



**GREEN
CLIMATE
FUND**

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Consideration of funding proposals – Addendum XXI

Independent Technical Advisory Panel's assessment

Summary

This addendum contains the independent Technical Advisory Panel's assessments of funding proposals (FP046-FP058) submitted for the Board's consideration at its eighteenth meeting.

Table of Contents Table of Contents

FP 046 Renewable Energy Program #1 - Solar	1
FP 047 GCF-EBRD Kazakhstan Renewables Framework	6
FP 048 Climate-Smart Agriculture (CSA) Risk Sharing Facility for MSMEs	12
FP 049 Building the climate resilience of vulnerable smallholder farmers through integrated management of climate risks (the R4 Rural Resilience Initiative)	19
FP 050 Bhutan for Life	27
FP 051 Scaling-up Investment in Low-Carbon Public Building	33
FP 052 Sustainable and Climate Resilient Connectivity for Nauru	39
FP 053 Enhancing climate change adaptation in the North coast and Nile Delta Regions in Egypt	47
FP 054 Implementation project of the integral management plan of the Lujan River Basin	54
FP 055 Poverty, Reforestation, Energy and Climate Change PROEZA Project	64
FP 056 Scaling up climate resilient water management practices for vulnerable communities in La Mojana	69
FP 057 Climate Action for Rural Development: community-based adaptation and mitigation in Argentina	79
FP 058 Responding to the increasing risk of drought: building gender-responsive resilience of the most vulnerable communities	86

Independent Technical Advisory Panel's review of FP046

Proposal name:	XacBank Renewable Energy Program #1 – Solar
Accredited entity:	XacBank LLC
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. Power and heat demand in Mongolia is expected to grow significantly over the next few years. According to estimates published by the Asian Development Bank, power demand in Mongolia will increase from 774 MW to 2,404 MW (i.e. it will more than triple) between 2011 and 2020, driven primarily by an over 900 MW increase in power demand from the two large mines, Tavan Tolgoi and Oyu Tolgoi, currently under development in the South Gobi region of the country.¹ By 2030, the country's power demand is projected to increase five-fold to 4,073 MW, even in the low growth scenario.

2. The country is already experiencing power shortages, with peak power demand amounting to over 1,000 MW against an available supply capacity of only 836 MW. In order to bridge this demand–supply mismatch, electricity is being imported from Russia. In 2016, the imported energy amounted to 20 per cent of the total country electricity consumption.

3. Mongolia's historical contribution to the current level of greenhouse gas emissions is small. However, the country has one of the highest levels of carbon dioxide (CO₂) emissions per capita in the world, at 4.996 tonnes, almost three times the world average in 2013. This is largely driven by the nation's long and extreme cold winters, excessive reliance on coal-based power and heat generation, and dated and inefficient industrial facilities and equipment.

4. The energy sector accounted for 51.9 per cent of all greenhouse gas emission in Mongolia. Electricity generation in Mongolia heavily relies on lignite: 95.7 per cent (2016). Almost all of the existing coal-fired power generation plants were built more than 40 years ago. With limited maintenance and refurbishment, they have been operating at less than 40 per cent capacity. In terms of overall power generation, renewable energy sources accounted only for 4.18 per cent of which 2.71 per cent came from wind, 1.46 per cent from hydropower, and 0.01 per cent from solar. Diesel generation represented 0.11 per cent of the total generation.

5. The proposed programme aims: (1) to finance a 10 MW solar power plant in Sumber soum in Govi Sumber province in southern Mongolia; and (2) to develop accredited entity (AE) capacity in project finance. The total cost of the project is estimated to be USD 17.6 million, of which the GCF is requested to lend USD 8.7 million to the AE. The AE will on-lend it to the project in a form of senior debt on a project finance basis. Half (50 per cent) of the amount to be on-lent will be guaranteed by the European Bank for Reconstruction and Development. Accordingly, the GCF will not take credit risk of the project. The balance of the project cost (USD 8.9 million) will be financed in a form of equity or sponsor loan by project investors. In

¹ Source: ADB. 2013. *Updating the Energy Sector Development Plan: Electricity Forecasts*. Final report. Manila (TA 7619-MON).

addition, the GCF is requested to provide the AE with a grant of USD 877,846 to help build up AE capacity in project finance.

6. The AE projects that the total CO₂ emission reduction of the project will be 12,270 t CO₂ annually, and 306,745 t CO₂ over the project lifetime (25 years). This projection is based on an emission factor of 0.797 t CO₂/MWh, which is based on the lowest emission factor of coal-fired power plants supplying electricity to the national grid. According to AE, Central Energy System (CES), an independent energy system to which the project will supply electricity, presumes a higher emission factor of 1.154 t CO₂/MWh. Therefore, the emission factor used by AE is lower, and considered to be conservative. The project's CO₂ emission reduction is comparable to those of other renewable projects implemented in Mongolia.

7. The project will offer employment to 10-15 people during its operation. In addition, the project will generate employment for 200-250 people during construction.

8. The project promotes the reduction of water consumption in power generation. While solar power generation uses little water, thermal power plants require greater water use for cooling. In Mongolia, most water resources are not readily accessible to major population centres, mining operations and other industrial operations, where electricity generation is required. Based on its annual gross electricity generation, the project will save around 171 million litres of water per year compared with conventional thermal power plants. In its 25 years of operation, the total water saving will reach 4.2 billion litres.

9. Key outcomes of the project will be monitored and reported based on a methodology used in the 10 MW Darkhan solar power project, which is currently operational under JCM. A monitoring plan and report will be furnished periodically by the AE to GCF as stated in the funding proposal.

10. The independent Technical Advisory Panel (TAP) regards the project's impact potential as notable.

1.2 Paradigm shift potential

Scale: N/A

11. Mongolia has enormous potential for solar power generation, particularly in the South Gobi region. According to the National Renewable Energy Laboratory, the solar energy potential of Mongolia is 1,500 GW. On average, Mongolia can produce 4,774,000 GWh per annum from 66 MW/km² of applicable land.

12. The project is one of the first batches of large-scale renewable energy power plants to be implemented in Mongolia. Despite the country's great solar power generation potential, large-scale solar power generation remains new in Mongolia. Presently, there are seven solar power plants operating in Mongolia. Among them, there is only one of 10 MW capacity in Darkhan city. The remaining balance consists of those with less than 1 MW capacity.

13. The successful implementation of the project will enhance the government policy and regulatory framework for the establishment of other similar renewable projects. Integration of more renewable power projects, especially solar power projects, will develop further the Mongolian Government's capacity to promote and better manage renewable energy sources in the future.

14. The project will encourage private investors and financiers, both local and international, to expand their involvement in renewable power generation in Mongolia. The project will also contribute in experience sharing of solar project development because the sanitized version of the full funding proposal of the project will be publicly available. Future solar projects can then benchmark their projects with this project, and replicate project development and implementation experiences. This especially applies to the calculation of the grid emission

factor and CO₂ emission reductions so that the capacities of both project developers and government agencies will be enhanced in developing data necessary for mitigation projects in Mongolia.

15. The project is expected to provide technical solutions and evidence that a solar power generation facility can be designed to withstand the –40 degrees Celsius temperatures common throughout the six-month Mongolian winter. It may also assist other countries of similar climate, including those in Central Asia, to consider large-scale solar power generation as a viable option to develop renewable power generation.

16. Accordingly, the paradigm shift potential of the project is acknowledged. However, scalability of the project will remain constrained due to lack of financing from commercial banks and international institutions as a result of the ongoing economic crisis of Mongolia.

1.3 Sustainable development potential

Scale: N/A

17. The project will realize additional power generation capacity, and enhance the self-sustainability of the nation power supply. It will generate and supply electricity to the CES, which covers the Central, Khangai and South regions including Ulaanbaatar. The CES is the largest energy system, representing 77 per cent of the country's power consumption. The country's power consumption reached 5,624 GWh in 2016, of which 4 per cent was imported from Russia.

18. There are social benefits related to increasing the consistency and reliability of the power supply, because it will supply electricity to about 10,000 households. In addition, the project will create employment of 200–250 people during the construction, and 10–15 people during operation.

19. Promotion of renewable energy generation, such as this project, will contribute to ease air pollution in the country. It is estimated that air pollution in Ulaanbaatar is the major contributor to 10 per cent of deaths in the city.² It further impacts negatively on the nation's economy, in particular, the agriculture, livestock, land-use, water resources, energy, tourism, and residential sectors. The project has the potential for social development improvements in terms of health and safety as well as for broad economic development.

20. In addition, the project will be a demonstration project in terms of private sector development in Mongolia. With GCF support, it will showcase private sector involvement in the critical infrastructure in Mongolia, which is currently experiencing economic crisis.

21. The project will increase electricity supply without placing a demand on water resources. Compared with conventional combined heat and power plants, it will save 171 million litres of water per year, or 4.2 billion litres of water over the total project duration of 25 years.

22. The TAP observes sustainable development potential of the project.

1.4 Needs of the recipient

Scale: N/A

23. The project provides additional power generation capacity critical to CES and to Mongolia. New power generation capacity is urgently required because power shortages are already being experienced. The government estimates that 500–600 MW will be added to existing demand by 2020, corresponding to an average annual growth rate of 3.5 per cent.

² Allen, R.W., Gombojav, E., Barkhasragchaa, B. et al. Air Qual Atmos Health (2013) 6: 137. doi:10.1007/s11869-011-0154-3

Currently, the main power supplies are from ageing coal-fired power plants, and the majority of electricity consumption occurs in CES.

24. The programme will provide the critical financing required for the private sector investors of the project in the absence of long-term and competitively priced financing from commercial banks and international institutions. Without GCF assistance, the project is unlikely to secure the required financing for implementation.

25. The programme also supports the Government's endeavour to develop renewable power generation to supply 30 per cent of the nation's power by 2030, as indicated in its intended nationally determined contribution. Successful implementation of renewable power projects such as the project is critical for the Government of Mongolia to continuously attract private investment in renewable energy generation.

26. The programme further assists the AE to develop its capacity to ensure the project is structured in accordance with the sound project finance practice.

27. The TAP considers that the needs of the recipient are clearly displayed in the proposal.

1.5 Country ownership

Scale: N/A

28. The project is in line with the government's strategy and plans to increase renewable power generation in Mongolia. Under the intended nationally determined contributions, the government intends to increase the share of renewable electricity capacity in total electricity generation capacity from 7.62 per cent to 30 per cent. The nationally appropriate mitigation action also identifies renewable energy sources, especially solar, as an option for switching from coal-based heating to electricity-based heating for individual households.

29. The project further supports the government's efforts to promote private sector investment in renewable power generation. In 2007, the Renewable Energy Law was enacted to stimulate renewable energy development with private sector involvement. To attract private sector investment, a feed-in tariff is being offered for renewable energy projects. The project is expected to be the third large-scale renewable power generation project to reach operation, after the Salkhit wind power project and the Darkhan solar power project.

30. The national implementing entity is also the AE, and has therefore worked closely with government agencies and the private sector in developing the programme. Continuous engagement and dialogue with various stakeholders including civil society organizations will take place during project construction and operation. The national designated authority has been consulted, and has indicated its support for the programme through the signing of a no-objection letter.

31. The TAP acknowledges country ownership of the project.

1.6 Efficiency and effectiveness

Scale: High

32. The GCF assistance of USD 8.7 million to the project will mobilize co-financing of USD 8.9 million from private investors at a co-financing ratio of almost 1:1. The low co-financing ratio is the result of large GCF commitment (49 per cent of the project cost) in the absence of financing from commercial banks and international agencies for the project (and for renewable power projects in Mongolia in general). It should be noted that the GCF loan assumes the credit risk of the AE, and not project risk, and is repayable to the GCF with interest in 10 years. If a GCF grant of USD 0.9 million is included in the calculation, the co-financing ratio would be 0.9:1.0.

33. The GCF cost per tCO₂ reduction in emissions is estimated to be USD 30.9, which can be considered reasonable taking into account the large GCF assistance to the project (49 per cent of the project cost) plus its provision of grant to AE. According to AE, the engineering, procurement and construction contractor (EPC) was selected through a competitive process by the project. Therefore, the EPC cost is assumed to be reasonable.
34. The financial viability of the project is assessed to be sustainable, with the tenor of GCF and AE loans being synchronized with that of a power purchase agreement. Since the major cash outflow for a solar power project, especially photovoltaics, is debt service payment, the repayment of the AE loan (and GCF loan) by the project will be fully supported by an agreed-upon feed-in tariff payment under the power purchase agreement. The project will generate a steady and reliable income.
35. The feasibility study confirms that the project is operationally feasible. The project will be located in Sumer soum, an area with the large solar radiation in Mongolia: the overall duration of solar radiation is between 3,026 and 3,359 hours, and daily solar radiation is 4.3 to 4.7 kWh/m².
36. The TAP finds that efficiency and effectiveness of the project is sustainable. The low co-financing ratio is the result of large financial support from the GCF due to the lack of other co-financing sources for renewable projects in Mongolia.

II. Overall remarks from the independent Technical Advisory Panel

37. The TAP recommends that the Board support the programme as presented.
38. Successful implementation of the programme will support the government policy and regulation to further promote the development of renewable projects with private sector investments. The project is a demonstration project, and it has potential for paradigm shift. The project's estimated CO₂ emission reduction is comparable with that of other renewable projects implemented in Mongolia. The project also promotes a reduction of water consumption in power generation.
39. The programme contributes to sustainable development by increasing the nation's power generation capacity from renewable sources to enable the supply of electricity to about 10,000 households. It is developed within the policy and regulatory framework established by the government to increase renewable power generation in Mongolia. Although the co-financing ratio appears low due to the absence of financial sources other than GCF, the programme appears to be efficient and effective. The financial and operational viability of the project appears solid. The programme is unlikely to proceed without GCF financial assistance.

Independent Technical Advisory Panel's review of FP047

Proposal name:	GCF-EBRD Kazakhstan Renewables Framework
Accredited entity:	European Bank for Reconstruction and Development (EBRD)
Project/programme size:	Large

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: High*

1. Kazakhstan is one of the largest emitters of greenhouse gas (GHG) in Central Asia, with 75 per cent of its electricity generated from coal. Moreover, GHG emissions increased by 40 per cent since 2006 due to the economy's overdependence on fossil fuels; Kazakhstan possesses significant resources of renewable energy, such as wind, solar and hydropower. In order to achieve its renewable energy targets, the Government of Kazakhstan recently adopted a renewable energy regulation that includes the introduction of feed-in tariffs (FiTs);

2. In the funding proposal that was reviewed by the independent Technical Advisory Panel (TAP), the European Bank for Reconstruction and Development (EBRD) proposes to implement an investment framework programme of five years' duration, which is expected to lead to **USD 550 million** in investment, including funds from: (1) the GCF; (2) private sector investors; (3) other financial institutions; and (4) EBRD. This financing will provide loans to renewable energy source (RES) developers in order to finance the construction, connection to the grid, commissioning and launch of RES projects (solar, wind, small hydropower and biogas), and to electricity distribution and transmission companies to finance the modernization and strengthening of the electricity grid so as to enhance the integration of renewable energy sources into the electricity grid (the subprojects).

3. The proposed programme funding will include the following sources:

EBRD debt financing	USD 214 million
GCF concessional financing of about	USD 106 million
GCF technical assistance funding	USD 4 million
Other lenders co-financing/private-sector investments	USD 226 million
Total	USD 550 million

4. EBRD therefore seeks the total sum of USD 110 million from the GCF for this programme, made up of USD 106 million as a concessional loan and a technical assistance grant of USD 4 million. The programme will be made up of the following components:

- (a) **Component 1:** Scaling up renewable energy investments, by blending EBRD and GCF financing and leveraging additional debt financing from international and development financial institutions and in the future from commercial banks, as well as private sector investments; and
- (b) **Component 2:** Enhancing renewable energy integration, policies and planning through a comprehensive technical assistance and policy dialogue programme.

5. It is expected that about 8-11 projects will be funded under this programme. While it is expected that solar, wind, small hydropower and biomass based power projects will be covered by the programme, the financing of small hydropower projects will not constitute more than 20 per cent of total programme costs and will be limited to only financing small hydropower

projects with a capacity up to 35 MW.³ Biogas will constitute a very small portion of the programme and is unlikely to exceed [20] MW on a cumulative basis.

6. Coal is the main fuel for power generation in Kazakhstan over the years. As of 2015, coal power plants constituted about 66 per cent of cumulative installed capacity, while 73 per cent of electricity in that year was generated using coal as fuel. The carbon dioxide (CO₂) emission intensity of electricity generation in Kazakhstan has been estimated to be about 0.844 t CO₂/MWh of electricity generated. Given this grid emissions factor, the accredited entity (AE), EBRD has estimated, that the total CO₂ emission reduction over the lifetime of the subprojects of 20 years will be about 12.86 Mt CO₂ eq. This will be expected to achieve a reduction in emissions of about 643,229 t CO₂ eq per annum, provide clean electricity to grid-connected consumers, and create 5,000 short-term jobs (during construction) and 300 long-term jobs (in operation).
7. Accordingly, the impact potential of the proposed framework is assessed to be “High”.

1.2 Paradigm shift potential

Scale: High

8. A key barrier to investment in renewable energy (RE)/energy efficiency projects in many developing countries which are eligible for GCF funding (including Kazakhstan) is financing, especially the ability to mobilize funding from international and local sources into such projects in a market that is considered risky. Two key policies that were introduced to address this barrier include: the FiT and optional carbon credits for the Kazakh emissions trading scheme as per legislation. Over the short period in which these policies have been introduced (since 2013), the effect on RE capacity development and increase has been very marginal. In absolute terms, RE contribution to power generation continues to remain relatively insignificant at less than 1 per cent of overall power generation by 2015. Key paradigm shift potentials of this AE proposed scheme will include:

- (a) Through the involvement of GCF concessional debt financing, as well as the EBRD intervention, other lenders co-financing/private sector investments will be mobilized to play a role in the perceived risky market, thereby enhancing the investment opportunities for this asset class (RE) to international investors;
- (b) The concessional fund from the GCF, coupled with the funds from the AE and those that will be raised by the AE from other sources, will enable the financial and economic viability of these projects, thus demonstrating the bankability of the projects, creating a track record and educating the market;
- (c) The incentives that will be provided by this intervention will help to establish a beachhead capacity of renewable energy in Kazakhstan, beyond the one that was achieved before this programme through the introduction of the FiT and the domestic carbon trading scheme. This will enable the development of national skills and a supplier/services infrastructure;
- (d) By demonstrating the commercial viability of the projects (8-11) targeted, this programme will catalyse the development of a scaled-up and viable RES market in Kazakhstan;
- (e) The framework will enable the involvement of private-sector resources in designing and implementing RES projects, taking full risk for long-term finance. This will allow optimal private sector technical and financial expertise in the diversification of the energy sector in Kazakhstan to be brought to the programme.

³ In accordance with the RES law, hydropower plant projects with a capacity of up to 35 MW are considered to be small hydropower projects.

- (f) Furthermore, the interventions that will be targeted by the grant portion of the funding that is expected to be provided by the GCF will result in the accumulation of valuable lessons learned and the enhancement of linkages between authorities, sponsors, financiers, suppliers and construction and consulting companies, and consequently the adequate strengthening of the local governance and institutional knowledge required for the successful and sustainable implementation of RES projects.
9. Accordingly, the TAP views the paradigm shift potential of the proposed facility as conditionally “High” if the fund-sourcing campaign by the AE that has been built into the design of the scheme is successful.

1.3 Sustainable development potential

Scale: Medium

10. Environmental, social and economic co-benefits, including gender-sensitive development impacts, will be associated with the successful implementation of this programme. The programme will bring:
- (a) Socioeconomic benefits through employment from construction and operation;
 - (b) Socioeconomic benefits from sustainable energy supply;
 - (c) Cumulative effects on the climate through a reduction in GHG emissions;
 - (d) Decrease in air pollutant emissions and other types of environmental pollution associated with traditional energy production, leading to improved air quality and reduced health risks;
 - (e) Penetration of modern construction/production patterns and technologies, and demand for high-skilled personnel; and
 - (f) Enhanced access to employment opportunities for women in the high-value, high-growth energy sector.

Gender-sensitive economic impact

11. Key gender interventions as built into the programme are described below:
- (a) The scale of the proposed programme is expected to create opportunities to work closely with eligible RES project developers to develop and implement a comprehensive plan to ensure that women and men are able to equally access opportunities connected to operations in terms of direct technical and operations skills and employment. This will, if achieved, strengthen women’s participation in the RES sectors compared with the current situation.
 - (b) EBRD will also develop partnerships with vocational education and training institutions and Kasipkor Holding (the public authority responsible for the quality assurance of colleges and universities), to enhance young women’s access to developing the relevant technical skills through training unskilled or low-skilled women to ensure their recruitment to the companies that will execute the subprojects. This intervention can potentially benefit the local female labour force, as many more women – who otherwise might have been unemployed – will have access to economic opportunities in the energy sector through the training and placement programmes offered.
 - (c) RES project developers will also aim to promote workplace equality and a culture of diversity by supporting the move of women workers from semi-skilled to skilled and managerial/leadership positions through training/reskilling, mentoring and employing ‘buddy’ systems and other programmes/systems. RES project developers will also aim to raise awareness of gender issues within public and private entities working in the energy sector in Kazakhstan by conducting a series of gender-awareness workshops,

especially in relation to the topic of gender in the workplace, to enable concerned entities get a better sense of what it takes to achieve gender equality in the work environment.

