCF. The proponent prepared a new budget based on the independent Technical Advisory Panel's question on why it is mostly desegregated in consultancy services (service fees), travel and equipment. The budget is still not clear in terms of the proportion of the money that will be used for in-country capacity-building. Furthermore, a budget should be estimated so as to understand future needs in terms of maintaining the system (radar, an upgraded information technology platform, including computing hardware and software, human resources, etc.).

31. The big risk of information platforms is that they end up being perpetually dependent on external providers of information or that there is a lack of budgetary and human resources to maintain the system. The project completely lacks a section on the maintenance and operation of the system once it is in place.

32. The project requests USD 5.75 million for a radar. The cost was reviewed by a consultant against benchmarks and assessed to be very high.

33. The project management cost and the accredited entity fee amount to up to 21.4 per cent of the total GCF financing. The accredited entity has a dual role as it is executing the project, including management fees. Therefore, managerial costs are rather high.

34. There is a big question surrounding having two executing entities, each one with a management unit. If the project is really ensuring the strengthening of local capacities in a cost-effective manner, there should be an arrangement to establish a long-lasting entity able to manage the meteorological system in Vanuatu. A proper phase out procedure should result in just one management unit in the country at the end of the four years of the project's lifetime.

35. The project tackles mostly technological needs in a variety of activities that are not necessarily integrated. Furthermore, the top-down approach of the design is reflected in the budget of the proposal, with very little resources allocated to activities with end users and to ensure sectoral and territorial arrangements to effectively manage the project following completion.

36. The project expects to train technical persons able to manage the system. However, the scholarships and the training activities that will be put in place do not necessarily ensure that there will be local capacity in every province to manage their own information units. Furthermore, since the methodology used to calculate the results regarding the economic benefits of the project is one of the activities that will be undertaken under the project, it is difficult at this stage to ensure that the project will have economic impacts in the long run.

II. Overall remarks from the independent Technical Advisory Panel

37. The independent Technical Advisory Panel recommends that the project is approved under the following conditions:

(a) Prior to the effectiveness of the funded activity agreement, the project should deliver a long-term management and monitoring arrangement plan (beyond the four years of project completion), including a budget to ensure the sustainability and maintenance of the system.

(b) The following should be presented to the satisfaction of the GCF secretariat prior to the second disbursement:

(i) A complete assessment of the information, meteorological services and risk management systems currently in place from previous or related projects, and arrangements to use them for the project objectives;

(ii) A theory of change that connects end user needs and the design of the technological platform, including the five components and sectors involved in the project;

(iii) A workplan with identified packages of work to be undertaken with concrete outputs, linking the five components and ensuring intake from sectors and territories. The workplan should include specific recipients of project funds based on comparative expertise, value for money and a proposal to transfer knowledge. It should also include an assessment of sectoral and market demands for the information services, including arrangements to ensure access to the information by end users in a commercial or free of charge manner and future activities to integrate local and technical knowledge;

(iv) Development of the project costs with greater clarity on the international and national assistance needed, budget categories, and in-country investments so as to ensure gradual intake of the system by the government;

(v) A coordination agreement that ensures better project intake by the Vanuatu Meteorology and Geohazards Department, including a well design technological transfer arrangement and exit strategy by SPREP;

(vi) A report on the selection of scholarship students and arrangements in order to ensure the students acceptance to work on the project after the end of their studies; and

(vii) A full operational and maintenance plan of the radar system, including an institutional arrangement to make it effective.

Independent Technical Advisory Panel's review of FP036

Proposal name:	Pacific Islands Renewable Energy Investment Program
Accredited entity:	Asian Development Bank (ADB)
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. Seven countries in the Pacific islands are covered in this programme. They are the Cook Islands, the Marshall Islands, Micronesia (Federated States of), Papua New Guinea, Nauru, Samoa and Tonga. The Pacific islands renewable energy investment program (the Program) will support a paradigm shift from diesel power generation to renewable energy in seven Pacific small island developing States (SIDS). The current proposal, which is a request endorsed by the seven SIDS is asking for GCF Board consideration for funds for:

(a) **A Cook Islands subproject**, which will include battery storage to allow upscaling of private sector investment in renewable energy and capacity-building; and

(b) **Programme support technical assistance** (TA) which will:

(i) Support the preparation of subsequent subprojects under the programme in six SIDS, including feasibility studies and due diligence; and

(ii) The implementation of the programme.

2. The remaining six subprojects (Marshall Islands, Micronesia (Federated States of), Papua New Guinea, Nauru, Samoa and Tonga) will be prepared under the TA and submitted for consideration at subsequent GCF Board meetings. The breakdown of total funding for the project and the sources where the funding will come from, including the request from GCF, is presented in table 1 below.

Table 1: Fund breakdown for the implementation of the Cook Islands project and technical assistance for the other six small island developing States

Subproject		ADB Grant	Gov.	GCF (grant)	Total
1.	Cook Islands	0	4	12	**16**
2.	Program Support Technical Assistance	5	0	10	**15**
	Total	**5**	**4**	**22**	**31**

Abbreviations: ADB = Asian Development Bank, Gov. = government.

3. A total of USD 22 million in the form of grants of the total of USD 31 million is requested from the GCF. It is expected that the successful implementation of this project will yield a veritable strengthening of the existing renewable power capacity in the Cook Islands and adequate planning document for renewable power projects in the other six states. The planning documents generated for these six SIDS will be utilized to prepare funding proposals, which will be submitted to the GCF for a second tranche of project funding. It has been estimated that this second project tranche will require a total fund of about USD 451 million, of which the GCF is

expected to provide USD 303 million (loan) with the rest coming from the Asian Development Bank (ADB) (grant and loans), co-financing (grants),and the governments of the seven SIDS.

4. Before discussing the mitigation and adaptation impact potentials of this programme, it is important to present the types of projects that will be covered under the two phases that will be presented for funding to the GCF:

(a) **Mitigation projects will include the following investments:**

(i) Solar power generation (38 MW at 18 sites in 4 SIDS);

(ii) Wind power generation (9.4 MW at four sites in two SIDS);

(iii) Hydropower generation (13 MW at six sites in one SIDS);

(iv) Energy storage facilities at six SIDS; and

(v) Improved energy access; 16 renewable energy mini-grids (six SIDS) and solar home systems (one SIDS)

(b) **Adaptation projects.** This investment will add to the climate resilience and strengthen the adaptive capacity of the region:

(i) Samoa: flood diversion dam/hydropower reservoir to prevent flash flooding after cyclone activities; and

(ii) All infrastructure supported by the investment programme will incorporate climate proofing into technical design.

5. The potential mitigation and adaptation impacts of the GCF intervention under this request covering the first phase, which has been immediately submitted with the funding request to the GCF as well as the overall projects, which will include the first phase as well as the next submission to the GCF are discussed below:

Increased penetration of renewable power projects

6. A very large proportion of electricity is generated using diesel as fuel in all the seven SIDS. With the implementation of the phase now submitted to the GCF for funding, that is, the Cook Islands project, there will be a ramp up of renewable power penetration in the Cook Islands. It has been estimated that with the completion of the first request, renewable power penetration in the Cook Islands will be ramped up from 15 per cent before this intervention to about 50 per cent at the successful completion of the first phase. The Cook Islands project will displace about 7,884 MWh per year of diesel generation through the installation battery storage systems which will allow an increase in renewable energy generation by 6 MW in the Cook Islands. The Cook Islands programme also covers the programme support technical assistance, which will get funding for the preparation of the planning and implementation documents for renewable energy projects in the other six SIDS, and more investment in the renewable power programme in the Cook Islands, which is expected to raise renewable energy penetration in the Cook Islands to 100 per cent by 2020 and to further facilitate higher penetration of renewable power in the region.

Greenhouse gas emission reduction

7. It has been estimated that the Cook Islands project will displace about 7,884 MWh of diesel electricity generation. As such, when it is assumed that the emission factor of a diesel generator is 0.808 tonnes of carbon dioxide equivalent per megawatt hour (t CO_2 eq per MWh) assuming 33 per cent efficiency and that a 3 MW battery storage system enables full output of 6 MW photovoltaic (at 15 per cent plant load factor) directly displacing diesel generation in this project will lead to an annual emission reduction of 6,370 t CO_2 eq per year. Over a 25-year lifetime, this equates to a total reduction of 159,256 t CO_2 eq. This lifetime mitigation potential

at a total project cost of USD 16 million (generation components only) implies a mitigation cost of USD 100.5 per t CO_2 eq .To determine the level of this impact, the independent Technical Advisory Panel (TAP) compares this metric with a similar metric in a recent mitigation project in the region. A recent Solar power development project in the Solomon Islands also in the Pacific region yielded a cost of USD 724 per t CO_2 eq. Hence the mitigation impact can be considered as high.

Adaptation impact potential

8. For the Cook Islands project, the renewable power infrastructure facility that will be built by the total project at a cost of USD 16 million will be climate proofed. Therefore, the entire population of this SIDS country will benefit from the inherent climate protection. The performance metric of this adaptation project can therefore be estimated to be about 0.67 beneficiary per USD 1 spent. The Cook Islands renewable project's adaptation compares much more favourably with the metric of the Tuvalu coastal adaptation project, approved by the GCF Board in June 2016, which will have 6,600 beneficiaries for USD 36 million of GCF investment – 0.18 beneficiaries per USD 1,000. It however compares poorly when it is placed side by side with the Fiji urban water supply and wastewater management project, which will have 290,854 beneficiaries for USD 31 million of GCF investment – 9.4 beneficiaries per USD 1,000. It is however important to note that the better result for the Fiji Island project should be seen due to the fact that Fiji is more densely populated compared to the Cook Islands.

9. Following on from the mitigation and adaptation impact potential discussion above, the TAP concludes that the scale of these impacts is high.

1.2 Paradigm shift potential *Scale: N/A*

10. A key consideration in the evaluation of the paradigm shift potential of the activities proposed is whether this intervention will produce impacts beyond this first project/programme. The key paradigm shift potentials that are associated with this intervention will include the following:

Potential to scale-up and replicate the success of this first project/programme

11. The project's plan is to start the intervention with the Cook Islands' situation by increasing the renewable power penetration in that country, and using the funding opportunity to develop the necessary planning documents for similar interventions in the remaining six SIDS. The first renewable power programme will be implemented in the Cook Islands and its success will generate learning curves for the subsequent projects in the other six SIDS. It will also serve as a theatre for capacity-building through learning by doing for the key stakeholders from the other six SIDS thus making the possibility of scaling up and replicating the success in the first project easily achievable in the other projects. The project will support the following paradigm shifts:

(a) **Transition to the low-carbon energy sector through renewable energy**

The proposed comprehensive programme will create a paradigm shift by supporting the SIDS to overcome the investment and technical barriers to higher integration percentages. The involvement of the GCF allows the major barriers to be addressed on a scale which would not otherwise be possible. By approaching the issues on a Pacific regional scale, the sector will be transformed to a point where renewable energy technology is the norm and capacity is built to a point where systems can be managed;

(b) **Increased private sector engagement**

The proposed programme will create a paradigm shift by developing the capacity of private sector stakeholders in SIDS to participate in the development of and investment in the shift to renewable power. The technical support component of the GCF intervention will be useful in removing the barriers that have hitherto made this impossible. Helping to develop the capacities of local private companies across the supply chain of wind and solar photovoltaic projects, will result in efficiencies and enhance the viability for future projects;