12. Accordingly, the TAP views the sustainable development potential of the proposed facility as "medium" due to the fact that many of the effects described above are dependent on the activities of secondary stakeholders in this programme.

1.4 Needs of the recipient

Scale: High

13. The following characteristics of the programme, when implemented successfully, will determine the extent to which the needs of the recipients are taken into consideration in the design of the intervention:

Economic impact

14. A key need of Kazakhstan is the elimination of barriers such as: a lack of local knowledge on RES; a lack of suitable loan characteristics (long tenure, low interest rate, etc.) and other market barriers. It is expected that these barriers will be mitigated by the successful implementation of the programme.

Social impacts

15. A key issue in the development of RE in Kazakhstan is the affordability and potential social impact of RES for Kazakhstan. EBRD, at the request of the Government of Kazakhstan, carried out studies as part of the planning of this programme that showed that:

- (a) Electricity cost increases are not a significant portion of residential expenditure even with relatively a high level of penetration of RES investments in need of FiT support. As such, the planned RE projects for implementation in the country are for renewables that are not expected to create affordability issues in the near future; and
- (b) For the same reason, the EBRD study also concluded that a rapid build-up of renewable capacity will not become unsustainable in social terms due to the added electricity tariff.

16. The implementation of the programme is not likely to result in the negative needs of the country as well as of the people.

17. The fact that these critical needs issues are likely to be mitigated by this intervention, and attract financing for RE projects in the absence of the GCF-supported EBRD intervention, has convinced the TAP to rate the needs of recipients as likely to be between "Medium and High".

1.5 Country ownership

Scale: High

18. The key country ownership metrics will include the following:

- (a) The project will make contributions to the country's policies already in place on RE. For example, the Kazakh Government launched a strategic initiative called the Green Economy in 2013 under which several actions have been planned, including the development of renewable energy sources. The objective is to bring the share of new renewable energy in electricity generation from nearly 0 to 3 per cent by 2020, and then to raise it further to 30 per cent by 2030 and 50 per cent by 2050. The programme is in line with this initiative and hence gives the Government of Kazakhstan strong ownership of the intervention;

- (b) This initiative became the key pivot on which Kazakhstan’s intended nationally determined contribution (on its strategies to reduce its GHG emissions) were based in its submission to the secretariat of the United Nations Framework Convention on Climate Change. On 16 November 2016, the President of Kazakhstan signed the Law “On ratification of the Paris Agreement”. Kazakhstan’s intended nationally determined contribution, and now nationally determined contribution as Kazakhstan has ratified the Paris Agreement, calls for an economy-wide target of a 15 per cent reduction in greenhouse gas emissions by 2030 compared with 1990 reflecting a reduction of at least 22 per cent below projected ‘business-as-usual’ emissions. The currently proposed intervention, which is in line with the nationally determined contribution is a strong indication of country ownership;
- (c) The Government of Kazakhstan plans to modernize existing power facilities and to construct new power plants, not only to meet internal demand reliably, but also to increase the country’s power export potential. These plans are based on the country’s abundant availability of low-cost coal. Hence, the current RE plans will help the country to bridge the energy demand–supply gap with clean energy; and
- (d) Concerning engagement with national designated authorities, civil society organizations and other relevant stakeholders, there is evidence that there have been various stages of engagement with relevant stakeholders in Kazakhstan.
19. The Ministry of Energy of Kazakhstan provided its no-objection letter for the programme on 24 February 2017.
20. Given the various considerations above, the TAP has concluded that the country ownership of the proposed framework by the executing authority is "High".

1.6 Efficiency and effectiveness

Scale: High

21. The key efficiency and effectiveness metrics of this programme can be summarized as follows:
- (a) Cost-effectiveness and efficiency of the programme
- (i) The programme will address the barriers discussed earlier and facilitate private-sector participation in a sector that has limited private-sector engagement;
- (ii) The programme will introduce and demonstrate the viability and attractiveness of the new modern technologies, as well as project implementation and financing practices, such as limited recourse-based finance, project finance, etc.; and
- (iii) The implementation of the programme will demonstrate that projects containing green energy components, RES in particular, can be replicated in the long-term.
- (b) Cost-effectiveness of the mitigation activity
- (i) The estimated cost per tonne of CO₂ equivalent (total investment cost/expected lifetime emission reductions), assuming the project lifetime to be 20 years are the following:
- USD 106 million/t CO₂ for GCF contribution = USD 8.2 per t CO₂
 - USD 550 million/ t CO₂ for total programme cost = USD 42.7 per t CO₂

This compares well with the estimations for the social cost of CO₂ emissions.

- (c) Co-financing efficiency

- (i) The programme will enable the GCF to leverage a significant amount of co-financing, approximately USD 444 million compared with the USD 106 million requested from the GCF (the co-financing ratio - total amount of co-financing divided by the GCF investment in the programme - equals 4.2x).

22. Given the description above, the TAP views the efficiency and effectiveness of the proposed framework to be "High".

II. Overall remarks from the independent Technical Advisory Panel

23. The framework for implementing this programme as suggested in the funding proposal is considered by the TAP to be effective in promoting the development of the RE programme in Kazakhstan. The GCF component fund – senior loan (USD 106 million as a concessional loan and USD 4 million as a grant) – will encourage the crowdsourcing of financing (equity and debt) from other sources, including private-sector partners as well as debt financing from other sources by EBRD (including EBRD resources - senior loan of about USD 214 million from EBRD). These funds would not have flowed into the project in the absence of GCF financing. The success of this framework has the potential to deliver a paradigm shift to the sector, which has not been successful in getting such funds to promote RE projects in the recent past. The promotion of private-sector investment in this RE programme is in line with Kazakhstan's RE and GHG mitigation emissions reduction policies and strategies.

24. The success of the programme is heavily dependent on EBRD being able to raise USD 226 million from private and public equities and debt fund sources once the GCF agrees to provide the senior loan of USD 106 million and grant fund of USD 4 million requested. These are in addition to the USD 214 million of a senior loan that will be committed by EBRD. Not being able to source the fund through the EBRD will have a negative impact on the success of the programme and thus constitute a risk to the funds provided from the GCF. The TAP takes note that the funding proposal recognizes this risk and provides for a condition that prior to signing the financing contract for a particular underlying project, the AE shall submit evidence to the GCF that the relevant third party co-financing has been committed.

25. In order to be able to measure the mitigative performance of this programme, a clear monitoring and reporting procedure guiding this programme must be agreed between the AE and the Secretariat, prior to signing the financing contract for the first underlying project. The monitoring and reporting report must be submitted on an annual basis by the AE to the GCF. The TAP notes that a condition in this regard has been agreed to between the Secretariat and EBRD.

26. Accordingly, the TAP recommends that the Board approve the proposal.

Independent Technical Advisory Panel's review of FP048

Proposal name:	Climate-Smart Agriculture (CSA) Risk Sharing Facility for MSMEs
Accredited entity:	Inter-American Development Bank
Project/programme size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential *Scale: N/A*

1. The proposal consists of a programme that seeks to finance subprojects related to climate-smart agriculture (CSA) activities in an area of approximately 200,000 ha in Mexico and Guatemala. The proponent of the programme, the Inter-American Development Bank (IDB), estimates that it would generate a greenhouse gas emission reduction of 9.2 Mt CO₂ eq during the lifetime of the facility (15 years).⁴
2. CSA projects that are to be part of this proposal are not yet specifically determined, so IDB presents the mitigation potential by estimating the future portfolio and subprojects (and impacts) based on a market study. Given the conservative assumptions of the mitigation calculations presented, the mitigation impact could be significant.
3. The potential CSA practices and insurance products envisaged in the proposal will help to improve resilience on climate change for small farmers and micro-, small- and medium-sized enterprises (MSMEs) in the region.
4. The proposal estimates that direct beneficiaries would exceed 800,000 people. Almost 70 per cent of these beneficiaries (558,000 people) are accounted for within the subproject "Efficient use of firewood in indigenous and rural communities of Guatemala".
5. For this subproject, IDB considered the total demand for financing cooking stoves of USD 20 million, while the subproject profile describes a total available funding of USD 8.9 million (including USD 2.2 million of GCF funding). The proponent estimates the number of beneficiaries to be 100,000 families, considering a cost per stove of USD 200.
6. Moreover, the promotion of efficient stoves is only one of the two main components of the project. The other component, "Promoting energy and multi-purpose forestry, agro-forestry and agro-silvo-pastoral systems", is not clearly described on the proposal, and the estimated beneficiaries and fund allocation are not defined. In the best-case scenario, where all funding except the portion allocated to technical assistance (USD 450,000) goes to financing cooking stoves, beneficiaries could reach approximately 40,000 families, or 200,000 people. That being said, total beneficiaries of the programme could be estimated at 450,000 people.
7. The adaptation impact of the programme is considered to be notable.
8. The only activity related to climate information and risk awareness was found on the subproject "Climate-Smart Agriculture (CSA) Risk-Sharing Facility for MSMEs", which includes a component on "Agronomic Advisory". This component aims at supporting farmers in understanding their climate risk exposure and developing agronomic extension plans for

⁴ Funding proposal, page 6.

adaptation, and will be done through partnerships with local nongovernmental organization and research center.

1.2 Paradigm shift potential

Scale: N/A

9. The proposal includes several monitoring and evaluation mechanisms for subprojects, and for the generation and dissemination of knowledge products, which will be disseminated through IDB Group events, by the facility's clients, and through the GCF and other relevant organizations.⁵ The IDB team, in collaboration with the GCF Secretariat, plans to organize workshops in Mexico and Guatemala, with the purpose of sharing lessons learned and exposing local financial institutions to the financial innovations promoted through this facility.⁶

10. A Steering Committee comprising one investment specialist from the IDB Multilateral Investment Fund (MIF), one climate change specialist from the IDB Climate Change Division and the Facility Coordinator, will be in charge of the evaluation and development/structuring of proposed subprojects. The investment specialist will evaluate the financial components of subprojects and the climate change specialist will be in charge of evaluating the climate mitigation and/or adaptation potential of the proposed subprojects.⁷

Contribution to the creation of an enabling environment

11. The risk associated with CSA practices is perceived to be high because of a lack of specificity in the subproject definition, poor knowledge of the technologies within financial institutions, and a lack of previous experience of funding these activities. Knowledge gained through the implementation of the proposed programme will help to enhance the related knowledge base, thus reducing the perceived risk.⁸

12. The proposal aims to contribute to an enabling environment by demonstrating that CSA practices are profitable and that the risk involved is acceptable.

Contribution to the regulatory framework and policies

13. Even though the proposal does not include a clear "institutional and regulatory framework strengthening" component, it can be said that local financial institutions that will be directly or indirectly involved in the implementation of the subprojects will consequently gain expertise on innovative financial products targeted at CSA and will contribute to creating capacity for the future as climate finance channelling agents.

Potential for scaling up and replication

14. The above-mentioned knowledge improvement, risk reduction and institutional strengthening will improve the potential for scaling up the programme.

15. Also, part of the grant funds to be used for technical assistance and financial products may be used to improve linkages to high-value markets or to value chain actors, facilitating the access of MSME producers to markets. It is possible that these value chain actors may seek to support programme activities beyond the lifetime of this facility, thereby contributing to scalability.⁹

16. Given the magnitude of the proposed programme and the innovative characteristics of the described tentative subprojects, the paradigm shift potential is well observed.

⁵ Funding proposal, page 43.

⁶ Funding proposal, page 17.

⁷ Funding proposal, page 31.

⁸ Funding proposal, page 18.

⁹ Funding proposal, page 43.

1.3 Sustainable development potential

Scale: N/A

Environmental co-benefits

17. The environmental co-benefits of the implementation of the subprojects, which play a key role in this proposal, are expected to include reduced vulnerability of watersheds to erosion and flash floods, reduced pollution of watersheds, reduced siltation of riverbeds, improved soil quality, enhanced biodiversity, increased groundwater recharge and, in general, conservation of ecosystem services.¹⁰

18. In order to maximize these environmental co-benefits, CSA subprojects should specifically avoid monoculture crops and plantations and, at least, minimize the use of chemical herbicides, pesticides and fertilizers. Monocultures are generally more vulnerable to pests than more biodiverse systems. This is because plantations of one or two species offer an enormous food source and ideal habitat to any pest and pathogen species adapted to them.¹¹ Increased vulnerability to pests is likely to lead to increased use of pesticides, with the subsequent hazard to the environment and the population. This issue should be taken into account on projects involving the replacement of coffee plantations with resistant cultivars.

Social co-benefits

19. Although the proposal includes a definition of CSA together with a list of eligible activities and a list of excluded activities, there is still the potential that some practices or technologies which are labelled as CSA may end up being harmful to the environment. An example of this would be the introduction of genetically modified crops, which are supposed to be more resistant to drought, but also involve an intensive use of agrochemicals, are very capital intensive and would displace production by small farmers in the medium to longer term.

20. The proposed programme does not include activities aimed at improving health, education or cultural preservation. However, it must be noted that environmental co-benefits could result in health improvements for part of the benefiting population.

Economic co-benefits

21. Owing to the umbrella nature of the programme, it is not possible to calculate how many jobs will be created by programme activities. Every subproject will have its own characteristics. Nevertheless, similar IDB projects in the region have generated approximately 200 jobs per USD 1 million invested.¹² Based on this assumption and considering the six tentative subprojects, the present programme would have the potential to create more than 30,000 jobs.

Gender-sensitive development impact

22. In order to guarantee that women farmers have access to the financial products offered by the facility, the programme will provide technical assistance concerning this matter to the executing entities and capacity-building activities to women farmers.¹³

23. The programme will allocate USD 0.3 million towards the implementation of the gender action plan and the environmental and social management systems. However, the funding

¹⁰ Funding proposal, page 45.

¹¹ Food and Agriculture Organization of the United Nations. 2001. *Biological Sustainability of Productivity in Successive Rotations*. Report based on the work of J. Evans. "Forest Plantation Thematic Papers, Working Paper 2". Unpublished. Rome: Forest Resources Development Service, Forest Resources Division. Available at: <<http://www.fao.org/3/a-ac122e.pdf>>.

¹² Funding proposal, page 45.

¹³ Gender Assessment and Action Plan. CSA Facility for MSME.v4

proposal does not determine the amount that will be specifically invested for the gender action plan.¹⁴

1.4 Needs of the recipient

Scale: N/A

Vulnerability of the country

24. Guatemala: Roughly half of the country's population live in rural areas, over 40 per cent are indigenous and almost 20 per cent (300,000 households) live in Guatemala's dry corridor, with weather characteristics that include prolonged droughts, erratic rainfall, frost, land degradation and water scarcity. These conditions can result in 55–100 per cent maize and bean yield losses in particularly hostile years.

25. Mexico: 73 per cent of land owners are smallholders that own 5 ha or less; 22 per cent are medium-sized land owners (up to 20 ha); and only 5 per cent of landholders own more than 20 ha. This scheme hinders the implementation of economies of scale, and accentuates the need for putting on place effective farmers' organizations. Between 1980 and 2000, 15 per cent of farmers were affected by extreme events such as heavy rainfall, landslides, tropical cyclones, droughts, floods, frost and hail.

Vulnerable groups and gender aspects

26. In general, small farmers in the beneficiary countries do not have sufficient incentive, technical capacity and financial resources to adopt any kind of alternative agricultural practice such as CSA.

Absence of alternative source of financing

27. Commercial banks, equity funds and insurance companies in Latin America and the Caribbean (LAC) do not offer products tailored to the needs of agricultural producers experimenting with alternative practices. Risk-sharing mechanisms are needed to reduce the risk of investing in innovative agricultural practices and to support the longer-term loans that agricultural and forestry activities generally require.¹⁵

1.5 Country ownership

Scale: N/A

Alignment with priorities in the country's national climate strategy

28. The two countries considered for the programme have given significant priority to land-use activities, including CSA and forestry, in their intended nationally determined contributions (INDCs),¹⁶ and they are also part of the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries, which is in line with the forestry and agroforestry activities included in the programme.

¹⁴ Funding proposal, page 7.

¹⁵ Funding proposal, page 47.

¹⁶ Funding proposal, page 48. Even though agriculture is not the first priority for the country, hydrological events such as floods are. The "reduction of impacts caused by meteorological disasters, and the formation and maintenance of soils" fits CSA, which aims at strengthening the diversification of sustainable agriculture by conserving germplasm and native maize species, thermal comfort for livestock, and the development of agro-ecosystems, through the incorporation of climate criteria in agriculture programmes.

29. Also, the relevance of agricultural, forestry and agro-processing activities on the gross domestic product (GDP) of these countries is significant.¹⁷

Capacity of accredited and executing entities to deliver

30. The IDB is the accredited entity. MIF of the IDB has over 20 years of experience in working with MSMEs and financial institutions in the agriculture sector in LAC. Further details on IDB expertise are given in the proposal.

31. Executing entities: the potential partners identified in the proposal have expertise in financing agricultural businesses in the targeted countries, and will likely provide the necessary linkages between the provision of financing and the local end beneficiaries.¹⁸

Engagement with civil society organizations and other relevant stakeholders

32. During the preparation phase of the programme, the design team has consulted with the national designated authorities, the private sector and civil society of the countries where this programme will be implemented during its first years. Non-governmental organizations (NGOs) and civil society organizations will be consulted in the development of individual subprojects.¹⁹ More details on consultations are presented on the proposal.

1.6 Efficiency and effectiveness

Scale: N/A

Cost-effectiveness and efficiency

33. The proposal states that, of the total of USD 158 million, USD 128 million of co-financing will be provided by the potential partners. The independent Technical Advisory Panel (TAP) noted that, as there are no letters of commitment on co-financing from the potential partners (executing entities), it is not clear to what extent these partners are committed to co-financing the proposed activities. In response to this concern, IDB has indicated that:

“At this stage of the project design, considering the ‘Facility approach’ of this proposal, it is not possible for the IDB to request commitment letters to potential partners. ... the current pipeline is only tentative and commitment letters cannot be requested from partners before the approval of the GCF of this Facility and the approval by the IDB Group of the funding flowing into each specific project. Once the GCF funding for the Facility has been approved, the pipeline projects will be further negotiated with each partner. The IDB will thereafter, in line with its own policies and practices, perform an in-depth due diligence of potential partners and confirm their eligibility to receive the specific financing being considered for an individual subproject. Only after the positive assessment of the due diligence will commitment letters be delivered. Following that stage, each project proposal will have to be approved by the IDB/MIF Board, and only after that, the relative funding agreements would be signed.”²⁰

34. The estimated cost of reducing each tonne of CO₂ (total investment cost/expected lifetime emission reductions) is USD 17.2 per t CO₂ eq in total, and USD 2.2 per t CO₂ eq for the GCF investment. However, this estimation is only indicative, because the greenhouse gas reduction efficiency will vary from one subproject to another.

¹⁷ In Mexico those activities account for 7 per cent of GDP, while in Guatemala agriculture represents 14 per cent of GDP.

¹⁸ Funding proposal, pages 48 to 51.

¹⁹ Funding proposal, page 52.

²⁰ “Additional ITAP Questions and AE responses in advance of B.17”, page 2.

Financial viability

35. The following table presents the expected return associated with the three financial instruments proposed, as described in the proposal:²¹

Expected return associated with the three financial instruments of the proposal

Financial instrument	Annual interest rate/fee (%)	Annual internal rate of return (%)	Tenor (years)
Senior long-term loan	4.5	3-4	8-12
Equity investments	NA	7-10	7-14
Guarantees	3	3-4.5	15

Abbreviation: NA = not applicable.

36. Regarding financial viability beyond programme implementation, the proposal states that the demand identified in the preparation phase of the programme for the preliminary six subprojects is higher than the amounts requested.²²

37. The sustainability of the programme depends, above all, on the results obtained in its implementation in terms of financial viability.

Application of best practices

38. The independent TAP is aware of general concerns raised by NGOs about possible propagation, under the guise of CSA, of certain agricultural practices and technologies that may be socially unjust and environmentally harmful, such as genetically modified high-yield disease-resistant crops, and the intensive use of specific fertilizers and pesticides. Moreover, these practices are very capital intensive and would displace production by small farmers in the medium to longer terms, with commensurate social consequences for one of the poorest sectors of the population.²³ In response to this comment, IDB has indicated that:

“The IDB takes notes of the comment and would like to mention that it has been accredited by the GCF based on the high standards of environmental and social protection that are embodied in the IDB E&S safeguards. The rigorous application of such safeguards standards, coupled with the application of the IDB’s List of Excluded Activities (annexed to the ESMF and referenced in the FP), satisfies the GCF requirements in terms of environmental and social protection.”²⁴

II. Overall remarks from the independent Technical Advisory Panel

39. The independent TAP recommends that the Board consider the proposal as presented.

40. The proposal comprises a financial scheme (a facility) aimed at funding CSA projects, implemented through financial intermediaries, which will act as executing entities. There are no facilities like those in the targeted countries according to the accredited entity. The MIF of the IDB has over 20 years of experience of working with MSMEs and financial institutions in LAC.

41. The independent TAP understands that the private sector portfolio is dynamic and therefore candidate subprojects at the point that the funding proposal was prepared may no longer be available for investment when the GCF commitment is finalized. Nevertheless, the

²¹ Funding proposal, page 54.

²² Funding proposal, page 8.