(c) **Improved energy access**

There are currently significant disincentives for Pacific island corporatized power utilities to increase access for customers from high cost diesel-based generation centres. Most Pacific countries lack the budget to support rural electrification programmes. Renewable energy for rural electrification offers a paradigm shift as low cost power generation will allow power utilities to extend grids and improve access at lower power generation costs;

Potential for knowledge-sharing

12. This intervention, which is expected to provide long-term financing for the implementation of the renewable power generation projects in SIDS will create an avenue for learning by doing and knowledge-sharing for relevant local professionals in the Pacific region power sector, in engineering consulting as well as the local construction industry. In addition, the TA component of the funding will be targeted at delivering products (studies and consultant services) and activities (training), which will deliver supplemental capacity-building support in all the project's SIDS starting with the Cook Islands and percolating down to the other six SIDS, especially if the success of the first project is able to incentivize the granting of GCF funds for the other SIDS and thereby crowding other funds into the package due to the confidence generated by the success of the Cook Islands intervention. The inclusion of public entities at the national and local levels, and private sector actors, including sponsors, financing institutions, academic institutions in each of the seven SIDS will provide a venerable platform for the capacity-building of local institutions and manpower through knowledge-sharing that will enhance the ability of local know-how and institutions to implement renewable power projects in the second phase. The technical cooperation products that will be produced by the utilization of the TA grant component have a high potential to fill a significant gap in the countries, especially those related to the development of strategic plans, pilot projects on some renewable energy applications, and practical skills for the development and financing of sustainable renewable energy projects. Knowledge-sharing and learning will be enhanced for the following reasons:

(a) The programme will include a centralized project management unit (PMU) which will share lessons learned across the SIDS;

(b) The lessons that will be learned across the SIDS will include (i) technical lessons learned on integration issues, (ii) procurement support lessons, and (iii) sector reform lessons learned;

(c) The sharing of lessons learned will include: (i) the creation of knowledge products (website, lessons learned files and guidance documents); (ii) the provision of opportunities for inter-island visits in order to observe successes and lessons learned; and

(d) Cooperation with regional stakeholders and regional coordination bodies.

13. It is therefore concluded that if the project/programme as described in the funding proposal (FP) is implemented as laid out, and if the intervention covering the Cook Islands can lead to a follow-up GCF fund, then the entire intervention will have a high knowledge-sharing impact in the whole region through the capacity strengthening and building activities that will be carried out;

Contribution to the creation of an enabling environment for the development and implementation of renewable energy projects in the small island developing States and in the Pacific region

14. That there was no enabling environment in this Pacific region for the development and implementation of renewable energy facilities was reflected in the fact that not much success in renewable energy penetration has occurred to date in the region. Diesel generation with very little renewable power is the order of the day in the absence of this intervention and especially the GCF funding support. As a result, all of the SIDS countries have a significant learning curve to undergo in terms of local capacity development, including project design, financing, construction, and operation and maintenance, as well as regulation and grid management for adequate integration of renewable power, among others. It is therefore very highly likely that the current intervention through the GCF will create an enabling environment for the implementation of renewable energy projects in these SIDS in the following ways:

(a) The programme will include a centralized PMU which will share lessons learned across the SIDS;

(b) The investment programme will create an enabling environment which will encourage among other things: relevant public sector utilities (power generation companies) to convert diesel generation assets to low-carbon infrastructure (renewable energy); private sector contractors will be encouraged by the size of the programme to support the growing market; the programme will identify and support potential independent power provider transactions;

(c) The first few projects under the current project/programme intervention will help to establish links with international investors, lenders, specialized consultants (engineering, legal, etc.) and equipment suppliers, and to further develop the capacities of local partners across the supply of the SIDS region, which will foster the development and implementation of renewable power projects.

Contribution to the regulatory framework and policies

15. In addition to a series of fiscal incentives and financial support mechanisms, the regional and national interventions also include regulatory and contractual enhancements aimed at overcoming some of the investment barriers that limited previous attempts to develop renewable power projects in the region. The proposed programme will include a USD 5 million technical assistance package (ADB funded) which will include the following sector reform activities:

(a) Sector planning (road maps and grid integration studies);

(b) Power utility management reform and capacity-building;

(c) Tariff review and reform;

(d) The review and revision of regulatory and policy frameworks; and

(e) Promotion to the private sector by identifying opportunities for independent power providers, providing transaction advice and designing guarantee products.

16. We can therefore conclude that it is very highly likely that this GCF intervention will contribute to the regulatory framework for renewable energy development in this SIDS region. Given the four paradigm shift areas discussed the TAP has ranked the paradigm shift scale of this GCF intervention as high.

1.3 Sustainable development potential *Scale: N/A*

17. The sustainable development potentials of this project as measured by the level of the environmental, social, economic and gender co-benefits of the project/programme in the seven SIDS. The co-benefits will include:

Environmental co-benefits

(a) Reduction in local air pollution and noise impacts on local communities from closing down or reducing the use of diesel-generated electricity; and

(b) Reduction in the use of diesel will lower the risk of fuel spills and land/water contamination (both at sea when transporting the fuel and on land when stored or being used);

Social co-benefits

(c) The improved reliability of powersupply on some grids will support household income generating activities;

(d) The improved affordability of power supply will reduce household expenditure on energy, releasing income for alternative uses such as education and food; and

(e) Increased access to electricity in Papua New Guinea will result in significant social benefits, including improved education, income generation at the household level, reduced household expenditure on kerosene, lowered fire risk from kerosene lighting, and reduced fuelwood consumption;

Economic co-benefits

(f) The improved reliability of power supply supports local businesses;

(g) The downward pressure on tariffs supports business activity, including household income generation and local small businesses;

(h) Improved access to electricity;

(i) Reduction in fuel importation improves the national bill of payments and improves national energy security;

(j) Increased local jobs;

(k) Improved balance of payments; and

(l) Benefit to the tourism sector;

Gender co-benefits

(m) Improved household access to electricity disproportionally benefits women; and

(n) Lower cost and improved access to electricity disproportionally benefits women.

18. All these co-benefits will enhance the sustainable development potential of the intervention. These metrics and the fact that the revenue generation potential of the renewable energy projects in each of the SIDS countries will enhance the sustainability of the projects long after the proposed funding intervention from the GCF and other sources have been closed.

1.4 Needs of the recipient *Scale: N/A*

19. The people living in the SIDS, who are the recipient /consumers of the electricity generated by these renewable facilities, are the key recipients of the benefits of these projects. They are the beneficiaries of both the mitigation and adaptation components of these projects. They are, for example, the ones living in these Pacific nations who are vulnerable to the negative impacts of extreme climate events in the region. They are also the first beneficiary of improved

and secured electricity supplies. Vulnerability to extreme climate events is now increasing with population growth and migration (internal and external), poor coastal development and land-use planning, unplanned urban growth, and water and ecosystem degradation, including pollution of subsurface and coastal waters. The various adaptation components of this project will offer these recipients direct benefits. Some of the natural hazards the effects of which are exacerbated by climate change include:

(a) The increasing ocean and land temperatures;

(b) The changing seasonality and duration of rainfall;

(c) The increasing intensity of tropical cyclones; and

(d) Rising sea levels, which are worsening coastal erosion and saline intrusion and increasing the severity of storm surges.

20. These impacts adversely affect agriculture, infrastructure, fisheries, coastal zones, water resources, health and ecosystems, and thus threaten entire communities and economies. The mere existence of low-lying atoll island nations like the Marshall Islands is threatened by sea level rise and storm surges. In the global ranking of countries vulnerability to climate change, Pacific SIDS always occupy many of the top places.

21. The Program directly supports adaptation in Samoa, where it will finance a large flood and drinking water reservoir in the country's largest catchment area – along a river that has caused serious damage to government infrastructure, commercial facilities, properties and communities in the past; Indirectly, by fostering energy security, and the use of modern, resilient, appropriate energy technologies, the Program will contribute to establishing a climate resilient energy sector across the region – which is a necessary basis for all socioeconomic, climate-resilient development, therefore the adaptation component of this programme will satisfy the need of some of the recipients of this project.

22. Other recipients of this programme are the people of the Pacific SIDS through their governments who will be able to, as a result of this programme, have access to the investment needed to implement the mitigation and adaptation components of the project. In the absence of this programme, given the low level of the financial rating of their economies, many of the seven countries covered by this programme will be unable to access the quantum of funding required to implement this programme. With this intervention however, the need of the people for such investment will be met. The need of consumers in the seven SIDS for reliable, clean and affordable electricity will also be met by the implementation of this programme. The mitigation as well as the adaptation components of the Program will meet the needs of the recipients in these Pacific SIDS.

1.5 Country ownership *Scale: N/A*

23. The primary evidence of country ownership in this project/programme is the letter of no objection (LONO) that has been issued by the governments of each of the SIDS. The issuance of these LONOs can be taken as the necessary expression of support for the Program. There is also evidence that even the idea of this project/programme emanated from regional dialogue on the necessity of the intervention. The regional Framework for action on energy security in the Pacific 2010–2020 was prepared by the Secretariat of the Pacific Community, and was endorsed by Pacific island leaders at the forty-first Pacific Islands Forum held in Vanuatu on 4 and 5 August 2010. The Framework for action on energy security in the Pacific assessed the threats to achieving energy security in the Pacific and concluded on the need to carry this regional intervention further lending credence to the ownership of this intervention by the seven countries involved.

24. The goals of this SIDS regional collaboration covering the mitigation and adaptation components are also consistent with the goals and aspirations elucidated in each of the seven countries' energy road map. A summary of the national energy sector road maps is presented below:

Table 2: Summary of the national energy sector road map documents in the country covered

S/N	Country	Energy sector plan	Acronym for Country
1.	Cook Islands	Renewable energy chart (2011–2020)	COO
2.	Tonga	Energy road map (2010–2020)	TON
3.	Marshall Islands	National energy policy (2009)	RMI
4.	Nauru	Energy road map (2014–2020)	NAU
5.	Papua New Guinea	PNG power limited 15 year power development plan (2016–2030)	PNG
6.	Samoa	SAM energy sector plan (2012–2016)	SAM

25. There is ample evidence in the submission, of a high level of interaction with relevant stakeholders in all the countries during the design and development of the project/program. Given that that a LONO is in place coupled with the interactions with stakeholders, the TAP has ranked the country ownership of this project as high.

1.6 Efficiency and effectiveness *Scale: N/A*

26. The efficiency and effectiveness metrics under the GCF project evaluation process is a measure of the economic and financial soundness of the Project / Programme. For this GCF intervention the TAP approaches the evaluation of this metrics by utilizing the well prepared description in the FP on how the financial structure is adequate and reasonable in order to achieve the proposal's objectives, including addressing existing bottlenecks and/or barriers; providing the least concessionality; and without crowding out private and other public investment:

(a) On cost-effectiveness and efficiency

The investment programme

27. The proposed mainly grant financial structure is considered reasonable to meet the Program's objectives of increased renewable energy integration. Three out of the six SIDS are unable to borrow from the ADB and are only eligible for grants, due to recent debt distress and poor economic performance. In addition, the Cook Islands and Tonga have reached national debt ceilings. It is not considered reasonable for the GCF to extend loans to these SIDS. While public sector grant financing has supported the majority of renewable energy investments to date in the SIDS, there is insufficient public sector financing, either grant or concessional lending, to transition to the levels of renewable energy integration stated in national targets within the proposed time frames. Therefore, the proposed programme will not crowd out public sector financing. The Program will support the development of private sector investment in renewable energy. All renewable energy generation proposals were screened and dialogue was held with the SIDS regarding whether they were suitable for private sector investment. As discussed on a subproject basis in annex 3 to the FP, the subprojects proposed for concessional

financing are not considered suitable for private sector investment, and therefore the Program will not be crowding out private sector financing.