²³ KfW. 2016. “The Current Controversy between the FAO and NGOs regarding ‘Climate-smart Agriculture’”. Available at <https://www.kfw.de/KfW-Group/Newsroom/Aktuelles/News/News-Details_368192.html>.

²⁴ “Additional ITAP Questions and AE responses in advance of B.17”, page 2.

examples of tentative subprojects allowed the assessment of impact, paradigm shift, and efficiency and effectiveness potential.

42. The Board may provide further guidance on if and how activities such as use of genetically modified crops and the permanent use of chemical biocides or inorganic fertilizers are considered in project selection criteria.

Independent Technical Advisory Panel's review of FP049

Proposal name:	Building the climate resilience of food-insecure smallholder farmers through integrated management of climate risk (R4 ²⁵) in Senegal
Accredited entity:	World Food Programme (WFP)
Project/Programme size:	Micro

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: N/A

1. Senegal is a vulnerable country. The most prominent climate-induced hazard is drought, the frequency and extent of which has been exacerbating due to a rise in surface temperature and erratic rainfall patterns. Smallholder farmers, most of whom are women, have been experiencing frequent crop losses and subsequent food insecurity. Such incidences often force them to sell productive assets (distress-induced sales) including land and farm animals, which in turn places them in perpetual poverty. At the national scale, it is not only growth in food production from domestic sources that has been unsatisfactory (despite institutional support in agriculture); the overall increase in food insecurity has been forcing the Government of Senegal to spend large sums for a social safety net (SSN), depriving development processes.

2. The rise in temperatures will continue to increase, as will the variability in rainfall, so it is projected that the future food security of Senegalese smallholders will likely face steep challenges under climate change. Moreover, the rise in population and subsequent increase in food demand might have dire consequences. This funding proposal is aimed at addressing the above challenge. The project has the following four specific objectives:

- (a) To increase the adaptive capacity of food-insecure smallholder farmers and their families by increasing the resilience of their environment and reducing the risk and impacts deriving from climate change;
- (b) To protect food-insecure smallholder farmers from the impact of covariate climate shocks and provide them with the confidence to invest in agricultural inputs and diversified income-generating activities;
- (c) To increase the adaptive capacity of food-insecure smallholders by gradually building savings, while improving their ability to produce and sell surpluses, and diversifying their income sources through investments in income-generating activities that are not climate sensitive; and
- (d) To enable the Government of Senegal to mainstream climate change adaptation and climate risk management into its safety net and social protection programmes.

3. It is to be noted here that the project has already benefitted from the initial pilot activities, which were carried out between 2013 and 2016 by the accredited entity (AE), the World Food Programme (WFP). In the current phase, as proposed in the funding proposal, an effort will be made towards scaling up the previous innovative solution (also tested at a regional scale in sub-Saharan Africa) called "an integrated management of climate risk (R4)". It is

²⁵ R4 stands for 'Rural Resilience Initiative', which fosters resilience building in Senegal involving four modalities/approaches: 'risk reduction', 'risk transfer', 'prudent risk taking' and the creation of 'risk reserves'.

envisaged that a total of 25,000 households involving an estimated 225,000 persons in the regions of Kaffrine, Kolda, Tambacounda, Fatick and Kaolack of Senegal will benefit from the project activities, with an additional 180,000 people to be supported with a programme on insurance for cash, resulting in benefits reaching 2.7 per cent of the total population of Senegal. The project will be run for four years, with a financing of approximately USD 9.98 million.

4. The benefit streams will help farming communities to create assets, enhance production by means of smart agriculture, prevent crop loss due to the provisioning of climate information (agricultural advisories); and will help individuals to subscribe to agricultural micro-insurance to cover post-loss rehabilitation costs, inspire farmers for “prudent risk taking” through savings (from surpluses) and create risk reserves and offer insurance for cash. Individually, each of these adaptation modalities can either reduce the sensitivities of the production system to climate-induced hazards, or enhance the adaptive capacity of individual households. Since all these are part of a comprehensive package, led by national institutions, their synergistic effect offers a greater chance for the intended services to help build the resilience of smallholder farmers.

5. The funding proposal mentions that the project will benefit about 50 per cent women. However, the impressive proportion of women beneficiaries might even be higher, owing to two factors: in Senegal, the proportion of women in smallholder agriculture (rain-fed rice cultivation and vegetable gardening) is higher than men; and the pilot project shows that more women than men have subscribed to R4 insurance in 2016.

6. The impact potential is also socially desirable. The targeting practices of WFP involve households with low food security status (deliberate positive discrimination) and the selection of areas where food security has been a direct effect of vulnerability to climatic factors.

7. Component 4 of the funding proposal deals with institutional strengthening of the national agencies that deal with the mobilization of social protection, the generation and dissemination of climate information, and agricultural insurance. Moreover, the farmers (including women) will be made aware of the adverse impacts of climate change, which will contribute to the risk reduction culture in beneficiary communities.

1.2 Paradigm shift potential

Scale: N/A

8. Since the R4 model has already been tested, and will be further put into practice with only a small amount of financing needed, there exists an excellent potential for scaling up and replication.

9. There is ample potential in terms of scalability. If deemed successful, similar projects could be implemented in other sub-Saharan African countries that have somewhat similar economic, social and environmental settings or those that are facing threats to subsistent food production systems, the latter being affected by climate-induced hazards and extreme weather events.

10. The funding proposal describes a theory of change, which sets out the technically feasible and socially desirable path for scaling up and replication. However, the theory of change does not provide an answer regarding financing such efforts elsewhere, perhaps implying that without external financial intervention the potential for bringing a paradigm shift might not be easily realized.

11. However, the funding proposal calls for an effort to build resilience against production loss and financial erosion following food insecurity. Such an effort is envisaged to be reinforced by the gradual replacement of support-based payment of insurance premiums to achieve self-reliance in terms of payments of premiums for crop insurance – the latter has been thought to deliver risk transfer in favour of the poor smallholders. The payouts provided during the pilot

phase have been found to be useful for the poor farmers to rehabilitate their farm-based livelihoods.

12. There exists good potential for learning. The farmers will learn climate-smart agronomic as well as conservation agricultural practices to ensure sustainable farming and the benefit of investing in crop insurance. Farmers will also receive training on agro-forestry, nursery-based production and, more importantly, how to respond to agricultural advisory once it has been disseminated. Target farming households will also be introduced to alternative livelihoods and provided with training on alternative income generation activities. The proposed annual impact reflection workshops will enable a host of partners to learn from each other and also to disseminate knowledge products which external entities can learn from. Moreover, there will be transfer of knowledge for institutional capacity-building, which is absolutely vital for future efforts to build resilience across sub-Saharan Africa and beyond.

13. The project, as envisaged in the funding proposal, will contribute to creating an enabling environment, especially in terms of establishing a business model for weather index-based insurance and the creation and subsequent dissemination of climate information – the latter clearly contributing to the resilience of farmers by assisting their decision-making in the wake of impinging climate-induced perturbations. The component in the funding proposal (component 4) on institutional support is likely to contribute to the development of regulatory frameworks and policies, which in turn will help to remove the current barriers for the replication of good practice elsewhere.

14. It is to be recognized that about 50 per cent of the paid premium for crop insurance is being paid by the Government of Senegal and it is provided through only one company, where the Government of Senegal has a stake and the company is allowed to enjoy a monopoly in crop insurance servicing. Such an arrangement itself creates a barrier for other private-sector market operators to contribute towards expanding the risk transfer scheme. A full paradigm shift will only be realized if the Government of Senegal allows a healthy competition among various private sector providers so that, for similar coverage, the premium is adequately lowered and in the longer run the subsidy regime is gradually replaced by market-driven premium – the latter falling within the ability of farmers to pay.

15. The institutionalization of an early warning system (EWS) will create the right incentives for the poor target stakeholders to develop climate-resilient smart agriculture-based livelihoods. Dissemination of drought advisories with a long lead time can be of great help to millions of farmers, if the dissemination is done through proper method(s) and using locally palatable language(s). Subject to the identification of existing barriers to the dissemination of EWS and the systematic removal of such barriers, the impact of the project may appear much more profound than envisaged.

16. The project is fully consistent with Senegal's strategies and plans in relation to climate change adaptation. Moreover, the project elements are synergistic with sectoral development strategies, particularly in terms of addressing food insecurity, disaster risk reduction, agricultural growth and removal of hunger.

1.3 Sustainable development potential

Scale: N/A

17. The project has a few elements which have the potential to contribute to the United Nations Sustainable Development Goals (SDGs) of Senegal.

Table 1: Sustainable Development Goals

Project directly contributing to SDGs	Project indirectly contributing to SDGs
SDG-2: Zero hunger - by improving the food security of smallholders	SDG-1: No poverty - by contributing to both the economic empowerment of poor smallholders and bringing significant social co-benefits among beneficiaries
SDG-5: Gender equality – creating targeted access for women to benefit from a comprehensive climate-resilient development package	SDG-3: Good health and well-being - particularly increasing nutrition, reducing the burden of pollution-related diseases
SDG-13: Climate action – by addressing resilience against climate change induced hazards	SDG-8: Promote economic growth (at household level) – by contributing to higher returns, reducing crop loss from hazards and increasing savings
SDG-15: Land degradation – by ceasing and reversing land degradation through the promotion of smart agriculture	

Abbreviation: SDG = Sustainable Development Goal.

However, it is important to note that, under this project, the coverage of all these elements can only reach 2.9 per cent of the overall 14 million population of Senegal. This clearly indicates that, despite having good elements, it will not be practical to expect that the project will help Senegal to achieve its SDGs in a major way.

18. The project promises to enhance livelihoods of the primary stakeholders: the smallholder climate-affected farmers. The citations regarding the outcomes of earlier trials elsewhere suggest manifold increase in cereal production, which might have huge economic potential, if realized fully. Much enhanced production guarantees high economic returns as income, defying climate change related risks, factoring in shocks and losses due to climate change. There will be economic benefits accrued from the prevention of distress-induced sales of productive assets, the latter process further contributing to household income and well-being.

19. The project focuses on the provision of social co-benefits, especially in terms of delivering greater food security (through both production and storage), increased nutrition opportunities for household members, and improved health co-benefits. The issuance of agricultural advisories in turn will enable farming communities to discuss the threats and help them to make informed decisions in a collective effort in fighting hazards. Such exercises generally contribute to enhanced social capital within a community.

20. The project envisages the efficient management of productive resources (soil, water and village forests), therefore accruing environmental co-benefits. The proposed water regulation works leading to conservation contribute to sustainable groundwater management, leaving opportunities for communities to irrigate now and simultaneously address long-term sustenance of the precious resource. Similarly, the prevention of deterioration of soil quality will have positive implications for sustained crop production. Ecosystem restoration will also have micro-level restoration of already deteriorated ecosystem health.

21. However, the increasing ability to invest in agriculture might simultaneously be accompanied by higher levels of the application of chemical inputs, and higher levels of the use of groundwater as a source of irrigation water. Such issues, if pushed to unsustainable limits, might also result in the deterioration of resource bases. Extreme care must be taken in terms of monitoring and evaluation at the grass-roots level and enhancing awareness and understanding

regarding the potential harm of over-utilization of certain resources and the related adverse environmental implications.

22. The project scores high in terms of its efforts to reach out to a significant number of women as the primary beneficiaries. Over 50 per cent of the beneficiaries will be women, who will be empowered through improved farming knowledge, EWS and subsequent decision-making and for their leadership in enhancing family income through production. If surplus food is produced in micro-sized farms, as envisaged, women and children are likely to be the direct beneficiaries. Appropriate gender-sensitive training and delivery mechanisms must be developed, field tested and applied towards benefitting the women.

1.4 Needs of the recipient

Scale: N/A

23. According to the United Nations Framework Convention on Climate Change (UNFCCC), the African country Parties and also the least developed countries (LDCs) should be provided with preferential assistance for climate action and for achieving sustainable development. The Paris Agreement²⁶ also expresses this commitment and calls for a collaborative framework. Since Senegal qualifies as both an African nation and an LDC, the country and its drought-affected poor smallholders are fully eligible to seek financial support from the GCF.

24. In Senegal, approximately 58 per cent of rural households are below the poverty threshold. There exists a high incidence of food insecurity; an estimate in 2016 indicates that 2.3 million people were food insecure²⁷. Such a high degree of food insecurity may largely be attributed to both a decrease in rainfall (in the order of 50–150 mm below the average of 1960-1989) and a corresponding increase in temperature (increased by 0.7 °C since 1975). To further complicate the food production scene, erratic rainfall has led to an exacerbation of drought-related problems and subsequent crop losses. The complex food production scene has been further complicated by a gradual rise in sea level leading to salinization, land degradation (in 34 per cent of the areas) and soil erosion. It is projected that, owing to climate change, by 2050 the increase in temperature will be about 3 °C and the decrease in rainfall will be in the order of 20 per cent, resulting in an estimated decline in food production potential of 20 per cent. Such a backdrop clearly highlights the needs of the recipients to draw international support to address the prevailing and projected challenges emanating from climate change.

25. The need of the recipients is duly presented in the nationally determined contribution (NDC) for Senegal. In the agriculture sector alone, the estimated financial requirement for adaptation is in the order of USD 1.6 billion, of which only 25 per cent may be mobilized through national sources. External financing for building resilience is therefore extremely important for Senegal.

26. The components of the project fully align with the various relevant (sectoral) policies and strategies of Senegal. Regarding food security, the project conforms with the National Strategy on Food Security and Resilience (2015–2035), while in terms of general development issues it is relevant within the “Plan Senegal Emergent 2014–2035”. On climate change, the project has strong linkages with ongoing process of formulation of national adaptation plan, the NDC for Senegal, and the country’s national adaptation programme of action. The project is also

²⁶ The *PARIS AGREEMENT* (French: *ACCORD de PARIS*), or *PARIS climate ACCORD* and *PARIS climate AGREEMENT*, is an *AGREEMENT* within the United Nations Framework *CONVENTION* on Climate Change (UNFCCC) dealing with greenhouse gas emissions mitigation, adaptation and finance starting in the year 2020.

²⁷ WFP Senegal Country Brief, available at: <http://documents.wfp.org/stellent/groups/public/documents/ep/wfp273885.pdf>

synergistic with international processes: it is relevant to United Nations Development Assistance Framework, the Paris Agreement (2015) and the UNFCCC, among others.

27. The existing policy regime of the Government of Senegal includes provision for: capacity-building of farmers for increased farm income and production; support for poverty reduction and food security; mobilization of SSN support for crop insurance and disaster risk reduction; and commitment to generate and disseminate early warnings for improved decision-making. The project provides for a comprehensive package encompassing all the above, which makes the project interesting.

28. The institutional delivery mechanism calls for strengthening the policy regime and the implementation of capacity-building. Component 4 of the funding proposal is dedicated for addressing this.

29. The needs of the recipients are duly understood through a robust engagement process, as documented, and also through the enthusiasm of people at the grass roots, as exhibited in the pilot phase(s). In view of all the above, the needs of the recipient are fully justified.

1.5 Country ownership

Scale: N/A

30. The project is aligned with the NDC and national communication of Senegal to the UNFCCC. The project elements are in line with the country's national adaptation programme of action and with national priorities for climate change adaptation. At the time of the submission of the funding proposal, the national adaptation plan for Senegal is being produced, where the issues covered by the proposed project are also being discussed.

31. The project conforms to sector-specific priorities and strategies. For example, soil restoration and conservation is a crucial focal area within the agriculture sector. Crop insurance is also considered to be an important modality to address risks of farmers in the wake of frequent crop failures due to climate variability and change, which is why the Government of Senegal has committed 50 per cent subsidy on actual premiums to be paid. All the above show how the Government of Senegal has exhibited its firm commitment and ownership of the project components.

32. All these elements are part of current discourse on climate change adaptation in Senegal, as shown in the NDC. There is also further evidence in and synergy with the "Plan Senegal Emergent 2014–2035" and United Nations Development Assistance Framework 2017–2021.

33. The project preparatory phase has gone through institutional consultation. Past good practices have been taken into consideration in the project design.

34. The AE (i.e. the WFP) has led past pilots on agricultural micro-insurance and the provision of climate services. WFP has run trials on the R4 approach, and it has been partnering with relevant Government of Senegal institutions in areas on food and nutrition assistance, in all 14 regions of the country. Many such institutions within the Government of Senegal have been invited to partner in the joint venture, which promises a smooth delivery of the project.

35. The national designated authority has been duly integrated into the project. A no objection letter is attached to the funding proposal to exhibit the commitment of the national designated authority for the project.

36. The private sector is included in the project design, particularly through the integration of Compagnie Nationale d'Assurance Agricole (CNAAS) – the only agriculture insurance company in the market. However, due to regulations regarding monopolies, imposed by the Government of Senegal, all the other private sector actors do not have access to the level playing field for the development of a market-driven opportunity for crop insurance. This appears to be one of a few drawbacks of the project.

37. The stakeholder engagement process is inclusive and transparent.
38. The AE has chosen a host of organizations and initiatives to build a partnership. This could be beneficial if the coordination function is performed judiciously.

1.6 Efficiency and effectiveness

Scale: N/A

39. The funding proposal requests for full concessionality regarding the entire project cost (approximately USD 9.98 million). The financial constraints of the target beneficiary groups are well documented. Despite the fact that Senegal meets both the criteria as a vulnerable African country and as an LDC, the absence of any co-finance and the relatively high transaction cost (i.e. 17 per cent of total plus 10 per cent of total as additional to the estimated cost as the requested management fee for the AE) for the AE (i.e. WFP) to cover management and consultancy raise question regarding value for money.

40. Since Senegal intends to generate not-for-profit public goods and 50 per cent of the insurance premiums are to be paid by the Government of Senegal (without calling it a co-financing agreement), the grant financing is somewhat justified. It is to be noted here that the re-insurance scheme will enable international companies to make profits and, more importantly, take money (i.e. profit) out of Senegal – which somewhat tarnishes effective climate financing involving GCF. Since country-based private sector insurance companies are not allowed to operate in crop insurance with the Government of Senegal burden sharing for the payment of premiums, there are limited options other than to continue with the experiment on risk transfer. In the absence of any insurance, perhaps the burden on the SSN would be insurmountable for the Government of Senegal.

41. From pilot experiences, elsewhere (e.g. in Kenya and Ethiopia), it appears that early interventions were generally cost effective in terms of hazard rehabilitation and risk reduction. The observed gains from pilot experiences in terms of disaster risk reduction and climate (information) services have been impressive. The rapid payout (2 to 4 months) as against low premiums (about 7 per cent compared to average payout) appears attractive. Moreover, the reliance on weather station data towards defining a risk transferable hazard event seems more practical and manageable compared with actual field-based loss estimations at individual households.

42. In addition to the above issues, the financial gains for the entire project are positive only after the seventh year of operation (i.e. not necessarily within the project period). However, the net present value estimation did not consider other tangible social, economic and gender-related benefits, the inclusion of which might have resulted in a positive net present value much earlier than that presented in the funding proposal.

43. The management involves too many partners, which embraces a certain degree of complexity and might require strong coordination. The perceived increase in economic (productivity) gains by individual farmers might lead to an increase in the application of chemical inputs, which must be checked with awareness and persuasion regarding the application of integrated pest and organic fertilizer management practices. Otherwise, environmental pollution factors (in water and soil) might eventually outweigh the gains from the conservation agricultural practices in the long run.

II. Overall remarks from the independent Technical Advisory Panel

44. The independent Technical Advisory Panel has assessed the few minor negative issues against the potential gains from various components of the project and is happy to recommend the project to be approved by the Board.

45. For the satisfactory outcomes of the project, the independent Technical Advisory Panel puts forward the following recommendations:

- (a) Appropriate gender-sensitive training should be designed and administered in such a fashion that, in the process, time away from the training recipients' household chores does not affect their overall household harmony;
- (b) The project should conduct a study to analyze the opportunity of lifting the existing monopoly agriculture insurance company supported by the Government of Senegal towards creating additional opportunities for other micro-insurance companies to provide for competitive options for farmers; and
- (c) The monitoring and evaluation function should be enhanced in view of the potential increase in the application of agrochemicals and fertilizers, which must be supplemented with training on integrated pest management and the application of organic fertilizers.

Independent Technical Advisory Panel's review of FP050

Proposal name:	Bhutan for life (BFL)
Accredited Entity:	WWF
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium

1. In order to better understand the potential impact of this funding proposal, important facts related to the country's national context are provided below.
2. Bhutan is a small country with a total area of 38,394 km². This mountainous country with elevations ranging from 160 m to more than 7,000 m above sea level has a population of 745,000 (2015 estimates). Half of the population live in rural areas and is engaged in small-scale or subsistence agriculture.
3. Electricity from hydropower is the country's largest export, followed by tourism. Due to extensive forests (forests cover approximately 70.5 per cent of the country's land area, including an important expanse of intact forests); Bhutan is unique worldwide and is carbon negative. According to the greenhouse gas national inventory submitted within Bhutan's second national communication to the secretariat of the United Nations Framework Convention on Climate Change, in 2000 Bhutan was and still is a net sink for greenhouse gases with -4.7 million tonnes of carbon dioxide equivalent (Mt CO₂ eq) in 2000 moving to -4.1 Mt CO₂ eq in 2013.
4. As it is reported in the country's intended nationally determined contribution (INDC) the highest emission is from the agriculture sector but it more or less remains constant when compared with the industrial processes and transport sectors. During 2000-2013, emissions from the energy sector increased by 191.6 per cent and from the industrial processes sector by 154.3 per cent.
5. Mitigation and adaptation are equally important for Bhutan as the country's main priority is sustainable development covering both areas and this sustainable development focus by the Government of Bhutan is on forests and protected areas which could remain as mitigation sources only through sustainable management and the use of effective adaptation measures to climate change.
6. Mitigation focus of Government of Bhutan. Run-of-river hydropower accounts for almost 100 per cent of electricity generation in Bhutan with almost 100 per cent access to electricity in urban areas and 94 per cent in rural areas. Presently, Bhutan offsets 4.4 Mt CO₂ eq through exports of hydroelectricity. In addition, Bhutan can offset up to 22.4 Mt CO₂ eq per year by 2025 in the region through the export of additional electricity export from clean hydropower projects.
7. Adaptation focus of Government of Bhutan. Adaptation to the adverse impacts of climate change is a priority for Bhutan in order to increase the country's mitigation potential and to ensure the sustainability of mitigation measures. According to Bhutan's [second?] national communication and INDC the country is vulnerable to climate change due to the high dependence of the population, living in fragile mountainous areas, on agriculture and the significant role of hydropower in economic development. Bhutan also faces increasing threats

from climate hazards and extreme events such as flash floods, glacial lake outburst floods, windstorms, forest fires and landslides.