Cook Islands project component

28. Grant financing of battery storage is considered reasonable as:

(a) Due to the small size of its economy, the Cook Islands has ongoing national debt ceiling issues, and is unable to fund the transition to renewable energy. As a result, the transition towards private sector upscaling of renewable energy will not be achieved without grant financing of the battery storage investment;

(b) The battery storage will facilitate the paradigm shift towards renewable energy by allowing additional private sector investment onto the grid, resulting in 'crowding in' of the private sector; and

(c) The proposed battery storage is not considered suitable for private sector investment. The proposed GCF financing will therefore not displace private sector financing;

(b) Co-financing, leveraging and mobilized long-term investments (mitigation only)

Investment program

29. The proposed GCF grant financing accounts for USD 306 million, or 67 per cent of the overall investment

Cook Islands

30. The requested GCF investment in the Cook Islands is USD 12 million, or 60 per cent of the overall investment.

31. The total leveraged co-financing for the Program is USD 151 million, including USD 4 million of co-financing leveraged in the Cook Islands;

(c) Financial viability

Subproject 1 - Cook Islands

32. The financial internal rate of return of the Cook Islands subproject is 18.4 per cent. Given a weighted average cost of capital of 7.34 per cent, this demonstrates the project's financial viability and sustainability. This economic analysis yields an economic internal rate of return of 18.1 per cent for the base case scenario of the proposed investment. With an economic internal rate of return higher than the hurdle rate of 12 per cent, the subproject is deemed to be economically viable.

33. Given the metrics described above and the splendid viability of the projects especially in phase 1, the TAP ranks the efficiency and effectiveness of the intervention as high.

II. Overall remarks from the independent Technical Advisory Panel

34. The independent Technical Advisory Panel therefore recommends that the Board of GCF should approve the project/programme entitled " Pacific islands renewable energy investment program" for funding by the GCF as requested by the ADB.

Independent Technical Advisory Panel's review of FP037

Proposal name:	Integrated flood management to enhance climate resilience of the Vaisigano River Catchment in Samoa
Accredited entity:	United Nations Development Programme (UNDP)
Project/programme size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: Medium to high*

Adaptation impact

1. The proposed project targets the population of the most vulnerable communities of the Apia urban area regarding flood-related risks, with approximately 26,000 direct beneficiaries and 37,000 indirect beneficiaries. The direct beneficiaries constitute 70 per cent of the Apia urban area and roughly 14 per cent of the total national population.

2. Furthermore, the ecosystem-based adaptation (EbA) activities included under output 2 could potentially benefit 6,000 people, who will be offered technical and financial training to generate activities and business proposals to implement community-based adaptation measures. The proposal conservatively estimates that of those 6,000 people, 700 will develop business ideas that will increase incomes for themselves and their families.

3. The project activities aim at reducing vulnerability to climate change related hazards by: (1) strengthening Samoa's capacities for integrated watershed management (including expansion of early warning system (EWS) coverage to provide flooding alerts in Apia); (2) flood-proofing key infrastructure of the Vaisigano River Catchment, including river works and upgrades of bridges, and EbA activities; and (3) increasing the drainage capacity in downstream areas to allow for more rapid outflow of flood waters.

4. Under output 1, the proposed project will invest USD 8.6 million (roughly 14 per cent of the total project cost) on activities related to strengthening capacity and mechanisms to reduce flood-related risks in the Vaisigano River Catchment. Activities under output 1 are expected to contribute significantly to increased climate-resilient sustainable development. These activities include the implementation of an integrated hydraulic model; feasibility studies for a flood-buffering reservoir in the upper catchment of the Vaisigano River and for an integrated sewage system in Apia; the establishment of surveillance systems to control flood-related health issues; the upgrade of the existing climate network and database; awareness-raising campaigns on climate-resilient building practices and designs; and the expansion of the existing EWS to include floods.

5. The screening criteria to be applied to the ecosystem component of the project for the approval of EbA activities are not clearly described in the funding proposal. The Development Bank of Samoa (DBS) will be in charge of financing EbA business activities using GCF funds. Paragraph 80 of the funding proposal provides a list of activities that have been identified as having flood risk reduction potential. The list will be part of the DBS additional screening criteria and includes the following: coconut tree planting; cocoa tree planting; banana tree planting; taro and other tuber crop production; noni tree planting; and intercropping. To

maximize flood risk reduction benefits and environmental co-benefits, the project should encourage the implementation of proper agroforestry systems, which involves planting agricultural crops together with tree crops, bearing in mind the need for crop diversity and avoiding the use of biocides.

6. Although the proposed project focuses on adaptation, it also includes mitigation co-benefits related to carbon dioxide capture and storage through to the restoration of forest ecosystems and tree plantation in general (under EbA). The impact of this component is not quantified in the proposal.

1.2 Paradigm shift potential *Scale: Medium to high*

Potential for knowledge and learning

7. Although a project-level monitoring and evaluation (M&E) plan is not described in the proposal, it specifies that M&E will be carried out in compliance with the Programme and Operations Policies and Procedures of the United Nations Development Programme (UNDP) and the UNDP Evaluation Policy, as well as with specific GCF requirements.[9]

8. The M&E plan will include the preparation of reports, publications and other communication and knowledge products to inform lessons learned and best practices across the national, subnational and community levels.

9. The project activities will help to develop a body of knowledge that could contribute to the implementation of climate-resilient flood management solutions in other islands of the Pacific that face similar challenges. This will be achieved through the organization of regional knowledge-sharing events, which will include representatives from non-target islands, and exchange visits.

10. Capacity-building elements of the project include targeted trainings for officials from the Ministry of Health on linking health and climate information and how to manage this information in order to forecast public health risks caused by flooding, and training programmes on upstream EbA activities (including ecosystem-enhancing activities and financial management).

11. Furthermore, the effectiveness of the flood management measures implemented through the project activities will be assessed by an expert in the final year of the project.[10]

Contribution to the creation of an enabling environment

12. With respect to the sustainability of outcomes, the Government of Samoa committed USD 8 million to be used specifically on operation and maintenance (O&M) activities related to river works and the drainage system over a period of 25 years from the start of the project, assuming that the annual O&M infrastructure costs will be 1 per cent of capital costs[11]. The continuation of project activities beyond GCF involvement will represent other costs which are not considered in the proposal, such as the cost of insuring the assets, and O&M of EWS and the health surveillance system.

13. In general, the training programmes included under the proposed project will improve the long-term sustainability of project outcomes.

---

[9] Funding proposal, page 66.

[10] Funding proposal, pages 38 and 39.

[11] Funding proposal, page 33.

14. The project components related to EbA aim at facilitating the participation of vulnerable households in climate-resilient agribusinesses through the removal of financial barriers, business training, and facilitating access to markets to ensure financial viability and sustainability[12]. The latter will be achieved by promoting linkages between newly created agribusinesses and the tourism industry, supermarkets and export markets.

Contribution to the regulatory framework and policies

15. The ecosystem component of the project will generate incentives for climate-resilient development through technical and financial support for activities that contribute to improving ecosystem functions for flood risk reduction (EbA activities). GCF resources will be used to provide technical assistance to commercial banks, DBS and the Small Business Enterprise Center in integrating climate-resilient criteria across their lending portfolios.[13]

16. Samoa's Water Resources Management Regulations 2013 include the demarcation of one area within the Vaisigano Catchment as a 'no development zone', as well as a 'restricted zone' below it. GCF resources will be used to help put this regulation, which is currently ineffective, into force[14].

17. Samoa's Building Code, which was recently updated to include methodologies for hazard-proofing infrastructure, is written in technical language and needs to be translated into more user-friendly language. Project activities include the translation of this code into non-technical visual aids and tools to reach a wide audience living along the Vaisigano River[15].

18. To achieve a cross-sectoral approach in the Vaisigano River Catchment, output 1 includes the development of feasibility studies for future projects (related to road resurfacing, resilient reservoirs and an integrated drainage works for multiple water catchments), that are to integrated by the Government of Samoa into policy planning[16].

Potential for scaling up and replication

19. A theory of change for the desired outcomes, developed using a barrier removal approach, is clearly described in the funding proposal[17]. Since other Pacific small island developing States (SIDS) would face similar technical and financial barriers in the process of strengthening their adaptive capacity and reducing exposure to climate risks, the results and knowledge gained from this project could serve as a basis for conducting similar initiatives in the region.

20. The successful development of small agribusinesses and value chains (under the ecosystem component of the project) would work as an example to increase incentives for future private and public investment in Samoa as well as in other Pacific islands. Future regional projects will also benefit from the development of the tourism industry and an export market for agroforestry products that the present project seeks to achieve.

21. The scalability of the project to cover the whole country would not result in proportionally increasing costs. Activities related to capacity-building within both private and public institutions, the enforcement of the regulatory framework, some components of EbA-

[12] Funding proposal, page 20.

[13] Funding proposal, page 25.

[14] Funding proposal, page 20.

[15] Funding proposal, page 18.

[16] Funding proposal, page 39.

[17] Funding proposal, page 36.

related activities, and the implementation of a health monitoring system would not present proportionally increasing costs.

22. Although the knowledge gained during the implementation of the project could create incentives and help to replicate the project in other islands more efficiently, it would not necessarily entail a proportional increase in project expenses. The costs of infrastructure and training in general, awareness-raising campaigns, EWS, health surveillance systems and EbA activities are expected to be proportional.

1.3 Sustainable development potential *Scale: High*

Environmental co-benefits

23. The ecosystem component (output 2.2) of the project will generate significant environmental benefits from activities related to afforestation/reforestation, agroforestry and the enforcement of a clear zoning policy. Environmental benefits include riverbank protection, soil and water quality improvement, increased biodiversity, reduced soil erosion, and increased ecosystem climate resilience in general.

Social co-benefits

24. River works, drainage upgrades and the implementation of a health surveillance system will help to safeguard cultural activities and educational services, and improve public health, given that the project focuses on the Apia urban area, which is the most densely populated area of the country.

25. Agroforestry practices will provide increased availability of locally grown food, thus supporting food safety.

Economic co-benefits

26. By supporting the development of small agribusinesses and the expansion of related markets, the project activities will consequently expand job markets, thus helping to alleviate poverty.

27. The ecosystem component of the project will also improve income generation capacity and agricultural productivity.The implementation of a health surveillance system will reduce flood-related health costs.