8. The submitted funding proposal titled “Bhutan for life” (BFL) aims to secure 51 per cent of the country’s territory managed under its network of protected areas, which serves as the cornerstone of Bhutan’s bold pledge to remain carbon neutral. Currently, only about 50 per cent of the annual maintenance costs of the protected areas system (PAS) targeted by the proposal is covered by the government through public money and the rest is supported by donors from outside the country.

9. The funding proposal is a cross-cutting, medium-sized project with four main components:

- (a) Increasing forestry and land use based climate mitigation;
- (b) Increasing community-based adaptation to improve natural resource management and livelihoods;
- (c) Increasing ecosystem based adaptation to enhance the biodiversity of protected areas (PAs) for the improvement of ecosystem services; and
- (d) Increasing the sustainable management of protected areas.

10. For component 1 (mitigation component) more or less specific information is identified and provided in the proposal for example that 3,000 ha of degraded forests and lands as well as deforested areas will be restored. However, further technical and methodological details are not available at this stage of project development. This type of information will be provided on an annual basis in parallel with the REDD-plus implementation activity plan which is currently at the development stage and considered as the basis for decision on specific areas and methodologies.

11. Components 2 and 3 (adaptation components) are described mainly at the conceptual level and are oriented towards information management, education and awareness-raising, which is one of the most important activities for increasing the resilience of the local population and the sustainable management skills of the government through the generation and dissemination of knowledge and capacity-building. Technical and financial reports on the implementation of specific adaptation measures, along with the community-based (component 2) and ecosystem-based (component 3) adaptation plans (APs), will be developed by each AP and submitted to the GCF annually prior to the disbursement of the next year’s tranche.

12. Component 4 considers an innovative financial model based on the creation of a sinking fund to support the improved management of the country’s PAs, while providing the time and resources to allow the Government of Bhutan to identify and secure the long-term revenues sufficient to maintain these management improvements. For this purpose, the GCF is providing a 14-year bridge co-financing to the Government of Bhutan for the establishment of a transition fund jointly with other donors and public money to fill the national resource gap mentioned above and to push Bhutan’s PAs to a higher level of delivery through proper management. This GCF financing will be used while the country gradually increases its own financing and management resources, so that by year 14, the country will be able to fully finance the sustainable management of its protected areas system.

13. Based on its national circumstances, the country’s vision of its future and the funding proposal concept of the impact of this project should be very high at the national and international levels. However, the submitted funding proposal lacks information on the technical details of the implementation of pilots. Information provided in the funding proposal is conceptual regarding the measures to be implemented and therefore the impact is rated as “medium” which most likely will be changed to “high” when technical feasibility studies and

implementation results are provided annually, demonstrating specific sites and activities to be implemented.

1.2 Paradigm shift potential

Scale: High

14. While transformational for Bhutan, the project also will generate valuable experience to help to achieve the sustainable financing of protected areas in other countries. Mitigation and adaptation benefits will be generated in a cost-effective manner, with GCF resources leveraging both public and private financing.

15. The proposal aims to support the sustainable management of the lifestyle, philosophy and traditions of the country, which could become an exemplary model for others, in particular for forest-rich countries, on their low-carbon development pathway. Bhutan offers to pilot the concept of “high forest cover-low emission” in its territory saying “no” to “high emission development”. The economic success of such an approach depends on the successful implementation of the BFL project. Considering the possibility of the negative worldwide impact of the failure of the project or the project leading to unsatisfactory results, very likely, detailed technical feasibility studies shall be carried out annually for the activities agreed under the milestones described in the implementation structure such as the annual submission of the technical and financial reports by each PA.

16. As already noted the proposal could have a high paradigm shift potential at the GCF level as well as for implementation of the Paris Agreement. Priority target countries for scaling up this approach should be those with significant forest cover.

1.3 Sustainable development potential

Scale: Medium

17. Based on the concept provided in the funding proposal, the project could really contribute to most of the Sustainable Development Goals (SDGs). However, not all of these contributions are demonstrated in the funding proposal.

18. It could be confirmed even at the conceptual level that the proposal will contribute to the following SDG targets:

- (a) Target 12.2 (“By 2030, achieve the sustainable management and efficient use of natural resources”);
- (b) Target 12.8 (“By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature”);
- (c) Target 15.2 (“By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally”);
- (d) Target 15.4 (“By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development”);
- (e) Target 15.5 (“Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species”);
- (f) Target 15.7 (“Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products”);
- (g) Target 15.9 (“By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts”);

- (h) Target 15.10 (“Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation”).
19. Although it is not mentioned in the funding proposal, the proposal will also contribute to all targets of SDG 13 (“Take urgent action to combat climate change and its impacts”).
20. There are other SDGs (1, 2, 6 and 8) which have targets for the poverty, hunger, food security, etc., considered by the funding proposal as areas of contribution but these contributions could not be confirmed without comprehensive feasibility studies for components 2 and 3 of the funding proposal.
21. The scale for this criterion is rated as “Medium” for the same reason as in case of the impact assessment. The conceptually demonstrated contribution to SDG targets will become “High” when the economic achievements of the project will be demonstrated after several years of implementation.

1.4 Needs of the recipient

Scale: High

22. The need of the recipient country in this project - to fulfil its ambitious INDC to remain carbon neutral despite its significantly pressing social and economic development needs and priorities - is very high. Along with this commitment, the country called on the global community to support its efforts to fulfil this commitment and to implement appropriate mitigation and adaptation measures.
23. This project is very important to the country, which is located in a fragile mountainous environment and is permanently facing floods, glacial lake outburst floods, landslides and the intensification of such risks. According to the INDC, the most vulnerable sectors in Bhutan are the water resources, agriculture, forests and biodiversity, and hydropower sectors. However, these risks have not been further elaborated in the funding proposal but technical details will be submitted to the GCF in the reports provided annually by each AP.
24. The primary constraints faced by the government in addressing these threats are capacity and funding, and the BFL project directly responds to these constraints. Another challenge for the country is the sustainable management of PAS. Worldwide, protected areas depend on public budgets and grant financing for most of their expenses. This is also the case in Bhutan, and GCF grant co-financing is critical to ensure the full funding of the Bhutan for life project.
25. In order to ensure the effective management of Bhutan’s protected area system for the continued provision of ecosystem services, the implementation of climate mitigation efforts and adaptation measures in the communities living in and around the protected areas, the total annual financial need in the long term is projected to be around USD 7.1 million per year (in 2016 USD). The contribution made by the government in the last years is about USD 3.3 million, including USD 500,000 from environmental trust fund. More than 50 per cent of the maintenance costs for protected areas is an annual challenge for the Government of Bhutan.

1.5 Country ownership

Scale: High

26. Bhutan is one of the very few countries in the world to feature environmental conservation explicitly in its constitution and prominent existing laws and policies applicable to the INDC, including the National Environment Protection Act (2007), the National Forest Policy (2011) and the Economic Development Policy (2010).

27. It is also central to the country's plans for meeting its constitutional requirement to maintain a minimum of 60 per cent of its land area under forest cover. The BFL project thus has the full backing of the Government of Bhutan, with strong public support received during design consultations.

28. The INDC of Bhutan states that "Bhutan intends to remain carbon neutral where emission of greenhouse gases will not exceed carbon sequestration by our forests, which is estimated at 6.3 million tons of CO₂". Bhutan will maintain a minimum of 60 per cent of total land under forest cover for all time in accordance with the constitution of Bhutan. Efforts will also be made to maintain the current levels of forest cover, which currently stand at 70.46 per cent, through sustainable forest management and the conservation of environmental services.

1.6 Efficiency and effectiveness

Scale: Medium

29. In a broader context, the anticipated effect and efficiency of the funding proposal is assessed as very high. This is taking into consideration the entire BFL budget of USD 118.2 million, 22.1 per cent of which is from the GCF. The project will deliver increased resilience and mitigation potential in a country which could become a model of the "high forest cover - low emission" pathway for other countries. In order to support the sustainable management of ecosystems and ecosystem services, BFL will spend approximately USD 4.3 per ha/year. According to the information in the funding proposal, this is in the lower range of cost estimates for sound PA management, excluding climate change related investments (Bruner et al. 2004, Verugdenhil et al. 2003, and Balmford et al. 2003).

30. The cost of emission reduction is estimated based on 25 per cent of total BFL investment (USD 29.55 million) covering direct mitigation costs (there will be mitigation through adaptation measures as well which is not included in this calculation) and reduced emissions of 35.1 Mt CO₂ eq is USD 0.84 per t CO₂ eq additionally sequestered in Bhutan's PA forests during the 14-year lifetime of BFL. This is one third of the USD 5 per t CO₂ eq often used as a reference in REDD-plus projects. The cost for the GCF is less and equals USD 0.38 per t CO₂ eq.

31. BFL has significant potential to catalyse direct and indirect and long-term low carbon investment in country's sustainable development. In particular, by facilitating the increase of public investment in the management of PAS committed by the Government of Bhutan over the long term, the earmarking of new sources of revenue that should be explored and put in place during BFL and the drawing of new private sector investment in eco-tourism triggered by the project investment in improved infrastructure and management in PAs.

32. There is some risk that the Government of Bhutan, being under pressure for economic development, could not reach the promised level of public money for PAS sustainable management in a 14-year period and a further grace period will be necessary from donors who could lower the effectiveness of GCF investment or vice versa.

33. Another challenge for the efficient implementation of the BFL project could be a high share of soft measures (training, awareness-raising, etc.), which is very important but not sufficient for the sustainable management of the process. A comprehensive technical feasibility study of hard measures to be implemented is not provided at this stage. In order to ensure the effectiveness of spent money, soft measures should be well balanced with particular adaptation and mitigation measures provided in the funding proposal at the concept level. Technical feasibility studies of planned specific mitigation and adaptation activities along with action plans for sustainable management (community-based adaptation and ecosystem-based adaptation) will be provided by the accredited entity to the Secretariat within the first year of project implementation. The disbursement of annual tranches will take place based on reports agreed under the milestones for project implementation.

34. It is confirmed in the funding proposal that there is close cooperation between BFL and REDD-plus process teams as far as both of these programmes are coordinated by the Ministry of Agriculture and Forests of Bhutan. Strengthening further coordination between the BFL and REDD-plus teams in particular during the planning of activities and the preparation of feasibility studies will only increase the efficiency of both projects. Bhutan's global environmental commitment and leadership and the World Wildlife Fund-Bhutan's almost 40 years on-the-ground experience give confidence that BFL implementation from a technical point of view will be effective.

35. The project only reaches the effectiveness criteria and begins implementation when all necessary funds have been raised and all key legal and financial effectiveness conditions have been met. This provides funders with the assurance that their contributions will be put to use according to the terms, and that all BFL activities will be fully funded.

36. Bhutan's global environmental commitment and leadership and the World Wildlife Fund-Bhutan's almost 40 years on-the-ground experience give confidence that BFL implementation from a technical point of view will be effective. This criterion is scaled as "medium" for the same reason as criterion 1 (impact assessment) – lack of technical information at the stage of project assessment.

II. Overall remarks from the independent Technical Advisory Panel

37. The independent Technical Advisory Panel recommends the funding proposal for approval by the Board. Approved by the Secretariat, annual budgets based on the technical and financial reports from each protected area shall then be transferred to the said transition fund through the accredited entity.

38. The independent Technical Advisory Panel recommends the Secretariat to monitor and avoid the potential double counting in mitigation impact achieved by BFL project and REDD-plus action plan implementation.

Independent Technical Advisory Panel's review of FP051

Proposal name:	United Nations Development Programme-scaling-up investment in low carbon public buildings
Accredited entity:	United Nations Development Programme
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential Scale: Medium/High

1. In Bosnia and Herzegovina, public-sector infrastructure and buildings have been left in dire condition as a result of underinvestment since the Bosnian War (1992-1995). In total, 70 per cent of public-sector buildings in Bosnia and Herzegovina were designed and built more than 30 years ago, of which two-thirds were built nearly a half century ago. Obviously, in designing those public-sector buildings, little consideration was given to energy efficiency. Owing to the fact that over 80 per cent of public-sector buildings use fossil fuels (coal, light fuel oil and natural gas) or district heating systems, which are largely coal-based, their carbon footprint is significant.

2. In its nationally determined contribution (NDC), the Government of Bosnia and Herzegovina recognizes the potential for greenhouse gas (GHG) emission reductions in public-sector buildings. According to the World Bank report in 2010, public-sector buildings in the Western Balkans have an energy saving potential of 20 to 60 per cent.²⁸ Detailed energy audits conducted by the accredited entity (AE) further confirmed that average energy use in a building can be reduced by about 60 per cent without compromising a given thermal comfort level in the building (e.g. 20 °C) before and after retrofitting. The AE estimates that the cost-effective energy savings potential in public-sector buildings will be around 700 GWh/year, which can result in 560,000 tonnes of carbon dioxide per year (t CO₂/year) or over 10 Mt CO₂ in GHG emission reductions over the investment life cycle.

3. The government is committed to reducing about 23 per cent of GHG emissions in 2030 with the financial support of international development/financial mechanisms for indicated mitigation measures, including the systemic energy rehabilitation of existing buildings focusing on the public sector. The proposed project aims to take a holistic and comprehensive approach to addressing the policy, regulatory, technological, informational and financial agendas critical in the government and industries promotion of low-carbon public-sector buildings as advocated in the National Framework for Low-Carbon Investment in Public Buildings.

4. The project has two components. The first component ("Policy de-risking") provides technical assistance (TA) to support public- and private-sector stakeholders at various levels of government in order to address non-financial/structural barriers to investment. This includes, among others, the preparation and implementation of the primary policy instrument at the local level so as to promote low-carbon and climate-resilient development, the creation of an energy management system, preparation and implementation support for energy efficiency/a renewable energy project for selected public-sector buildings, building stakeholders' capacity, and the promotion of knowledge dissemination.

²⁸ World Bank. 2010. Status of Energy Efficiency in the Western Balkans: A Stocktaking Report, Report No.AAA49-7B

5. The second component (“Financial de-risking”) intends to address financial barriers to low-carbon investment in buildings and infrastructure. Under the second component, low-carbon building retrofits (both energy efficiency and switching to renewable energy) in 430 public-sector buildings (11 per cent of the total public building stock in Bosnia and Herzegovina) will be financially supported. Operational guidance will be prepared to detail the process and procedures for the allocation of public funds to low-carbon measures in public-sector buildings, as well as other required regulatory documents to operationalize the National Framework for Low-Carbon Investment in Public Buildings. Lessons learned will be compiled to help to develop the energy service market in the public sector. Moreover, engineering, procurement and construction opportunities will be offered to energy service companies (ESCOs).
6. By retrofitting 430 public-sector buildings under the second component, the AE estimates that the proposed project will achieve direct emission reductions of 2.02 Mt CO₂ eq during the investment life cycle, calculated using relevant clean development mechanism methodologies for small-scale fuel switch projects. The project will further realize indirect GHG emission reductions as a result of its non-financing activities beyond individual investments in low-carbon public-sector retrofits. The indirect GHG emission reductions are estimated to be between 7.1 and 8.1 Mt CO₂ [eq?]. These estimates are prepared by the AE based on the Global Environment Facility top-down and bottom-up methodologies.
7. Apart from GHG emission reductions, the AE estimates that the total number of beneficiaries of the proposed project will be around 150,000 (including 80,000 women) representing 4 per cent of the country’s total population. The beneficiaries will include teachers, nurses, students, patients, residents and public- and private-sector employees working in the public-sector buildings to be retrofitted.
8. The independent Technical Advisory Panel (TAP) concludes that the impact potential of the proposed project is “Medium/High”.

1.2 Paradigm shift potential

Scale: Medium/High

9. The proposed project aims to establish a more coordinated and holistic policy approach among various government agencies to promote low-carbon sustainable development in public-sector buildings, as specifically recommended in the country’s NDC, its national communication to the secretariat of the United Nations Framework Convention on Climate Change (UNFCCC secretariat) and the National Climate Change Strategy of the government. It aims to assist the government in mobilizing financing other than donor grants and/or in blending public subsidies with other sources of financing so as to expand low-carbon retrofits in public-sector buildings (by a factor of four or five). The ESCO sector will be developed and supported further so that its role will be enhanced in the low-carbon retrofitting of public- and private-sector buildings. This will enable the government to mobilize larger sums of private-sector investment and capital for the energy efficiency sector in the long run.
10. The proposed project will assist the government in building the knowledge infrastructure critical for the energy efficiency sector to develop. It will provide critical training to various public-sector building stakeholders, municipal energy managers and ESCOs, as well as entity- and state-level authorities, in energy management, and in the design and implementation of energy-efficient and renewable energy projects. At least 2,500 people, 30 per cent of which are women, are expected to receive the training in the proposed project. Lessons learned will be disseminated as part of the proposed project.
11. The proposed project has a paradigm shift potential in initiating the low-carbon retrofitting of public-sector buildings (and subsequently private-sector buildings) by developing a holistic policy and regulatory framework with the participation of various government

agencies, and by implementing the retrofitting of 430 buildings (11 per cent of the public-sector building stock) with non-conventional financial modalities (other than grants) and private-sector involvement.

12. The TAP views the paradigm shift potential of the proposed project to be “Medium/High”.

1.3 Sustainable development potential Scale: Medium

13. With the support of the proposed project, 180 public-sector buildings are targeted to be coal-free, and in total 430 public-sector buildings (or 9 per cent of the total building stock) are expected to achieve a zero-carbon footprint (as far as heating energy use is concerned) by implementing low-carbon public-sector building retrofits with combined energy efficiency and renewable energy solutions. The proposed solutions will support the transition towards a zero-carbon public sector with a corresponding significant reduction of GHG emissions.

14. The proposed project will further improve conditions for the occupants of public-sector buildings. Presently, the buildings are overheated with an average temperature of 15 °C compared with the usual thermal comfort level of 20 to 22 °C. These buildings include schools, kindergartens, health-care centres, clinics and government offices, the majority of users and occupants are women and children. The direct beneficiaries of this project are expected to be 150,000 people, of which 80,000 are expected to be women.

15. The project will promote public health also as local pollution can be reduced as a zero-carbon public sector is promoted. The public, especially women, will be offered the opportunity to learn about and understand the positive effects on children's health and safety of the retrofitted schools and hospitals. Furthermore, the proposed project will improve the access of local communities to clean and affordable energy. In the case of public-sector buildings and areas which were affected by floods or are at risk of flooding, proper engineering consideration will be given to delivering resilience through improved resistance to floods and increased reliability and affordability of energy sources.

16. In addition, the ESCO sector will be developed further through new business opportunities, an improved regulatory framework, and knowledge-sharing under the proposed project. The private sector will expand its role in retrofitting buildings in Bosnia and Herzegovina by developing operational expertise with a new source of capital. It is projected that the proposed project will create the equivalent to 5,630 full-time jobs.

18. The TAP views the sustainable development potential of the proposed project is “Medium”.

1.4 Needs of the recipient Scale: Medium/High

19. The initial national communication and the second national communication submitted to the UNFCCC secretariat was prepared by the government and recognized that climate change is affecting the country. Significant variability in precipitation and increased climate variability in recent decades has been noted across the entire country. Estimates have put the total economic impact of the floods and subsequent landslides at between 5 and 10 per cent of the country's gross domestic product. The proposed project will contribute to achieving a zero-carbon footprint (as far as heating energy use is concerned) by implementing low-carbon public-sector building retrofits with combined energy efficiency and renewable energy solutions.

17. Seventy per cent of the public-sector buildings in Bosnia and Herzegovina was designed and built more than 30 years ago, with little consideration of energy efficiency. Since the operation and maintenance of public-sector buildings has received little attention and investment since the Bosnian War, a substantial amount of energy is being wasted, and the conditions for occupants and users of public-sector buildings has deteriorated. The AE estimates that the average energy use in a building can be reduced by about 60 per cent. There is a serious and urgent need to retrofit public-sector buildings in order to improve energy efficiency, switch energy sources from coal and oil to renewable sources, and improve the conditions for occupants and users.

18. The proposed project aims to assist the government in establishing a more holistic approach in managing and consuming energy in a more sustainable manner for its public-sector buildings. It will accelerate the implementation of the government's Climate Change Adaptation and Low Emission Development Strategy, which highlights energy efficiency in buildings as having the strongest potential for emission reduction, and suggests it to be a key priority at the national level.