Gender-sensitive development impact

28. The gender-sensitive development impact of the project is not clearly described in the corresponding section of the funding proposal (section E.3.1, titled “Environmental, social and economic co-benefits, including gender-sensitive development impact”). However, the vulnerability of women was found to be mostly linked to their reduced ability to participate in income-generating activities. The implementation of ecosystem responses upstream includes the establishment of women producer groups to support the adoption of climate-resilient crops and practices through the Civil Society Support Programme and in partnership with the Women in Business Development Initiative[18].

29. The gender assessment and proposed gender action plan (included in annex XIII of the funding proposal) assess gender equality issues and the baseline situation in Samoa, and provide recommendations on gender-related issues to be taken into account in the project design.

[18] Funding proposal, page 21.

30. Although the technical feasibility assessment describes the Ministry of Women, Social and Community Development as the primary government institution for women's issues and the entity which all other government and non-government entities are required to consult for any work involving local communities[19], the funding proposal does not mention this ministry as a participant in the project.

1.4 Needs of the recipient *Scale: High*

Vulnerability of the country

31. The Apia urban area is home to 20 per cent of the total national population and contains the majority of its critical public and private infrastructure (residences, hospitals, government buildings, schools and industries). Infrastructure and livelihoods are at risk from flooding caused by extreme rainfall events. Approximately 6,000 people were evacuated when Cyclone Evan struck in 2012.

32. At the national level, approximately 70 per cent of the population of Samoa lives and works within one kilometre of the coast. Critical infrastructure, including the international airport, is mainly located in the coastal zone. This infrastructure and livelihoods are at risk from flooding caused by extreme rainfall events and coastal inundation. However, the present project focuses on reducing risks related to extreme rainfall events, and not those related to sea level rise.

33. Even though the proposal places emphasis on climate vulnerability using as an example the damage caused by Cyclone Evan, the project is mainly focused on reducing risks related to flood events caused by intense rainfall and not so much by high-speed winds. Translation of the new Building Code into simpler language is the only project activity that will enhance resilience to strong winds.

Vulnerable groups and gender aspects

34. Aside from the above-mentioned gender aspects, the ecosystem component of the project will help to increase income generation capacity for the low-income segment of the population by facilitating access to finance and technical training for the development of micro- and small-sized businesses.

35. Apart from that, the proposal does not describe the direct beneficiaries in the Apia urban area as being part of the poorer population of the city/country.

Economic and social development level of the country and the affected population

36. Samoa has a population of 190,000 and is classified by the United Nations as a SIDS. The country has one of the best performing economies in the Pacific, with growth in gross domestic product (GDP) averaging 4.3 per cent annually between 1998 and 2008. However, the economy suffered a contraction of 5 per cent during 2009 and 2010 (cumulatively). The 2009 earthquake and resultant tsunami, and the 2012 Cyclone Evan worsened the country's economic stability. GDP for 2015 was estimated to be USD 760 million.[20]

37. In total, 75 per cent of national income is generated in the city of Apia.[21]

[19] Technical feasibility assessment, annex II, page 171.

[20] Technical feasibility assessment, annex II, pages 19 and 20.

[21] Technical feasibility assessment, annex II, page 20.

38. Samoa performs highly in the following development indicators: 95 per cent of the country has access to electricity; more than 97 per cent has access to clean water; and 98 per cent has access to a direct road connections.

39. The agriculture sector, which will be benefited by the project activities, accounts for 10 per cent of GDP.[22]

Absence of alternative source of financing

40. The current budgetary capability of the Government of Samoa means that it can only focus on short- and medium-term flood prevention efforts; however, with GCF financing it can also tackle long-term hazards.

41. The adaptation measures proposed by the project involve relatively high investment and long-term engagement. Given that Samoa has a public debt of 50 per cent of its GDP, the tight budgetary situation allows only for necessary short-term investments.

42. The Least Developed Countries Fund (LDCF) is already financing the Economy Wide Adaptation to Climate Change (EWACC) project that started in 2014.

The need for strengthening institutions and implementation capacity

43. The implementation of an integrated watershed and flood management system will strengthen inter-institutional coordination.

44. The Climate Resilient Investment Coordination Unit within the Ministry of Finance will receive capacity-building support as part of efforts to prepare the Government of Samoa for GCF direct access in the future.[23]

45. Feasibility studies designed to develop a cross-sectoral approach to watershed management will serve as capacity-building elements for related institutions.

1.5 Country ownership *Scale: High*

Alignment with the priorities of the country's national climate strategy

46. The present proposal is in line with the Strategy for the Development of Samoa (2017–2021) and with the measures set out in the new National Environment Sector Plan (2017–2021).

47. Activities under the proposed project will add to the adaptation efforts of the EWACC project, an LDCF-financed project which started in 2014.

48. The present proposal was designed taking into consideration the results and lessons learned from several ongoing national adaptation-related assessments: (i) the national adaptation programme of action (NAPA) (2005); (ii) the national capacity self-assessment (2007); (iii) the national communications to the United Nations Framework Convention on Climate Change (UNFCCC) (initial national communication, 1999; second national communication, 2009); (iv) the Climate Resilience Investment Programme (2011); (v) the climate public expenditure and institutional review (2013); (vi) the post-disaster needs assessment (2013); (vii) the intended nationally determined contribution (2015) for

[22] Technical feasibility assessment, annex II, page 20.

[23] Funding proposal, page 33.

submission at the twenty-first session of the Conference of the Parties to the UNFCCC; and (8) the National Environment Programme (2017–2021).[24]

49. The results and knowledge gained from the implementation of the proposed project will contribute to the preparation of the national adaptation plan, which is currently under development.