19. The TAP concludes the needs of the recipient is "Medium/High".

1.5 Country ownership

Scale: High

20. The project is in line with the country's NDC. Energy consumption in Bosnia and Herzegovina is projected to increase and emission levels are projected to peak in 2030 (a 20 per cent increase from 1990 baseline levels). The energy rehabilitation of existing public-sector buildings is part of the envisaged climate change mitigation measures leading to an expected decrease in the emission levels of 3 per cent relative to the 1990 baseline by 2030.

21. The second national communication submitted to the UNFCCC secretariat (2013) further indicates that up to 80 per cent of energy could be saved by improving the thermal performance of buildings (thermal insulation of roofs, exterior walls, floors, better sealing and the replacement of windows), and by replacing heating, ventilation and air conditioning systems and biomass/coal boilers with more efficient models. The proposed project also supports the government commitments under the Stabilization and Association Agreement with the European Union, the International Energy Charter (2016) and the Energy Community Treaty (2009).

22. In developing the proposed project, 13 agencies in the government, both federal and local, have made a commitment to provide USD 55.8 million (excluding the World Bank loan to the government and the Environment Funds) out of the total project cost of USD 105.2 million. The national designated authority was involved in developing the proposed project with the AE, and has issued a no objection letter.

23. The TAP concludes that country ownership of the proposed project is "High".

1.6 Efficiency and effectiveness

Scale: High

24. Based on a total grant of USD 17.3 million to be provided by the GCF, the cost per tonne of direct CO₂ reduction would be USD 9. Additionally, significant indirect emissions (7.1 - 8.1 Mt CO₂ reduction) can be expected following the project interventions. If indirect emission reductions are included, a total estimated cost per tonne of CO₂ reduction is projected to be USD 1.8. This projection confirms that the proposed project is cost-effective.

25. The total project cost is estimated to be USD 122.564 million by 2023. The GCF grants of USD 17.3 million will have co-financing of USD 105.33 million in total from project partners, building end users, and international agencies, including the AE, the World Bank, the Global

Environment Facility and the Swedish International Development Cooperation Agency, at a ratio of 1 to 6. Commitment letters from main co-financing partners have been already secured. Furthermore, the AE reasonably indicates that additional co-financing from the private sector can be expected in the later stage. If that materializes, the co-financing ratio will increase.

26. The GCF grants represent 64 per cent in Component 1 (“Policy de-risking: technical assistance”) while 10 per cent in Component 2 (“Financial de-risking: investment”). The GCF grants in the second component will be used to improve the viability of switching the fuel used in of public-sector buildings from coal to biomass. Switching fuel from coal to biomass is financial less attractive due to the low cost of coal in Bosnia and Herzegovina. As its intervention focuses on critical, but non- or low-revenue generation activities, GCF financial assistance in the form of a grant is justifiable.

27. The AE presents its calculation of the economic internal rate of return (EIRR) and the financial internal rate of return (FIRR), of which results vary from 8 per cent to 26 per cent, and 0 per cent to 11 per cent, respectively, depending on the type of fossil fuels (coal or light fuel oil) that buildings to be retrofitted are using for heating, and the availability of GCF grants. In the absence of information on the public-sector buildings to be retrofitted, it is unfeasible to calculate EIRR and FIRR of the proposed project with any certainty. The projection of the AE, however, confirms that EIRR and FIRR of the proposed project will be higher than 8 per cent and 0 per cent, respectively.

28. The TAP is of the view that the proposed project is “High” in efficiency and effectiveness.

II. Overall remarks from the independent Technical Advisory Panel

29. With the aim of supporting the government strategies and commitments indicated in the country’s NDC and other relevant policies, the proposed project aims to establish a more coordinated and holistic policy approach among various government agencies to promote low-carbon sustainable development in public-sector buildings in Bosnia and Herzegovina, and to retrofit 430 buildings with non-conventional financial modalities and private-sector involvements. During the investment life, the proposed project will achieve direct emission reductions of 2.02 Mt CO₂ eq and indirect emission reductions of 7.1 to 8.1 Mt CO₂ eq. It will further improve conditions for the occupants of public-sector buildings. Direct beneficiaries are expected to reach a total of 150,000 people, of which 80,000 are expected to be women. A total estimated cost per tonne of CO₂ emission reduction is projected to be USD 1.8, which is costeffective. The GCF grants of USD 17.3 million will mobilize co-financing of USD 105.33 million at a ratio of 1 to 6. As its intervention focuses on critical, but non- or low-revenue generation activities, a GCF grant is justifiable.

30. Public-sector buildings in Bosnia and Herzegovina lie within multiple jurisdictions reflecting the complex administrative and political structure of the government. Therefore, extensive and complex coordination is essential for the project to succeed. There is a risk that project implementation will be delayed or suspended due to insufficient coordination among government agencies and stakeholders. However, the TAP takes comfort in the extensive operational experience of the AE in Bosnia and Herzegovina with various levels of government entities in its projects. The TAP also understands, based on its discussion with the Secretariat and the AE, that the risk will be further mitigated by structuring GCF disbursement to be performance-based. The TAP is supportive of the proposed risk mitigation.

31. The TAP supports and recommends the Board to consider the proposed project with the following conditions:



- (a) In order to be able to measure the mitigative performance of this programme, a clear monitoring and reporting procedure guiding this programme shall be agreed between the AE and the Secretariat, prior to the first disbursement; and
- (b) The monitoring and reporting report shall be submitted on an annual basis as part of the annual performance report by the AE to the GCF.

Independent Technical Advisory Panel's review of FP052

Proposal name:	Sustainable and Climate Resilient Connectivity for Nauru
Accredited entity:	Asian Development Bank
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential Scale: Medium/High

1. Nauru is the world's smallest island nation. Isolated deep in the Pacific, it depends almost entirely on its port (Aiwo Port) for supplies of food, energy and most other essentials its people and economy need to survive. Yet its aging, dysfunctional port facilities are completely exposed to the effects of climate change.

2. The existing port facilities at Aiwo consist of offshore loading and offloading facilities, where seagoing ships are anchored in adequate draught and from where goods are loaded onto barges that transports these goods to the facilities on land for offloading, storage and disbursement. Goods to be transported out of the country are also transported by barges to the offshore location for loading onto the anchored ships. With this existing port facility:

- (a) Visiting ships are totally unprotected from sea and climatic conditions;
- (b) Offshore loading and off loading has become steadily more hazardous and difficult due to the increasing hazard of waves;
- (c) Westerly waves and swells that pose the main challenges at Aiwo are driven by the ElNino Southern Oscillation, the South–Pacific Convergence Zone, the Western Pacific Monsoon and distant tropical cyclonic activity;
- (d) Delays and complete port shutdowns are chronic for three months a year, and
- (e) Shipping costs are climbing, with some ships already refusing to serve the port.

3. In spite of the uncertainties surrounding how climate change will affect these drivers, it is quite correct to conclude that a significant risk exists that the wave climate at the port will worsen and combine with sea level rise to make Nauru's vital sea link inoperable for longer periods every year, hence the need for this intervention.

4. The alternative that has been proposed by the Asian Development Bank (ADB) in this funding proposal submission and that is requesting GCF funding support will involve the construction of a climate-resilient port that can operate year-round. The facility will comprise the following:

- (a) A channel through which ocean-going ships can pass between the sea and the shore for the first time in Nauru's history;
- (b) A stable wharf with a turning berth;
- (c) A breakwater to shelter the wharf and the berth from waves; and
- (d) Port buildings, a container terminal and port security provisions complying with the International Ship and Port Facility Security Code.

5. Some of the key features of the new port facilities for which GCF financial intervention has been requested include the following:

- (a) The new port facilities are expected to include a climate-resilient port that can operate year-round;
 - (b) The new port facilities will mean that ships will spend considerably less time at sea, leading to a significant reduction in fuel combustion and hence carbon dioxide (CO₂) emissions from the shipping sector; and
 - (c) Some of the funds requested will also be used to institute a programme that will help to reform port governance and management and capacity-building of the Nauru Port Authority to ensure financial, economic and institutional sustainability.
6. The proposed programme funding will include the following sources:
- (a) GCF (grant) USD 26.91million
 - (b) ADB (grant) USD 20.70million
 - (c) Government of Australia USD 13.50million
 - (d) Government of Nauru USD 4.09 million
 - (e) Total USD 65.20million
7. The ADB therefore seeks for this programme the total sum of USD 26.91million from the GCF, as grant, which will be utilized to fund about 59 per cent of the civil works on the offshore facilities (wharf, berth pocket and breakwater) of the new ports. The 41 per cent balance needed for the offshore civil works will come from the other funding sources. Funds from the other sources will also be used for the following:
- (a) The civil works on the onshore facilities (port buildings and services);
 - (b) Port equipment;
 - (c) Consultant services for construction and civil works; and
 - (d) Port reforms, governance and capacity development.

Mitigation potential

8. In both the 'with project' and 'without project' scenarios, all ships use equal time and fuel to reach Nauru waters.

'Without the project' scenario

9. Without the project, container ships and fuel ships spend many days at sea resulting in high consumption of fuel. In addition, the need for ships to be fastened and anchored firmly throughout their lengthy stay also results in more fuel being used to ensure the stable fastening of the ships despite wave activities. Moreover, the push barges that bring goods to be exported from shore to ship and transport imported goods from ship to shore will also burn fuel with resulting emissions of greenhouse gases (GHGs). Energy consumption in the form of electricity and fuel for goods handling and moving facilities (cranes, trucks, etc.) will also take place especially at the onshore facilities where there will be good storage and handling facilities.

'With the project' scenario

10. With the project, the fuel use of container and fuel ships will be greatly reduced due to a significantly reduced wait before traveling to wharf and docking. Even at the wharf, due to the modern facilities with the project, it is expected that ships' stays will be greatly reduced. Overall as a result, fuel use by ships while at the wharf will be greatly reduced when compared to that during the status quo ante period. In addition, the need for barges to criss-cross from the ship anchored offshore will be eliminated as a shipping channel right to the wharf area at the shore would have been constructed as part of this project. The function of barges at the new facilities

will be restricted to the simple operation of helping the container and fuel ships into the wharf, with a substantial reduction of fuel consumed by the barges compared to the pre-project period. Electricity and other fuels will also be consumed at the new port, for example for lighting and for the operation of trucks, cranes, etc.

11. GHG emission reductions as a result of the implementation of this infrastructure project have therefore been estimated at about 10,558 tCO₂eq per annum. This will amount to about 527,900 tCO₂eq during the 50-year lifetime of the port facilities. It is important to stress that the value of the GHG emission reductions achievable can even be higher than the estimate provided above if the project emissions are mitigated via the provision of solar power at the new port facility. According to the accredited entity, there is about 1,890 m² of roof space at the new port that could accommodate 1,050 solar panels. Implementing this rooftop solar facility will require a capital cost of about USD 1 million and the facility, when implemented, will be able to generate about 18 per cent of the electricity needs of the port facilities. This will reduce project emissions and thereby increase the GHG emission reduction impact of the project. The accredited entity in its submission stated that it will continue to investigate this renewable energy opportunity in a coordinated manner with the Government of Nauru.

Adaptation potential

12. The port facilities that are the focus of this intervention have been designed to ensure that the vagaries of the maritime environment (wave actions, etc.) that are expected to be exacerbated by future climate change and variability have limited negative impact. Therefore, it is expected that the port will be climate-resilient. In the absence of the project, Nauru will be left with the baseline port facility that is inoperable for about three months of the year, a disruptive effect that is expected to increase in the future due to climate change impacts.

13. Without a climate-resilient port, Nauru will experience increasing food and health, energy and water insecurities due to the failing port operations and limited connectivity. It will also experience progressively higher transport costs and increasingly unreliable transport facilities that will undermine any chance of new economic developments. Due to climate change, Nauru will become more and more disconnected from regional and international partners, markets, development, trends and knowledge.

14. The port is a national asset, which contributes substantially to the socioeconomic development of Nauru, the entire population of which benefits from this intervention. Because the port as a result of the intervention will be made climate-resilient, it can be concluded that the project will make a meaningful contribution to all round adaptive capacity.

15. Accordingly, the impact potential of the proposed framework is assessed to be “Medium to high”.

1.2 Paradigm shift potential

Scale: High

16. The paradigm shift of this intervention will occur at two levels. Firstly, the project will be a paradigm shift for the country of Nauru and secondly, it will be a paradigm shift for small island developing States all over the region and beyond.

Paradigm shift for Nauru

17. The current utilization of existing port facilities in Nauru is limited to nine months per year. This limitation has been attributed to serious wave activities at the offshore location where ships currently berth due to the non-availability of accessible least available depth close to shore. There is scientific consensus that there is a very high probability that wave activities will be exacerbated in the Pacific region in the future especially by climate change and climate

variability, resulting in longer periods of waiting at the offshore berthing site for the existing port facility in the absence of the current intervention that is proposed.

18. The intervention will, however, lead to the building of a port facility in Nauru that is available all year round because its harbour will be protected and will have a shore-backed berth for ocean-going vessels. This will make the port facilities have a higher usability and availability thereby bolstering the economic and social development of Nauru and creating a transformative environment and a paradigm shift when compared with pre-project situations.

Potential paradigm shift for the Pacific region

19. All the 14 Pacific member countries and the hundreds of islands in those countries face a similar situation to that of Nauru - dependence on a single port with ships berthing at offshore locations, where they are exposed to similar climatic vagaries as that observed in Nauru. These single ports are usually poorly protected and in some cases are not protected at all. Delays at these ports are common as a result of the waves and other inclement elements that are likely to be exacerbated in the future by climate change and climate variability. The successful implementation of the Nauru port project will provide a strong basis for the replication of the intervention in all the Island States in the Pacific hence providing the basis for regional paradigm shift. Climate-resilient ports in the region will contribute to resilience across the region.

20. Accordingly, the independent Technical Advisory Panel (TAP) views the paradigm shift potential of the proposed facility as “High”.

1.3 Sustainable development potential

Scale: Medium

21. Environmental, social and economic co-benefits, including gender-sensitive development impacts, will be associated with the successful implementation of this programme.

22. Some of the important benefits that were highlighted in the programme description and submission includes the following:

- (a) Socioeconomic benefits through employment in the construction and operation of the new port facilities;
- (b) Improved efficiency in the port operations, which will facilitate economic diversification in Nauru as the improved economic climate will facilitate the development of new businesses;
- (c) An improved and more reliable supply of food, health products, fuel and portable water, which in turn can bring down the prices of these goods in Nauru in the medium to long term;
- (d) Cumulative effects on climate through reduction in GHG emissions;
- (e) A decrease in air pollutant emissions and other types of environmental pollution due to the decreased use of fossil fuels by ships and barges, leading to improved air quality and reduced health risks;
- (f) The development of facilities for fish storage and processing, which will attract fishing industry actors and provide more employment;
- (g) The potential for the improved Aiwo Port to emerge as a regional port, with regional neighbouring countries (Micronesia (Federated States of), Kiribati and the Marshall Islands) using Aiwo Port as a regional trans-shipment hub for the transfer of cargo and containers from ocean-going larger ships;

- (h) Some of the key employment generation potentials of the programme have been estimated in the submission to include the following:
 - (i) International (15) and national (25) individuals in construction works; and
 - (ii) International (12) and national(4) individuals in construction supervision and policy reform;
- (i) It is stated, however, that in the medium to longer term, the programme will not lead to an increase in pre-project workforce at the port due to current excess employment at the Nauru Port Authority;
- (j) The socioeconomic co-benefits envisaged are expected to include the following:
 - (i) Better health, educational and social conditions for the population of Nauru due to more frequent unencumbered ship visits to the Nauruan port resulting in a reduction in the cost of goods delivered to Nauru;
 - (ii) Reduced risks of injuries or death due to the elimination of the dangerous offshore loading and unloading of goods; and
 - (iii) It has also been noted in the funding proposal submission that the funding of port reforms under component 2 of this intervention will improve port organization, practices and worker's skills, which will further contribute to reduced risks in the operation of the facilities; and
- (k) Environmental co-benefits envisaged in the funding proposal include the following:
 - (i) The elimination of hazardous materials, which exist in the old port facility (e.g. asbestos) and pose a very unacceptable risk to human health. In the construction of the new port, these hazardous materials will be removed and carefully disposed of; and
 - (ii) A reduced risk of damage to the environment from the elimination of damage to the ocean floors from accidents, leaks and abandoned mooring chains.

Gender-sensitive economic impact

- 23. Key gender interventions noted as built into the programme are described below:
 - (a) Jobs will be created for both men and women and, as indicated in the description of the programme in the FP, procedures will be designed into the programme to ensure that employment opportunities for women are promoted;
 - (b) Women are expected to benefit more from the expected reduced prices of goods as a result of more efficient sourcing activities for commodities such as fresh foods and medicines; and
 - (c) The proposed capacity-building training and preferences for women in the project management units, as built into the programme, will enhance the benefits to women in the port's development activities.
- 24. Accordingly, the TAP ranked the sustainable development potential of the proposed facility as "High".

1.4 Needs of the recipient

Scale: High

25. The following characteristics of the programme when implemented successfully will determine the extent to which the needs of the recipients are taken into consideration in the design of the intervention:

- (a) *Economic impact:* a key need of Nauru is a complete change in its ports availability and operability in order to ensure that the current situation, whereby the facility is not available for about three months in a year, is reversed. This is because this usually makes the acquisition of goods difficult and hence results in a higher landed cost, with very negative impacts on the welfare of the people and the economic growth of the country. It is expected that these negative impacts will be mitigated by the successful implementation of the programme. The success of the port development programme will stimulate Nauru's economy and impact positively on the people of Nauru;
- (b) *Social impacts:* the successful implementation of the projects under the port development programme will enhance the social development of Nauru and hence the welfare of its citizens. Not only will goods be better sourced and more readily available but the prices are likely to come down compared to status quo ante with positive feedback on the livelihoods of the people of Nauru; and
- (c) *Institutional:* Nauru ports require efficiency improvements especially in the management of the facilities. The fact that the Port is operated as a hybrid state-owned enterprise and government department does not augur well for the efficiency and effectiveness of the facility. The port reform component of the intervention will support the transition to a full State Owned Enterprise (SOE), which is an absolute requirement for the economic efficiency of the country.

26. The fact that these critical needs issues are likely to be mitigated by this intervention, compared with what would have happened in the absence of the GCF-supported ADB intervention, has convinced the TAP to rate the needs of the recipient as "High".

1.5 Country ownership

Scale: High

27. The key country ownership metrics will include among others the following:

- (a) The fact that the construction of the climate-resilient port has been the centre piece of the ADB/Nauru country programme, which was designed and launched in 2014;
- (b) Nauru's nationally determined contribution also has as a focal programme, an adaptation component that prioritizes action that can contribute to development and resilience objectives, simultaneously. In the nationally determined contribution, priority actions are expected to cover the resilience of infrastructure in the face of imminent climate change and climate variability. These are seen as key components of the national efforts to reduce Nauru's vulnerability to climate change. Therefore, the port development project is consistent with country goals and aspirations;
- (c) Nauru's second national communication (NC2) which was submitted to the secretariat of the United Nations Framework Convention on Climate Change in 2015 also had the protection of infrastructure and coastal protection as key vulnerable elements of the country that must be put in place. It is also noted in the NC2 that "strategic infrastructure can play an important role in improving economic productivity and/or reducing community vulnerability" and that "the sea and air ports are critical assets to ensure supply of essential goods and services (food, fuel, parts, medical supplies), as well as for export" This port development project for which GCF funding is hereby requested is therefore contributing to the aims of the NC2;

- (d) Nauru also has a national sustainable development strategy in place covering the period 2005-2025. A key strategy in the development strategy is titled "Fostering a cultural change towards self-reliance". The proposed port development project will contribute to this strategy. This is another piece of strong evidence of country ownership; and
 - (e) Nauru through its national designated authority has also provided its no-objection letter for the programme.
28. Given the various considerations above, the TAP has concluded that the country ownership of the proposed framework by the executing authority is "High".

1.6 Efficiency and effectiveness

Scale: Medium

29. The key efficiency and effectiveness metrics of this programme can be summarized as follows:

Cost effectiveness and efficiency of the programme

- (a) The programme will address the need to create a climate-resilient port facility as discussed above and will facilitate an effective and reliably available facility all year round; and
- (b) The programme will include, apart from the construction of a climate-resilient port, capacity-building support for the development of a proactive and efficient management of the operations of the new port. This will also enable the increased generation of revenue that will make it possible for the medium to long term sustainability of the facility.

Cost-effectiveness of the programme (mitigation)

- (c) The estimated cost per tCO₂ eq (total investment cost/expected lifetime emission reductions), assuming the project lifetime to be 50 years are the following:
 - (i) USD 26.91million/tCO₂eq for the GCF contribution = 50.98USD/ tCO₂eq; and
 - (ii) USD 65.20million/ tCO₂eq for the total programme cost = 123.51 USD/ tCO₂eq

Cost-effectiveness of the programme (adaptation)

- (d) The economic and financial cost-effectiveness are not worked out for the adaptation component of the funding proposal. Therefore, the TAP is not in a position to comment on it. However, given the public good achieved through the adaptation component, the TAP is supportive of the investment.