Capacity of accredited or executing entities to deliver

50. UNDP, the accredited entity, assisted the Government of Samoa with the development of the NAPA and provided support to enable Samoa to access funding for several adaptation projects in the agriculture, health, coastal management and forestry sectors. These projects helped to mainstream climate change into sectoral planning, strengthen climate information services and technical and financial capacities, and support communities in the implementation of adaptation interventions. Given the worldwide experience of UNDP in the field and specifically in climate change adaptation related projects in Samoa, it is clear that UNDP has sufficient capacity to act as the accredited entity for this project.

51. The Ministry of Finance will serve as the executing entity for this GCF project. The Ministry of Finance is also the national designated authority for the GCF.

52. The Ministry of Finance coordinates the programme objectives across 14 sectors that contribute to the Strategy for the Development of Samoa and has been the implementing partner for several development projects which contributed to the gaining of extensive experience with international accounting and reporting procedures as well as with donor coordination.[25]

53. Other ministries responsible for the implementation of the project are: the Ministry of Natural Resources and Environment, the Land Transport Authority, the Ministry of Health, and the Ministry of Works, Transport and Infrastructure. A capacity assessment of these ministries is under way and was expected to be completed in October 2016.

Engagement with civil society organizations and other relevant stakeholders

54. The design of the proposed project included extensive consultations and the involvement of the Government of Samoa, non-governmental organizations (NGOs) and community-based organizations (CBOs) to ensure ownership of the interventions.

55. The Samoa Umbrella for Non-Governmental Organizations (SUNGO) is a network of organizations which provides alternative development options and assistance to vulnerable groups in Samoa and provides input to government policy from NGOs, CBOs and civil society organizations. SUNGO has been actively participating in consultations since the preparation phase of the project and will play a key role during the implementation of the ecosystem component of the project.[26]

1.6 Efficiency and effectiveness *Scale: Medium to high*

Cost-effectiveness and efficiency

56. The implementation of climate-resilient features presented in the new Building Code is estimated to increase construction costs by 1 per cent, while the cost of repairing and

[24] Funding proposal, page 11.

[25] Funding proposal, page 26.

[26] Funding proposal, page 32.

reconstructing buildings damaged by climate-induced natural disasters is estimated to be 35 – 40 per cent of total construction costs.[27]

57. The project will address technical, institutional, financial and regulatory barriers that limit the sustainability and effectiveness of present and future interventions.

58. The proposal is seeking 100 per cent concessionality, justified by its budgetary limitations.

59. GCF financial support will certainly not crowd out private or other public investment. The Government of Samoa has limited resources and would not be able to invest in an integrated long-term intervention. Business activities to be developed under the ecosystem component of the project are not currently attractive as investment options due to the existence of technical and financial barriers and lack of access to markets. Aside from the ecosystem component, the rest of the project activities are not intended to generate profits.

Financial viability

60. The estimated net present value (NPV) of the proposed project is approximately USD 15.6 million. The internal rate of return is calculated to be 15.5 per cent.[28] The sensitivity analysis shows that in a scenario with benefits decreasing by 15 per cent, the NPV decreases to USD 5.9 million, and if an increase of 15 per cent in project costs is added to that scenario, the NPV amounts to USD –1.5 million.[29]

61. The ecosystem component of the project includes trainings that will guarantee the long-term sustainability of interventions. Also, as businesses develop, the links to the value chains of larger national and foreign-owned companies are expected to continue to expand beyond the project duration.

62. Technical assistance will be provided to commercial banks and government lending authorities to support the incorporation of climate resilience into their lending criteria.

Application of best practices

63. Results from the livelihood diversification interventions by the EWACC project will be used to develop best practice guidelines.[30]

64. The role of UNDP as the accredited entity will allow the application of best practices from projects with similar elements.[31]

II. Overall remarks from the independent Technical Advisory Panel

65. Based on the findings of this assessment, the independent Technical Advisory Panel (TAP) recommends that the Board of the GCF approves this project, subject to the following conditions and recommendations:

(a) The accredited entity shall deliver to the GCF, prior to the first disbursement, a draft terms of reference for the sub-activity 1.1.1 titled “Review of the interdependence of flood mitigation options”, in a form and substance satisfactory to the GCF Secretariat;

[27] Funding proposal, page 31.

[28] Funding proposal, page 49.

[29] Economic analysis, annex XII (b).

[30] Funding proposal, page 49.

[31] Funding proposal, page 47.

(b) The accredited entity shall confirm to the GCF Secretariat, within six months after the mid-term evaluation, that the executing entity has undertaken and completed an assessment of its O&M capacities, including the necessary financial, human and material needs for the sustainability of the infrastructure components of the project (river works and drainage system);

(c) The accredited entity shall complete, six months after the first disbursement, the capacity assessments of the main implementing entities (e.g. the Ministry of Finance, the Ministry of Natural Resources and Environment, the Land Transport Authority, the Ministry of Health and the Ministry of Works, Transport and Infrastructure);

(d) The accredited entity shall deliver to the GCF, six months after the first disbursement, a description of the selection criteria to be used for the ecosystem activities (sub-activity 2.2), in a form and substance satisfactory to the GCF Secretariat. These criteria should take into consideration the fact that agricultural activities must consist of proper agroforestry systems, which involves planting agricultural crops together with tree crops, bearing in mind the need for high crop diversity and avoiding the use of biocides; and

(e) The accredited entity shall ensure that, within 12 months after the effectiveness of the funded activity agreement, an operational manual containing detailed guidelines and procedures for the implementation of sub-activity 2.2 is prepared and delivered to the GCF, in a form and substance satisfactory to the GCF Secretariat. The document should include, inter alia, financial arrangements, business procurement, eligibility and selection criteria for beneficiaries, and the typology of investments and measures.

66. The TAP recommends that the accredited entity ensures the maximum synergies between the sewerage studies and the drainage master plan studies with a view to reducing costs and population disturbance during the execution of works (which will not take place as part of this project).

_____