Co-financing efficiency

- (e) The programme will enable the GCF to leverage an amount of co-financing, approximately USD 65.20 million compared with the USD 26.91 million requested from the GCF (the co-financing ratio - total amount of co-financing divided by GCF investment in the programme – equals 2.5times).
30. Given the description above, the TAP views the efficiency and effectiveness of the proposed programme as "Medium".

II. Overall remarks from the independent Technical Advisory Panel

31. The framework for implementing this programme as suggested in the funding proposal is considered by the TAP to be effective in promoting the development of a climate-resilient port infrastructure in Nauru. The GCF component grant (USD 26.91million), coupled with other grant sources from the ADB, the Government of Australia and the Government of Nauru will be adequate to create a sustainable, climate-resilient port facility in Nauru. The success of this framework has the potential to deliver a paradigm shift that will positively affect the economic and social strata of other small island developing States, when the success story of Nauru is replicated in these SIDs.
32. The TAP recommends that the Board approve this proposal.

Independent Technical Advisory Panel's review of FP053

Proposal name:	Enhancing Climate Change Adaptation in the North Coast and Nile Delta Regions in Egypt
Accredited entity:	United Nations Development Programme
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: High

1. The north coast and the Nile Delta region of Egypt is generally low lying and highly vulnerable to climate change-induced storm surge and beach erosion and salinization due to sea level rise. Low lying deltas are well recognized by the Inter-Governmental Panel on Climate Change (IPCC) as highly prone to climate change induced storm surges and sea level rise, while the north coast and the Nile Delta region in particular rank among the top three global deltaic regions that are most vulnerable to climate change. The region is home to a significant part of the productive agricultural lands in Egypt (accounting for about 90 per cent of the agricultural output of the entire country), a few urban and industrially important areas, lagoons for fisheries, aquaculture, ports, settlement areas (where 40 per cent of the nation's population live), beach fronts as tourist destinations and recreational centres. Climate change and associated changes, in conjunction with environmental externalities of past development projects, are threatening to inundate the agricultural lands with saline water and diminish the potential of goods and services generated from the area. Available literature suggest that the rise in sea level by one metre will cause inundation of 20 per cent of the land area by the end of the 21st century. The region, its economy and population urgently need adequate adaptation measures.

2. In the past, there have been efforts to protect the beach front by building hard engineering structures (such as embankments and groynes). However, those costly efforts have been proved to adversely affect the depth of water in the near shore. Moreover, the Aswan Dam built on the Nile river ceased to supply sediments past the dam to the delta, compounded by gradual withdrawal of ground water, which have caused a nett subsidence of coastal land. The change in bathymetry and changed wave patterns in relation to the shore line in turn have aggravated the erosion proneness of the shoreline. Although Egypt has been trying to pursue the implementation of integrated coastal zone management (ICZM), owing to weak institutional capacity and management and the issues highlighted above, the future well-being of the coastal areas appears bleak. In addition, climate change and sea level rise has been putting additional stresses on the coastal systems which need to be addressed urgently. This provides the rationale for undertaking a project which would avoid locking in large potential investments in hard-core engineering-based techno-fixes, and instead trying to emulate what unperturbed nature would have done to adjust to certain changes, and trying to build institutional capacity including policy and management skills so that a participatory climate-smart ICZM plan can be developed and implemented towards securing the area and the goods and services emanating from it.

3. The aim of the project is to reduce coastal flooding and salinization of the agricultural lands. Both these phenomena are aggravated by sea level rise and frequently occurring extreme weather events. The primary modality of achieving the aims is the creation of sand dune dykes up to a height of about 1.5m in 5 of 19 vulnerable hot-spots along the coast. The cause-and-

effect relationship has been tested by running computer simulation models using IPCC-endorsed scenarios, while the sensitivity of maximum height of the sand dunes has also been tested before finalizing the plan. The modelling exercise took the relative sea level rise values, taking into consideration compaction and gradual subsidence, which enhance the reliability of model outputs. It appears that a rise in soft protection by 1.5m will be more than adequate to provide for resilience well past the lifetime considered in the cost–benefit analysis. The soft engineering is expected to be further strengthened by developing a ‘vegetative buffer’ structure for coastal protection, beach nourishment, reinforcement of sand dune systems as a defence mechanism, revegetation to stabilize seabed sediment, wetland restoration and the establishment of conservation zones to preserve essential coastal habitats. The project benefits from a limited (only 1 km in length) but successful pilot testing of sand dune dam, which has been built under a project led by the Global Environment Facility (GEF) that is funded by the Special Climate Change Fund.

4. As per the proposed plan, a total of 69 km of sand dune dykes will be built in the target 5 hotspots, namely Kafr El-Sheikh, Port Said, Behira, Damietta and Dakahlia. The target 69 km cover about 30 per cent of the coastline of the northern Nile Delta. The dykes will be stabilized by the use of a geotextile core, supplemented by nourishment through the application of sand traps, vegetation and other soft engineering approaches so that those soft structures are not eroded by the invigorated wave actions. The soft engineering is expected to be further strengthened by developing a ‘vegetative buffer’ structure for coastal protection, beach nourishment, reinforcement of sand dune systems as a defence mechanism, revegetation to stabilize seabed sediment, wetland restoration and the establishment of conservation zones to preserve essential coastal habitats. Several criteria have been used to select the five hotspots, including topographical characteristics, planned development activities, socioeconomic characteristics, coastal processes and ecological conditions. Optimum solutions are reached by cross-analysis of comparative costs, technical viability and sustainability, and the level of innovation within and among comparable solutions. It appears that, given the complexity of the issues in the selected areas and general lack of data regarding many interacting parameters, the most suitable ‘no regrets’ solution has been chosen to address the issue.

5. In addition, the project aspires to deliver a participatory ICZM plan for the entire north coast of Egypt, with a particular focus on institutional strengthening through integration of climate change in a policy harmonization process and capacity-building to enforce the new ICZM plan. The initial attempt to implement ICZM under the GEF-led project mentioned above has been found to be less effective than originally thought. The inadequate effectiveness is found to stem from limited and ad-hoc cooperation among the different agencies involved. With additional efforts, it is anticipated that a greater level of cooperation will be forged by engaging various competing sectors and institutions in a participatory planning process, with adequate policy and legal structures around the plan. The participatory planning process will be further facilitated by long-term data collection and human resources development in the lead agency so that a functional knowledge-driven and cooperative management may be established.

6. It is clear that the ICZM plan has been regarded as the panacea for solving all major problems in the coastal zone of Egypt, including the complexities added by the adverse impacts of climate change, and that this has happened in an apparent void of adequate data and understanding. However, Egypt cannot afford to deny the necessity of a holistic plan which is duly owned by the competing institutions and sectors. Even without climate change, such a participatory plan should have been in place and implemented. Now that Egypt has to integrate responses to climate change, a climate-smart ICZM plan needs to be recognized as the first step – even before committing to any investment towards soft or hard protection measures.

7. All the above promises a number of potential results: the reduction of vulnerability to inundation and subsequent salinization of agricultural lands; the strengthening of institutional and regulatory systems; an increase in the generation and use of information (both climatic and

non-climatic); and wider awareness of stakeholders towards greater cooperation for a holistic plan. All these are aligned with the GCF objectives and priorities. Moreover, a total of 768,000 people are expected to directly benefit from the project and 16 million people further benefitting indirectly. The project has submitted a financing request for USD 31.88 million to be made as a GCF grant, against an estimated USD 73.6 million promised as co-financing, of which only USD 13.8 million is actually directly contributing to the results of the project. The independent Technical Advisory Panel (iTAP) concludes that the impact potential of the proposed project is “High”.

1.2 Paradigm shift potential

Scale: Medium to High

8. The project further strengthens the pilot actions and modalities being undertaken by the above-mentioned GEF-led project; therefore, as such, there is no innovation. However, efforts to imitate nature regarding sand dunes are expected to be a learning experience and, if successful, will also result in a modal shift from expensive hard engineering with adverse long-term effects to an adjustable low-cost ‘no regrets’ solution that blends adaptation with disaster risk reduction. Moreover, the ICZM plan will begin a collaborative process, if competing sectors aspire for a holistic coastal development instead of a business-as-usual sector-specific approach to development. This represents a potential paradigm shift; however, a lot depends on political will, motivation and hand-holding in order to achieve mutual benefits.

9. The project is expected to deliver the ICZM plan, which will be useful for the entire northern coastal areas of Egypt. This will not only contribute to the creation of an enabling environment for the implementation of the ICZM plan, it will consolidate the unfinished works of the GEF-led pilot project. The soft structural measures will be scaled up from the pilot in about 1 km of coastal length; however, this has the potential to be scaled up to cover the rest of the coastal areas. Therefore, some replication potential exists. The proposal admits the need for robust monitoring and evaluation, particularly for the soft structural part, and an ICZM platform for the sharing of learning, which collectively offer potential for growth of knowledge and learning. A number of institutional barriers will be addressed by the project, which will add to the potential for a paradigm shift.

10. Since a majority of the economic activities in Egypt is based on the Nile Delta, including about 90 per cent of agricultural activities, the model has the potential to contribute lasting development in the country. The theory of change, as presented, captures the linkages of such efforts in achieving a sense of safety in the target coastal zone in spite of climate change-induced adverse effects. It is premised on the demonstration effect of implementing soft coastal defences at scale in conjunction with policy and regulatory reform.

11. The Government of Egypt restricts coastal densification and excessive use of coastal resources by enforcing the existing legal framework. However, it is important to note that, if GCF resources help to achieve the objectives of the project as mentioned, the result will be enticing for industries and settlements to take advantage of the additional physical safety, which in turn might lead to further densification and ultimately result into unsustainable management of coastal resources. The project-led benefits will be tangible only if the Government of Egypt continues to enforce the prevailing legal framework and guide a knowledge-based cooperative development pathway, gradually investing in the ICZM plan. Much of the paradigm shift potential will largely depend on how institutional issues are rolled out with proper political uptake and leadership. Such issues warrant a nation-wide soul searching and a process of consensus-building, which perhaps is beyond the scope of the project. Despite such limitation, the iTAP views the paradigm shift potential of the proposed project to be “Medium to High”.

1.3 Sustainable development potential

Scale: High

12. The project components and activities contributes to a number of sustainable development goals (SDGs):
 - (a) SDG-2: Contributes directly to enhance food security and indirectly to promote sustainable agriculture.
 - (b) SDG-8: Contributes indirectly to the promotion of sustainable economic growth.
 - (c) SDG-9: Builds resilient infrastructure.
 - (d) SDG-11: Contributes directly to make cities and human settlements safe, resilient and sustainable.
 - (e) SDG-13: Directly considers urgent actions to combat climate change and its impacts.
 - (f) SDG-14: Contributes towards conserving and sustainably using the oceans, seas and marine resources for achieving sustainable development.
 - (g) SDG-15: Directly contributes to counteract land degradation.
13. The proposed project attempts to protect economic assets. It enables risk-modulated, if not completely risk-free, economic activities and settlements in the wake of adverse effects of climate change. It appears that the protection scheme and the holistic and harmonized institutional management approach are likely to have multidimensional benefits in agriculture and food security, fisheries and aquaculture, industrial development, settlements, tourism, port management and safeguarding natural resources, among other things. The project might contribute to limit migration and create employment. Given all such multidimensional potential benefits, the iTAP considers that the project could be a potential game changer towards achieving sustainable development in Egypt.
14. On environmental grounds, the project promises to stabilize soil by revegetation. Moreover, potential prevention of salinization of groundwater aquifer system can be an excellent environmental co-benefit.
15. Other than ensuring women's participation in the decision-making processes within the purview of the ICZM plan, the project does not offer women-specific elements as such. However, the non-specific benefit streams will also be enjoyed by women – although, the extent of gender-differentiated access to benefit streams can be quite inequitable.
16. Due to the creation of artificial sand dune dykes on the seafront (at least in the target 69 km of shoreline), the aesthetic and recreational values of the beach front will be somewhat undermined. While this is unavoidable, the 1.5m high dunes might significantly restrict the potential access by women and children to near-shore water fronts and the use of these areas for family recreational purposes (non-consumptive use of marina). Adequate measures may be considered necessary to ensure that women's (and children's) particular interests are given due importance in the protection schemes.
17. Overall, the iTAP considers that the sustainable development potential appears to be high for the project.

1.4 Needs of the recipient

Scale: High

18. Egypt is regarded as one of the most vulnerable countries on Earth and the high vulnerability to climate change stems from the low-lying deltaic coast. Recognizing the fact that climate change and sea level rise-induced adverse effects will adversely affect important sectors such as human settlements, agriculture and industrial activities – each of which are crucial to a large number of people – the project indeed reflects the paramount need of the recipient. Since 90 per cent of Egypt’s agricultural production depends on lands that are potentially at risk within the target areas, the indirect beneficiaries may even surpass the number estimated in the project. Under such circumstances, a significant proportion of Egypt’s population appears to be vulnerable to coastal flooding, which justifies the need for the project.

19. The proposal reflects people’s participation in taking decisions about the structures, although the people-centric proposals are scientifically validated through the application of knowledge and rationale. Women’s voices were also captured and given due importance in the project’s gender action plan. It promises greater access to decision-making processes by women, which will indirectly contribute to the development of women’s leadership capacities in the processes of the ICZM plan.

20. Egypt has been relentlessly trying to reduce the vulnerability of its Nile Delta coast and has invested heavily in the past to address coastal flooding. Since such efforts, as envisaged in the proposal, aim at building public goods and services, Egypt has decided not to create provisions for climate protection by borrowing from international sources. It leaves little option but to seek adaptation finance in the form of grants. Given that, Egypt asks only a small proportion of the estimated costs for building sand dune dykes as grant and the majority of the finance in this regard is committed from its own resources. The application for grant support is therefore justified. Moreover, the ‘no regrets’ type investments match well with the GCF financing portfolio and are therefore admissible.

21. Egypt commits to the infrastructure to be built by not only offering hefty co-financing, it also commits to bear the cost of operation and maintenance for about 40 years following the completion of the project. In addition, the project support is sought to meet the needs of Egypt for strengthening its institutions and implementation capacities, especially for the implementation of the ICZM plan. The iTAP acknowledges the needs of the recipient to the proposed project and ranks it “High”.

1.5 Country ownership

Scale: High

22. As a leading member in various processes under the United Nations Framework Convention on Climate Change (UNFCCC), Egypt fosters international partnerships on urgent climate actions. Egypt has placed an emphasis on coastal protection against climate-induced flooding and salinization in its communications/submissions to the UNFCCC. Moreover, the objectives of the project are aligned fully with the national policy regime, particularly the National Strategy for Adaptation to Climate Change and Disaster Risk Reduction and the nationally determined contribution to the Paris Agreement. Egypt has been initiated ICZM processes since 1996. In the recent past, Egypt has implemented two projects in partnership with GEF and the United Nations Development Programme (UNDP). The capacity of the accredited entity in dealing with similar projects in Egypt has already been proven. The main executing entity (Shoreline Protection Agency) has also implemented a few projects of a similar nature.

23. The project will benefit from its involvement with appropriate national executing entity and partners. The inter-agency partnership which has been proposed to steer the project is likely to strengthen national ownership and coordination – the latter being crucial towards

delivering sustainable solutions to coastal vulnerability. The local-level ownership and participation has also been forged by organizing consultations, as duly documented in the funding proposal package. The environmental and social management framework and the gender action plan provides for mechanisms for further public consultations, which keeps the learning/sharing and feedback opportunities alive for the primary stakeholders. The national designated authority was involved in developing the proposed project with the accredited entity, and has issued a no-objection letter, which testifies country ownership.

24. The Government of Egypt has made significant investments in coastal protection including commitments for USD 200 million in Alexandria, and about USD 40 million of hard coastal infrastructure mostly through the Shoreline Protection Agency. Moreover, investments related to the current project amounts to USD 73.8 million in co-financing and parallel financing. Of this amount, USD 13.8 million is expected to support the coastal defences and activities associated with the ICZM. The Government further commits to finance the operation and maintenance of structures for 40 years. The latter demonstrates strong country ownership.

25. The iTAP concludes that country ownership of the proposed project is evident and “High”.

1.6 Efficiency and effectiveness

Scale: High

26. The proposal estimates the overall cost of project activities to be USD 105.184 million, which qualifies it to be regarded as a medium-sized project. Out of the total amount, the Government of Egypt commits to USD 73.8 million as co-financing, of which the overwhelming majority (some USD 59.48 and 5.6 million) will be invested for the development and implementation of the ICZM plan and the development of a national observation system, respectively, over the 7-year duration of the project. The project requests GCF to cover an estimated amount of USD 31.384 million through a grant. The project is designed to pay for itself by avoiding large capital investments in hard-core engineering solutions (business-as-usual) and instead, using only a small proportion for covering up the entire cost of installing soft solutions in the form of sand dune dykes. Therefore, ideally, a fully concessional financing with zero interest rates could have been sought from the GCF. However, since the investment is intended to generate public good and the financing is non-profit making, a grant is requested. Given the urgency of the adaptation works along with the very high sustainable development potential of the investment to foster the ICZM plan in a vulnerable African country and the high co-financing from the Government of Egypt, the grant may be justified.

27. The economic analysis considers modelling results which took into account medium and high sea level rise scenarios and the protection requirements against the estimated extent of inundation. The full range of analysis may be considered as ‘conservative’ in terms of underestimation of cost of the project, based on certain assumptions. The economic benefits of the proposed investment project include the reduction in the quantity of agricultural land which may be impacted by sea level rise, and the mitigation of the economic cost to housing units and roads. The analyses suggest that the internal rate of return (IRR) for the medium and high sea level rise scenarios are 20 and 26 per cent, respectively. The sensitivity analyses reveal that, even in cases of either 20 per cent increase in costs or 20 per cent decrease in benefits the IRR does not decline by more than 3 percentage points, irrespective of the scenario, indicating a robust investment. Even in a more improbable economic consideration of both 20 per cent increase in costs and 20 per cent decrease in benefits occurring simultaneously, the analysis still indicates almost 16 and 22 per cent IRR, based on medium and high sea level rise scenarios, respectively. Again, the analyses suggest high economic returns and therefore justify investment in the project.

28. Although the project attempts to scale up from the GEF-led pilot, it is yet to be seen whether the invigorated storms under climate change will adversely affect the protective sand dune dykes. If, in the medium time frame, the sand dune dykes appear to be still operational and providing goods and services to all relevant sectors, it will certainly inspire the Government of Egypt to consider further investments. In addition, the current political motivation to implement ICZM, if continued, will help Egypt to further strengthen such collaborative programmes towards developing the coastal zone sustainably. The project finance is therefore justified as an initial input to act as a springboard for further development.
29. The project management cost is estimated as only 6 per cent of the total investment, which signifies highly cost-effective management to be set up for the project.
30. The iTAP is of the view that the proposed project is high in efficiency and effectiveness.

II. Overall remarks from the independent Technical Advisory Panel

31. The independent Technical Advisory Panel (iTAP) recommends that the Board approves the project.
32. For smooth and environmentally safe implementation of the project activities, the iTAP recommends the following:
- (a) The constructions are made in full alignment and legal permission of the provision created under the Environmental Protection Law (1994) and law number 48/1982 on Protection of the Nile River and Waterways to prevent pollution from various project activities, including dredging;
 - (b) In addition to the provisions of the Environment and Social Management Framework (ESMF) section 5.2.2 (e and f), refrain from construction activities in the beach/water front areas during the peak nesting and hatching season for sea turtles. This should be highlighted in the proposed Biodiversity Action Plan, as indicated in the ESMF document; and
 - (c) Extend the scope of environmental auditing, to take into consideration the inclusion of representatives from scientific communities, civil society organizations and media in a joint audit team, instead of an environmental audit team consisting of personnel from only UNDP and Shoreline Protection Agency (as in section 3.2.7 of annex VI (b) of funding proposal package).

Independent Technical Advisory Panel's review of FP054

Proposal name:	Implementation Project of the Integral Management Plan of the Lujan River Basin
Accredited entity:	Corporacion Andina de Fomento
Project size:	Large

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: High

1. The Province of Buenos Aires (PBA) in Argentina has witnessed rainfall of great intensity over the past 50 years. These intensive rainfall events have resulted in adverse impacts on the Lujan River Basin, with key impacts being flooding, which has resulted in the water-logging of soils in urban and rural areas as well as roads and trails, and damage to infrastructure (e.g. buildings in the PBA).
2. The proposed intervention (the project) is to implement measures aimed at reducing and/or preventing river flooding, as well as controlling the flow of streams and mitigating the impact of floods in the Lujan River Basin, thus promoting greater resilience to climate change in the area, as described in the funding proposal (FP). Flooding in the area is primarily caused by intense rain, a condition that is expected to be exacerbated in the future by meteorological and climate factors, which are expected to result in increases in rainfall frequency and intensity and hence more flooding events, hence the need for this intervention.
3. It has been estimated that the reduction in flooding that will be achieved by the project will translate into improved economic conditions for trade, agricultural and industrial production, as well as improving conditions for people in the region. The FP states that the intervention will result in a reduction in flood damage, which will positively impact the people located in the river basin. The implementation of the project is expected to have a direct impact on over 1.6 million people and an indirect impact on a further 1.2 million, amounting to a total of 2.8 million people, representing 17 per cent of the population of PBA.
4. A key expected impact of the intervention is the avoidance of damage to dwellings. The FP estimates that:
 - (a) Depending on the scenario of flood recurrence utilized, damage reduction to dwelling infrastructure can range between 55 per cent and 60 per cent;
 - (b) Damages avoided under the most likely flood recurrence scenario (every 2 years with a probability of 50 per cent) is in the order of USD 52.4 million²⁹;
 - (c) The area that can benefit from the basin management and the early warning system (EWS) may be as high as 337,850 ha; and
 - (d) Reduction of flood stains may range as high as 36 per cent (6,879.12 ha).
5. The project is also expected to increase the climate change adaptive capacity of the region while reducing the exposure to the risks associated with climate change through: (a) the implementation of an EWS, which will improve the population's prediction abilities and its

²⁹ Lujan Basin Study, Book III, Chapter IX

capacity to react quickly to the occurrence of flooding; and (b) the institutional component of the project, which is expected to enhance the sustainability of the project into the future.

6. The strengthening of institutions, especially the proposed capacity-building subcomponent is expected to have the following impacts: secure better-trained teams duly qualified for the holistic management of the river basin; and a civil society well trained on evacuation plans and duly skilled to interpret and read information on early warnings. In addition, the interaction of different entities from the river basin under the leadership of the Committee of the Lujan River Basin (COMILU), the key institution that will deal with the implementation of the project, will foster awareness among the population of climate change, its effects and adaptation activities.

7. Another key impact is that the successful implementation of the project's financial structure is expected to yield a replicable template for this unique financing of adaptation, which is via reimbursable financing (compared with the status quo non-reimbursable financing option). This is because a significant proportion of the funding of this intervention will be via loans, which will be serviced over time via Government budgeting.

8. The adaptation impact of the programme is therefore considered to be "High".

1.2 Paradigm shift potential

Scale: High

9. A significant paradigm shift potential observed in the review of the FP is the way the financing of the project has been structured. This is the first project on adaptation to climate change [submitted to the GCF] whose financing has been structured to rely on international funding on the basis of reimbursable loans. The success of this project would lay down the basis for structuring future projects on adaptation to climate change, both in Argentina and other countries in the region and worldwide, because to date the funding structure for adaptation interventions is based on non-reimbursable donations.

10. Some of the key paradigm shift issues are summarized below.

Potential for scaling up and replication

11. A unique characteristic of the project is the plan to implement both structural and non-structural measures in accordance with the priorities for adaptation to climate change set out by Argentina in its intended nationally determined contribution (INDC). The successful implementation of these measures in an integrated manner will enhance the scaling up of this project and replication in other river basins in Argentina.

12. Another unique feature of the project implementation plan that will enhance the scaling up and replicability of the project is the fact that a dedicated institution, COMILU, is being developed as part of the project delivery. Although river basin committees are common in Argentina, COMILU is being developed with toolkits that include: a performance-enhanced administrative structure; and proper institutional linkage, especially with relevant institutions in the municipalities of the river basin. The institutional structure of COMILU has been designed to facilitate interaction with members from the civil society (e.g. universities, civil defence, fire brigades). COMILU has also been designed as an institution that will have overarching responsibility for the development and operation of the project, including technical issues and non-technical issues that are critical to the success of the intervention (e.g. environmental and territorial management such as delimitation of the riverbank, review and improvement of local land-use plans, determination of protected areas, and subsequent determination of required expropriations and resettlements). All these will enhance the scaling up and replicability of the project approach.

13. The EWS will be an integral part of the project delivery plan, and the marked improvement in the planned EWS system will enable the population of the river basin area to

better react to the impact of climate change and obtain better climate information compared with that available today. The integral nature of the EWS will give COMILU the opportunity to institutionally learn within a short period of time and hence provide an institutional platform to replicate this success in other river basins.

14. The approach in similar adaptation projects that have been implemented in river basins in Argentina and in the region, was to focus on only on improving the water conveying capacity of the river as the main flood control technique, whereas the current proposal, in addition to improved water conveying, also include temporary retention of surplus water and the replacement of inflatable dams by lock gates in Lujan and Mercedes. This approach is likely to yield better flood control and, if successful, could be replicated in other river basins in the country and the region, seeking better effectiveness. Note that this success will depend on the successful implementation of the infrastructure projects.

Potential for knowledge sharing and learning

15. The fact that a dedicated institution, COMILU, will be developed as part of the activities of this adaptation project, to manage all the facets of the project, provides the main potential for knowledge sharing and learning in this intervention. As part of the package, other institutions whose capacity will be strengthened will include: The Provincial Directorate of Environment and the Provincial Directorate for Hydro-environmental Monitoring. This should result in knowledge sharing and learning.

16. One of the responsibilities of COMILU, for which its capacity will be developed, is to deliver regular interactions with relevant stakeholders within the basin including civil society, civil defence and voluntary fire brigades in each jurisdiction. These stakeholders will be trained in EWS principles and in evacuation plans with the hope that involving civil society in the project will raise awareness of civil works and their adequate operation, another strong potential for knowledge sharing and learning.

Contribution to the creation of an enabling environment

17. The development of a capable project development and management organization, COMILU, which is responsible for interacting with the municipalities and civil society will require and foster communications (lateral and vertical). This will contribute to the creation of an enabling environment for the effective functioning of the intervention.

Contribution to regulatory framework and policies

18. The successful implementation of this adaptation intervention will contribute to the achievement of country policies, as described in submissions by the Government of Argentina to the United Nations Framework Convention for Climate Change (UNFCCC) over the years. Argentina ratified the Convention in 1993, and its Kyoto Protocol in 2001.

19. All of these are policy issues that will be accentuated by the implementation of the present adaptation project. Furthermore, in the INDC submitted by Argentina to the UNFCCC prior to the Paris meeting in 2015, two of the seven core adaptation interventions mentioned in the submission (EWS and the implementation of structural and non-structural measures to address extreme events) are key components of this current proposal. Furthermore, the INDC also called for action to seek international financing to implement adaptation measures. It is therefore expected that this current adaptive capacity improvement intervention will enhance the already expressed and written policy framework of the country. It is also expected that part of the institutional strengthening of COMILU will include regulatory framework development.

20. Given the issues discussed above, the successful implementation of the structural interventions that are components of the Lujan River Basin Adaptive Capacity improvements planned under this programme will deliver a sound paradigm shift over and above similar

interventions that have been implemented to improve the resilience of people, properties and livelihood in this and other river basins in Argentina.

21. Given the magnitude of the proposed programme and the innovative characteristics of the described tentative components, the paradigm shift potential is considered to be “High”.

1.3 Sustainable development potential

Scale: High

Environmental benefits and co-benefits

22. The environmental co-benefits of the implementation of the subprojects, which play a key role in this proposal, are expected to include: reduced vulnerability of river basins to flash floods; reduced pollution of lands in the river basins as a result of frequent flooding events; reduced siltation of riverbeds; improved soil quality; and enhanced biodiversity.

23. The FP states that the other key environmental benefit that will accrue from the improved management of the river basin and the EWS will be areas of land that will be saved from the status quo negative vagaries of flooding. It is estimated that 337,850.74 ha of land (which constitute 33 per cent of the area usually directly impacted) and 1.1 per cent of the total surface area of the PBA (30,490,700 ha) will be protected by this intervention.

Social co-benefits

24. The proposed programme will deliver improvements to the quality of life of the population located in area of influence, who will be exposed to adequate protection from flooding events as a result of the successful implementation of the activities described in the proposal.

Economic co-benefits

25. A key economic co-benefit of this intervention will be the avoidance of the economic damage that generally results from floods in areas inhabited by the at-risk population when the Lujan River bursts its banks due to climate change induced intense weather events. Without the project, increasing rainfall will surely promote the bursting of the Lujan River. According to information presented in the financial proposal, the economic impact of the project for a time horizon of 20 years has been estimated to have: a cost–benefit ratio of 1 to 1.44; an economic net present value of USD 116.91 million; and an economic internal rate of return of 20.2 per cent.³⁰

Gender-sensitive development impact

26. Although gender-sensitive considerations were not explicitly covered in the presentation in the FP, the independent TAP is of the opinion that a reduction in the negative impacts of flooding in the river basin area will have a positive effect on both men and women in the area. This fact is better elucidated in the FP (annex, section IV, Gender analysis) which states that: “the implementation of this project present opportunity to incorporate women in the diverse instances, which would facilitate their integration into the process of decision-making and would contribute indirectly in their political and economic autonomy.”³¹ In section V of the same report, it was also stated that: “The project will have a Project Operation Manual (POM), whose presentation is required for the fulfilment of the conditions prior to the first disbursement. For the scope of the project, it is considered that the POM is the appropriate tool

³⁰ See page 37 of the FP.

³¹ See the FP, annex, section IV, titled “Integrated Management Plan for the Lujan River Basin Province of Buenos Aires, Argentina: Gender Analysis”.

for introducing the gender perspective. In this sense, working with the PBA is recommended in order to analyse the feasibility of incorporating these considerations and determining the suitability of elaborating a specific gender plan for the operation.”

27. Given the discussion of the coverage of the sub-elements of the sustainable development metric, and the fact that the gender aspects will be included in the POM, the independent TAP concludes that the sustainable development metric of this submission as “High”.

1.4 Needs of the recipient

Scale: High

Vulnerability of the country

28. Argentina is highly vulnerable to climate change due to the large number of glaciers in the country and the large number of people living in low-lying coastal areas. Over the past three to four decades, specific climate characteristics in large parts of the country’s territory have resulted in disasters in sectors such as energy and agriculture. Key climatic characteristics and trends that have manifested in many regions of the country include: (a) an increase in the average annual rainfall in almost all the country, except in the mountain range area of the west and in some areas of the extreme southern part of the country; (b) an increase in the frequency of heavy rains in the central and eastern parts of the country, with the frequency became higher since the 1990s, and in some areas the frequency of heavy rains has tripled; (c) an increase in the average temperature in the Patagonian area since the second half of the 20th century, reached temperatures of 1° C in the southern part. These phenomena gave rise to an increase in the isotherm to 0° C and the retreat of 48 out of the 50 existing glaciers. The retreat is also observed in the Cumana zone.

29. Key consequences of the trends and characteristics described above can be summarized as follows:

- (a) Changes in water balance and hydrology across the central and north-eastern part of the country;
- (b) Increase in rainfall resulting in a westward shift of the isohyets corresponding to dry land farming;
- (c) More frequent flooding of the Parana River giving rise to significant losses in the agricultural sector and the need to plan huge livestock evacuations, particularly in the southern part of the *Entre Ríos* province;
- (d) Disruption of the land transport network – rural roads become impassable about 60 days a year – complicating farming and the delivery of products;
- (e) In the north-eastern part of the country there has been a generalized increase in the average annual rainfall and a greater internal variability, adversely affecting agriculture;
- (f) In the region of Cumana, the average river flows have decreased since the 1980s by between 50 per cent and 60 per cent (San Juan, de los Patos, Atuel, Mendoza and Tunuyán rivers), increasing the risk of water shortages;
- (g) In the region of Comahue, during the past 20 years the average stream flows have decreased by about 30 per cent, adversely affecting the generation of hydroelectric energy;
- (h) On the other hand, an increase in average temperature brings forward the process of snow fusion, increasing both stream flows and flooding risks and mudslides in spring;

- (i) According with Swiss Re (October, 2016)³² over the past 50 years, 75 major flood events have been reported in the country, affecting around 13 million people and taking more than 500 lives;
- (j) With the equivalent of USD 22.5 billion lost since 1980, floods are the costliest natural catastrophe affecting the country.

Vulnerable groups and gender aspects

30. Flooding is a key source of vulnerability in many parts of Argentina, especially in the flood plains of rivers. Most of the population living in flood-prone areas is concentrated in the Greater Buenos Aires, Pampas and Gran Chaco regions, which together account for 65 per cent of the highly-exposed population. According to a statement in the FP, one in three Argentinians currently live in areas highly exposed to flooding, amounting to a total of 14.2 million people across the country who are vulnerable. Among this vulnerable people are women. Although no gender engagement plans were articulated in the FP, in a gender study included in the annex it was stated that the project will have a POM, whose presentation is required for the fulfilment of the conditions prior to the first disbursement. For the scope of the project, it was stated that the POM is considered as the appropriate tool for introducing the gender perspective.

Need for alternative source of financing

31. The financial resources of PBA are traditionally available for this adaptation intervention. However, this resource is inadequate to fund the entire project as presented, and as such, there is a need for additional sources of funds. Currently the main source of financing in PBA is long-term bonds with an average maturity of 8 years and rate of interest of 9.125 per cent.

32. These conditions are unsuitable for the success of the project, which will need to have a lower interest rate and longer maturity that will be mixed with the PBA sources. Another very important need is that the financial structure of the project should be in accordance with PBA capacity of payment. Towards this end, the following factors need to be satisfied by the financial structure of the project: (a) the structure should provide long repayment and grace periods and the debt maturity of the project should not match the current PBA debt maturity; and (b) the structure should provide interest rates that will enable PBA to reduce funding costs.

33. To this end, new funding sources such as that from the GCF and Corporacion Andina de Fomento (CAF) (the development bank of Latin America) are needed, because this is the first time PBA has structured a project on adaptation to climate change.

Institutional strengthening

34. The project implementation as presented in the FP covers the further development/capacity-building of the recently created institution, COMILU and the Provincial Directorate for Maintenance. The capacity-building will cover: the development of a highly skilled management team for the implementation of non-structural measures and with solid ability to undertake permanent interaction with all stakeholders in the river basin – for COMILU; and an increased capability and knowledge base to maintain infrastructure covering a large area and dealing with a wide variety of works and water bodies, channels, reservoirs, lakes, dams, floating lock gates, and so on.

35. Given the discussions above, the independent TAP has rated the need for this project by the recipient as “High”.

³² Swiss Re. 2016. *Staying Afloat. Flood Risk in Argentina*. Expertise publication. October 6, 2016. Available at: <http://www.swissre.com/library/expertise-publication/mantenerse_a_flote_el_riesgo_de_inundacion_en_argentina_long_version.html>.

1.5 Country ownership

Scale: High

Alignment with priorities in the country's national climate strategy

36. Argentina has submitted three national communications to the UNFCCC secretariat so far, with each accentuating: the country's vulnerability to climate change; the country's national greenhouse gas (GHG) inventory; and the country's position on adaptation measures that it considers to be a priority in its national adaptation programme. Key adaptation priorities as listed in the FP, which Argentina intends to consider include:

- (a) Introduce the expected climate change effects into the parameters for the design of infrastructure works, in particular those related to water management and construction of embankments to avoid floods;
- (b) Update laws and land-use plans taking into account expected climate changes, introducing statutes on land use based on flood risk maps under current and forecasted climate conditions; and
- (c) Aim at having land-use plans that take into account climate changes to avoid or mitigate undesired consequences over human settlements. This is relevant for developments along maritime coastlines and riverbanks.

37. Two out of the main seven adaptation measures considered in the INDC document submitted by Argentina to the UNFCCC prior to the Paris negotiation in 2015 directly relate to the Lujan River Project. These are:

- (a) Intensifying and broadening EWS for heavy rains, floods and hot weather, and systems for response to and recovery from climate disasters; and
- (b) Implementing structural and non-structural measures to address extreme events.

38. It can therefore be concluded that the Lujan River Project, which is the first adaptation climate change project to receive public funds and reflecting Argentina's commitment to comply with international commitments made on climate change adaptation, is in alignment with the national climate strategy of Argentina. A no-objection letter for this project has been issued for this project by the Government of Argentina.

Capacity of accredited and executing entities to deliver

39. CAF is the accredited entity (AE) for this project. In the past five and a half years, CAF has disbursed 98 loans, approved USD 4.652 billion and made disbursements amounting to USD 3.471 billion devoted to projects in Argentina, reflecting a high degree of experience in dealing with this kind of project and valuable country experience. Ongoing projects in Argentina that are being funded by CAF include: sanitation projects in the provinces of the northern parts of Argentina, with loans amounting to USD 240 million with an additional new loan of USD 70 million at the conclusion stages; the first phase of basic works on drinking water implemented by an agency called AySA is being disbursed, and is pending the conclusion of a new loan agreement for the second phase for USD 240.5 million. Considering these past and ongoing funding activities of projects by CAF in Argentina, it can be concluded that CAF has the capacity to handle this Lujan Basin intervention.

40. The executing entity for this project is PBA through the Ministry of Infrastructure and Public Services and the Under-Secretary of Finance from the Ministry of Economy. PBA has extensive experience of implementing projects and programmes funded by multilateral organizations. In the past ten years, the Government of PBA has concluded projects and programmes with international funding amounting to USD 1.0 billion, covering drinking water supply and sewage and drainage networks. PBA has ongoing projects for USD 570 million and over USD 1.5 billion in the pipeline. In the past five years PBA has implemented an average of

USD 92 million per year in water and sanitation projects. To synergize with these experiences, PBA has set up the new entity, COMILU, specifically to manage this project and to act as the main entity to interact with various stakeholders. It is also the plan that another local agency, the Directorate of Provincial Maintenance will provide the maintenance aspect of the programme. The capacity of these two agencies will be strengthened as part of this project, which will involve providing them with structures and mechanisms to discharge their duties and reinforce capacity-building.

Engagement with civil society organizations and other relevant stakeholders

41. During the preparation phase of the programme, PBA (through COMILU) held meetings with all districts integrating the upper and lower parts of the river basin. PBA also conducted the following two presentations and preliminary consultations:
 - (a) Eight meetings were held in five municipalities from February to May 2015 with the Advisory Commission of the Lujan River Basin. A summary of the process and feedback from the meetings has been presented to the GCF in the feedback sent on 2 February 2017; and
 - (b) From May to June 2016 three workshops were held to incorporate risk management strategies in the local context with emphasis on the floods in the basin. These workshops included technical site visits with municipal authorities (Suipacha, Lujan, Pilar, Campana, Exaltación de la Cruz, Escobar, San Andrés de Giles, Tigre and Mercedes), provincial authorities (Provincial Water Authority, OPDS, Land Planning, Security and Social Development) and technical staff, as well as representations from civil society organizations.
42. In 2016, COMILU held meetings in the municipalities of Lujan, Mercedes and Pilar with all districts (15) that are part of the Lujan River Basin, during which both structural and non-structural measures of the Master Plan were presented and discussed.
43. Additional stakeholder engagement events have been held by PBA in August 2017 to inform and receive opinion from key stakeholders of the Lujan River Basin on the project and its submission to the GCF. Meetings were held with representatives from civil society, communities, and national, provincial and local governments.
44. During project execution, a community relationship strategy will be developed for each work [package], identifying and prioritizing the particular social actors for each one, as well as determining their interests and concerns, building on the basis of initial stakeholder engagement initiated by the PBA, to present the project to civil society and community representatives.
45. Also, appropriate channels of communication, dissemination and participation will be established. The Community Relations Plan, which is included in the environmental and social management framework will be implemented.
46. The GCF national designated entity (NDE) for Argentina, the National Directorate for Projects with International Lending Institutions of the Argentine Ministry of Finance and Economy, has given approval to the PBA to structure the funding of this intervention through the innovative reimbursable instrument. The NDE has also provided a no-objection letter for this project.
47. The independent TAP has therefore concluded that, based on the discussions above, this submission can be ranked as “High” on the country ownership metrics.

1.6 Efficiency and effectiveness

Scale: Medium

48. The economic and financial soundness of the project are considered along the following metrics:

Cost-effectiveness and efficiency

49. The proposal states that of a total of USD 315.36million will be needed to implement both the structural and non-structural components of this project. It is noted by the independent TAP that USD 275.96 million of the total has been earmarked for funding the structural components of the project. A sum of USD 1.18 million has been earmarked for engineering and other studies. According to interactions with the AE, that sum of USD 1.18 million has been earmarked for: the review of the engineering concept of the project, which was articulated in the project feasibility study made available as an annex; and the development of a bidding document for the preparation of the detailed engineering design of the works as well as for the actual construction of the project. Since all these will occur after the approval by the Board of the GCF, the independent TAP notes that an inefficient concept as contained in the engineering specifications of the infrastructure component of the project may lead to a risk of failure, if a comprehensive review of the Feasibility Report is not carried out before the bidding process (for detailed engineering and construction). CAF informed the independent TAP that due diligence was carried out on the Feasibility Report and that the in-house report was prepared by an engineering firm that concluded that the Feasibility Report was effectively implemented. The independent TAP is therefore of the opinion that the risk of project failure is likely to be ameliorated if the entire recommendations of the due diligence consultant are implemented.

Financial viability

50. The following table presents the breakdown of funding for the project and expected returns associated with the three financial instruments proposed, as described in the proposal:³³

Financial instrument/ source	Amount (million USD)	Annual interest rate/fee (%)	Grace period (years)	Tenor (years)
Senior long-term loan/GCF	59.96	0.75	5	20
Reimbursable grant/GCF	1.57	NA	NA	NA
Co-financing loan A/CAF	100.00	<i>Confidential</i>		
Co-financing loan B/CAF	64.90	<i>Confidential</i>		
Equity co-financing/PBA	91.90	NA	NA	NA

Abbreviation: NA = not applicable.

51. The financial viability of this project is heavily dependent on the availability of alternative funding sources compared with the high interest rate and short tenor that has attended PBA funding of projects in the past. Therefore, access to concessional GCF funds and funds from CAF are paramount to the sound financial structure for implementing the project. This will enable the project to achieve economic, social and environmental benefits within the agreed timeframe.

52. Regarding financial viability beyond programme implementation, the success of this intervention, including the successful development of institutional infrastructure that will be in COMILU, will enable PBA to attract funding from different sources.

53. The sustainability of the programme depends, above all, on the results obtained in its implementation in terms of financial viability.

³³ FP, pages 3–7.

Application of best practices

54. The fact that the project implementation will involve both structural and non-structural measures for the integrated management of the river basin is best practice compared with similar interventions in recent past. This comprehensive plan facilitates the project follow-up beyond 5 years contemplated for implementation of structural measures.

55. Regarding structural measures, eight alternatives were considered and their assessment took into account technical aspects of civil works, environmental conditions and economic and financial optimization. In other words, all relevant aspects of any project of this kind were taken into account to select the best possible alternative

56. On the other hand, works for temporary retention of water surpluses (ARTEH), which allow for the control of stream flows and reducing the floods that result from the poor conveying capacity of the river were included among the structural measures. This is part of the project best practices.

57. In spite of the descriptions above, the efficiency and effectiveness metrics have been scored as “Medium” due to the fact that an independent review of the engineering component of the Feasibility Report suggested some key interventions that must be built into the implementation of the structural measures of this intervention. Although CAF accepted these independent suggestions, their inclusion in the implementation programme will guarantee the success of the interventions to mitigate flooding in the basin. Hence, given that the implementation of these measures can only be guaranteed if they are included in the later detailed engineering of the interventions (which will only be carried out after the project has commenced), the independent TAP can only score the efficiency and effectiveness metrics as of the time of this review at the “Medium” level.

II. Overall remarks from the independent Technical Advisory Panel

58. The independent TAP recommends that the Board consider this proposal for approval.

59. The proposal as presented scored very high in five of the six GCF metrics. The effectiveness and efficiency metric, however, has been scored as “Medium”. The efficiency and effectiveness of the intervention is a direct function of the success of the implemented measures aimed at reducing and/or preventing river flooding, as well as controlling stream flows and mitigating the impact of floods in the Lujan River Basin. A key basis of the success is the quality of the preliminary engineering of the facilities included in the Feasibility Report. CAF engaged an independent consultant who carried out due diligence on the quality of the Feasibility Report and gave the preliminary engineering a pass mark. The consultant who carried out the due diligence review also recommended the inclusion of additional measures as part of project implementation to ensure the success of the intervention.

60. CAF accepted the report of this due diligence and the recommendations of the due diligence consultant and proceeded with the planning of the implementation of the project; the independent TAP interacted with CAF on this issue during and after the review meeting. CAF informed the independent TAP (with a written disclosure) that the additional measures recommended by the due diligence consultant were incorporated into the submitted FP and will be implemented.

61. Although the independent TAP confirmed the inclusion of these additional recommendations in the FP, given the fact that the success of the infrastructure intervention will be guaranteed [only] by the inclusion of these additional measures in the implementation plan, it is hereby recommended that evidence of the inclusion of the due diligence recommendations in the final detailed engineering design of the projects should be presented to the GCF Secretariat before the start of construction of the facilities.

Independent Technical Advisory Panel's review of FP055

Proposal name:	Poverty, Reforestation, Energy and Climate Change (PROEZA) project
Accredited Entity:	Food and Agriculture Organization
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium

1. As the title of the funding proposal makes clear, the leading component of the proposal is poverty reduction. Most poor and extremely poor households are targeted by the project in 64 municipal districts located in eight *departamentos* (departments) of eastern Paraguay. The concept of the project is to introduce a climate change component into ordinary public social protection programmes and to improve the income level of local poor households.
2. The Poverty, Reforestation, Energy and Climate Change (PROEZA) project has three components targeting three different groups: socially vulnerable populations and their involvement in a programme to reduce deforestation; private farmers and strengthening the sustainability of their involvement in the afforestation process; and the public sector for strengthening the country's capacity to implement climate change related programmes and projects at the local (municipal and department) level.
3. The first and most important component, where 92 per cent of GCF money will be invested, is called "Planting the Future" and focuses on socially vulnerable households living in poverty. This population receives support through the Government's social protection programme "*Sembrando Oportunidades*" (the national programme to reduce extreme poverty). The project offers technical support and economic incentives to 30,000 poor and extremely poor households (153,000 people) to establish climate-smart agroforestry production systems and/or multifunctional "close to nature" planted forests on their land, totalling approximately 24,460 hectares (ha). This initiative, along with the distribution of energy-efficient cooking stoves, should increase the carbon stock and reduce the deforestation caused by inefficient use of wood stoves.
4. The second component, called "Sustainable Landscapes", is financed by the Government of Paraguay with concessional loans provided through public financial entities. Under this component, the Government of Paraguay will offer some land owners (medium size; around 300 ha each) incentive to increase the production of sustainable forest biomass in an environmentally sustainable way, adopting certified "New Generation Forest Plantations" through which high-yield forest plantations will be combined with natural forests in biodiversity reserves and watershed protection strips. Encouraging a larger proportion of native species compared with fast-growing non-native species is one of the criteria (among others) for qualifying for this concessional loan and the Government's incentive.
5. The third component, "good governance and law enforcement", aims at strengthening the capacity of national and local governments for the smooth implementation of climate change related programmes identified in the nationally determined contribution (NDC) action plan and the enforcement of Laws through various incentives.
6. It should be highlighted that, in case of the project success, the social impact of this project might be higher than climate change mitigation or adaptation impacts because the results achieved by both of these key GCF areas finally contribute to improvement of the social

component of the project integrated in the component 1 and targeted poor population. Figures in paragraph 3 of the proposal show that the share of direct beneficiaries is no more than 2 per cent and, with the inclusion of indirect beneficiaries (141,306) as well from the similar social aid programmes, it reaches 4 per cent.

7. Calculated mitigation impact equals, on average, 338,235 tonnes of carbon dioxide equivalent (t CO₂ eq) saved annually which is 0.3 per cent of the land use, land-use change and forestry (LULUCF) sector emissions of Paraguay. Calculations are based on a 30-year cycle and the harvesting cycles are also taken into consideration. This amount consists of increased carbon stock and the deforestation avoided because of the distribution of energy-efficient stoves and substituting oil fuel with sustainable biomass fuel.

8. The adaptation component is not sufficiently justified in the proposal. It lacks information on the current trends of climatic parameters at the local level that may have adverse impacts on agriculture, forestry and so on, which should be the basis for an assessment of the relevance of adaptation measures considered by component 1. The proposal does report anticipated positive changes in the considered ecosystems and mentions the potential climate change adaptation impact that could be confirmed based on common worldwide experience, but the real impact depends on proper diagnosis of climate impact at the local level which is not demonstrated in the proposal.

1.2 Paradigm shift potential

Scale: High

9. Increased inclusiveness is a key merit of the project. Based on this, the paradigm shift at the conceptual level and in particular, for the social component of the project is very high. This approach – targeting of a specific group of the population that is usually excluded from many of the global processes and encouraging their participation and voluntarily contribution to such important process as the abatement of global warming and its impact– demonstrates the opportunity to the poor population to make contribution to global process equally to other groups.

10. Integrating the climate change element into social aid in such way that it becomes a source for the generation of additional income and increasing the carbon stock (i.e. as a public good) is also innovative, and could therefore be replicated in other countries that have a large proportion the population who are poor or extremely poor, even if deforestation and land degradation are not the main targets in those countries. The replication potential of this concept is high in Paraguay (perhaps unfortunately so) because it has various conditional and non-conditional social programmes and a significant share of the population who are poor or extremely poor.

11. However, it should be recognized that mitigation potential quoted in figures for such paradigm shift processes is always limited.

1.3 Sustainable development potential

Scale: High

12. This proposal is a model of sustainable development in rural areas that are fully dependent on their local environment. The proposal has all three elements of sustainable development: environmental, social and economic. The scale of sustainable model is small and the leading element is social, nevertheless it contributes to environmental aspects (not only to climate change but to other environmental issues such as maintain local biodiversity) and to income generation through the production of sustainable biomass and increasing productivity.

1.4 Needs of the recipient

Scale: High

13. The highest need Paraguay has is in development and the eradication of poverty. While per capita income in Paraguay grew by 22 per cent between 2003 and 2011, extreme poverty remained persistently high. By 2013, moderate poverty fell to 24 per cent, extreme poverty reached a historical low of 10 per cent, and income inequality index dropped below 0.48 for the first time in the last fifteen years. However, two main challenges to the sustainability of poverty reduction are: the vulnerability of the poor and near-poor; and inequality of opportunity for the poor. Non-labour income, especially public cash transfers under the social protection programme *Sembrando Oportunidades*, which includes the programmes *Tekoporã*, *Tenonderã* and *Adultos Mayores*, account for one third of the decrease in rural poverty. As of February 2017, the Tekoporã database reports 141,306 households, approximately 10 per cent of the country's population.
14. As reported in the funding proposal, the CAF (Development Bank of Latin America) study "Index of Vulnerability and Adaptation to Climate Change in the Latin American and Caribbean Region" places Paraguay in the category of "extreme risk", ranking eighth out of 33 countries in the region. These results are partly due to high levels of poverty and inequality in the country as well as the economy's high dependence on the environment (in particular, forests), which make Paraguay extremely vulnerable to climatic variability and extremes.
15. Paraguay's expanding agricultural activity and its heavy dependence on unsustainable fuelwood have contributed to globally high rates of deforestation, reducing native Atlantic forests in Paraguay by 95 per cent. The sustainability of Paraguay's growth model is under threat from environmental degradation. Agricultural expansion and fuelwood harvesting are contributing to one of the highest deforestation rates in the world (over 290,000 ha or 1.5 per cent per year, between 2005 and 2015) according to the national forest inventory (2015).
16. As reported in the first biennial updated report of Paraguay submitted to the UNFCCC in December 2015, 71 per cent of the country's greenhouse gas (GHG) emissions are from the LULUCF sector and it is logical that the country is involved in designing of a national REDD-plus programme. Government institutions such as the National Forest Institute (INFONA) and the Environment Department (SEAM) are intensively involved in the development of the national REDD-plus process/programme. Indeed, the REDD-plus programme was actively involved and supported development of this proposal, in particular, its component 1. The proposal has some elements of REDD-plus process (although this approach is not results-based payment but ex-ante based payment). This funding proposal could contribute to ensuring the inclusiveness of all stakeholders, including the extremely poor, to the implementation of the REDD-plus programme. In conclusion, the successful implementation of this proposal could contribute to the implementation of the NDC action plan.
17. The most urgent need reported by the proposal is increasing the executing capacity of the Government of Paraguay to manage climate change related projects and programmes requiring the coordination of different governmental institutions. Lack of executing capacity could be a significant impediment to the development and implementation of the NDC action plan. The third component of the proposal aims to increase the management capacity of different governmental and other public institutions.
18. Although there has been increased public attention and effort to reduce deforestation and improve water resources management in recent years, progress has been slow and uneven because of weak enforcement of environmental legislation/regulations and limited institutional capacity, with overlapping and at times conflicting institutional responsibilities and weak governance. Land-use change and forest degradation are the largest contributors to GHG emissions in the country; at the same time, according to the financial proposal, agriculture is highly vulnerable to climate variability and, coupled with land degradation, contributes to increased volatility. The emission reduction potential is large, particularly through improved

agricultural practices and reforestation. Carbon trading options are also worth exploring through continued efforts to develop the national REDD-plus programme.

1.5 Country ownership

Scale: High

19. *Sembrando Oportunidades* surveyed 260,602 households nationwide, of which 215,452 (83 per cent) are located in the eight departments of eastern Paraguay selected by PROEZA for their high social and environmental vulnerability.
20. The project falls in the priority target areas of the intended nationally determined contribution (INDC) of Paraguay. These target areas are:
 - (a) A 10 per cent emission reduction by 2030 below the projected emission level. This is an unconditional commitment made by the country and planned to be fulfilled through different national programmes such as the special programme established in 2009 with the original purpose of planting 14 million trees (the actual planting was more than 40 million trees planted throughout the country). The current goal of the programme is to recover 1 million ha of forests; and
 - (b) Sustainable forest management. In both the mitigation and adaptation parts of the INDC the forest sector is the priority. Regarding mitigation, the INDC document says that the sustainable management of forest ecosystems is to be promoted as well as reforestation activities to protect and create income, to ensure a reduction of the native forests loss and degradation process.

1.6 Efficiency and effectiveness

Scale: Medium

21. As explained in component 3, the effectiveness and efficiency of this proposal very much depends on the proper implementation and monitoring scheme which is a key component of the proposal. Along with the enforcement of forest sector legislation facilitating the afforestation process and drawing more private sector players to this process through different incentives, the implementation process management scheme is also highlighted in component 3 as an innovative scheme strengthening the executing capacity of the Government where the strong coordination is required between different governmental agencies (in this case: the Ministry of Planning for Economic and Social Development, which is the national designated authority; the Ministry of Agriculture and Livestock; INFONA; the Social Action Secretariat; the Vice-Ministry of Mines and Energy; SEAM; and the Paraguayan Institute for indigenous communities). Based on the broad consultations among government institutions and other stakeholders, the proposal implementation management scheme was developed and is submitted in the funding proposal where the executive role of public institutions and local expertise is demonstrated. However, the independent Technical Advisory Panel (TAP) is of the opinion that the scheme as it stands could not substantially improve the executing capacity of the local government, national and local institutions. Rather, for effective implementation of the proposal, the scheme should be appropriately revised. The lack of executing capacity (in coordination processes) in governmental institutions was identified as one of the areas where the proposal should focus a special effort, and the TAP recommends that the GCF Secretariat monitor this component of implementation, with the aim of further improvement of the scheme based on the findings of the initial stage of implementation. Particular attention to this component should focus on supporting the Government to increase capacity for the coordination and execution of climate change related programmes requesting the very close sectoral cooperation.
22. GCF grant allocated for the component 1 and 3 should save about 3 million t CO₂ eq over 10 years (initial 5 years of PROEZA project intervention and an additional 5 years continuation by the Government) which amounts to around USD 15 per t CO₂ eq. This price is higher than that

agreed by the GCF Board (USD 5/t CO₂eq for results-based payments in the forest sector) but the high value of social component of the project should be also taken into consideration. Based on this, the price could be considered as acceptable and efficient.

23. The GCF intervention period is 5 years, while the Government of Paraguay is pursuing a total intervention period of 10 years. With a USD 44.5 million investment from the GCF, the Government committed to mobilize in this initial 5 years USD 24.80 million from the Social Action Secretariat, SEAM and INFONA. Also, for component 2, the National Development Bank and the Development Financial Agency will ensure the availability of USD 49.33 million through national concessional loans for private sector, focusing mainly on mitigation. As the Government is pursuing a total intervention period of 10 years including the PROEZA phase (5 years), it is expecting to leverage USD 213.3 million additionally in the second 5 years, which amounts to USD 287.4 million for the 10 years. This corresponds to a ratio of 1:6.5 in resource leverage, which is quite effective for the country having a high share of its population in the poor category.

II. Overall remarks from the independent Technical Advisory Panel

24. The independent TAP recommends the funding proposal for approval by the Board subject to the condition that the implementation scheme provided in the funding proposal significantly demonstrates how the project execution will strengthen the executing capacity of the national agencies prior to the signing of the funded activity agreement.

25. Taking into consideration the crucial role of component 3 of the project in the fulfilment of the NDC and its action plan, the independent TAP also recommends that the accredited entity highlight in its periodic reports to the GCF the progress achieved in component 3 and, in particular, in increasing the executing capacities of governmental structures.

Independent Technical Advisory Panel's review of FP056

Proposal name:	Scaling up climate-resilient water management practices for vulnerable communities in La Mojana
Accredited entity:	United Nations Development Programme
Project size:	Medium

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium

Adaptation impact

1. The project aims to reduce climate-related vulnerability in La Mojana region through a series of activities involving:
 - (a) the development, integration and dissemination of climate-related knowledge and information;
 - (b) the improvement of water provision infrastructure and ecosystem restoration;
 - (c) the enhancement of the existent early warning system; and
 - (d) research on and promotion of agro-diverse climate-resilient livelihoods.
2. La Mojana region, a vast wetland area that has suffered from flooding and droughts, has a population of approximately 400,000, 50 per cent of which is rural population, and has a poverty percentage of almost 84 per cent.
3. According to the funding proposal, the direct beneficiaries were estimated at 203,819 people, which accounts for the total rural population of La Mojana region. This is 0.42 per cent of the total population of Colombia. These beneficiaries would benefit from activities related to improved water provision, ecosystem restoration plans, promotion of ecosystem-compatible livelihoods, and rural extension programmes. Indirect beneficiaries were estimated at 201,707 people, which accounts for the total urban population of La Mojana region, who will be benefited by the enhanced early warning system.³⁴
4. According to the funding proposal, approximately 100,000 people could benefit from the improvement of water provision infrastructure. The continuity of the operation and maintenance (O&M) of these systems, particularly the small aqueducts proposed, is important in order to maximize impact potential and to guarantee sustainability. During an interview with the independent Technical Advisory Panel (iTAP), the project proponents explained the mechanisms to be implemented to achieve this O&M objective. The iTAP considers it important to ensure that the O&M scheme empowers local communities and institutions to adequately manage the project investments. The knowledge management component will include support to community water associations through capacity-building activities to ensure their capability on operating and maintaining the rainwater harvesting and storage facilities and the community water provision systems (the so-called micro-aqueducts).
5. The impact potential of installing drinking water systems (whether through rainwater harvesting or through micro-aqueducts) is higher when combined with sanitation measures

³⁴ Funding proposal, page 45.

(e.g. latrines, faecal management schemes, hand-washing training). The project proponents provided information on this, indicating that sanitation measures in this area have been carried out by separate activities by the Government under an approved master plan.

6. If effectively implemented, the project activities have the potential to significantly reduce the exposure of the targeted population to climate risks.

7. Through the implementation of Component 3, generation and use of climate information could be improved in the region. This component consists of the enhancement of the existent early warning system and includes the acquisition of radio communication equipment, three new hydrological stations, two climatological stations, forecasting software, the refurbishment of two existent hydrological stations, and the provision of capacity-building on early warning system protocols and mobilization strategies, the design of emergency evacuation plans and the generation of monthly agro-bulletins, real time information products, alert bulletins at an hour, daily and weekly basis, and 1, 3, and 6-month weather and climate prediction bulletins.³⁵

8. Regarding institutional strengthening for climate-responsive planning, Component 1 of the proposed project includes the development of technical models, a data bank on adaptive water management, and guidelines for decision makers to ensure the systemization of knowledge for use as a planning tool.³⁶

9. In order to tackle one of the most important drivers of ecosystem degradation in the region, project activities include the development of a code of good practice for cattle livestock in wetlands.³⁷ This will add to the strengthening of the regulatory system. The iTAP considers that it would be important to understand how will this code will change the behaviour of cattle rangers towards drying wetland areas and who will supervise its effectiveness.

10. The establishment of almost 5,000 home gardens, as contemplated under Component 4, has a great potential to increase food security, reduce malnutrition, and improve climate resiliency.

11. In terms of agroecological systems, the project is providing an extension service programme that is intended to be managed with local universities. However, it is not clear if the programme will provide the resources and tools to farmers to support more sustainable agroecological productive options.

12. As in other cases, the cause of the increase in droughts and floods in the past decades is likely to be the result of a combination of deforestation and the effects of climate change.

13. The Steering Committee for this project is composed of 10 institutions that will steer the executive agency, the National Adaptation Fund. The iTAP notes that it is unclear how so many institutions will manage to be in agreement to provide efficient management of this project.

1.2 Paradigm shift potential

Scale: High

14. The project will invest the majority of resources in mini-aqueducts and rural extension services to support agro-ecological systems. These types of investments are conventional, but if well-developed could improve the quality of life of communities. However, rainwater harvesting is not common in the region and nor is the proposed ecosystem-based approach for enhancing climate resiliency through wetland restoration and reconditioning of channels. These aspects of the proposal represent a considerable paradigm shift for La Mojana.

³⁵ Funding proposal, page 32.

³⁶ Funding proposal, page 21

³⁷ Funding proposal, page 30.

Potential for knowledge and learning

15. The project manager will be responsible for project monitoring and evaluation, which will be done in compliance with the United Nations Development Programme (UNDP) Programme and Operations Policies and Procedures and the UNDP Evaluation Policy. The results framework, reporting, monitoring and evaluation will be discussed during the inception workshop to be held after the UNDP project document has been signed by all relevant parties, during which the monitoring and evaluation plan is to be finalized.

16. Reporting products will include an annual project implementation report, an independent mid-term review process, and an independent terminal evaluation.³⁸

17. The creation of the data bank on adaptive water management will help to systematize lessons learned. The knowledge gained during the project implementation and integrated into the data bank will be shared with relevant stakeholders through workshops, web courses, workbooks and planning guides.³

18. The most innovative aspect of the proposed project resides on the ecosystem-based approach for enhancing climate resiliency through wetland restoration and reconditioning of channels. The Government has invested resources since the flooding of 2010–11 for this purpose. It would be important to understand the impacts of the investments so far and the linkages between the different programmes currently envisaged at La Mojana. Restoration activities will improve the provision of ecosystem services such as water purification, flood abatement, groundwater recharge and microclimate regulation. The implementation of best practices for agro-productive activities in wetland ecosystems will also have a positive effect on ecosystem services and economic income for communities, if concrete investments to support farmers are delivered beyond extension services.

Contribution to the creation of an enabling environment

19. The project elements intended to ensure the long-term sustainability of project outcomes include:

- (a) leveraging of community co-investments for installation and O&M of water infrastructure, home gardens and wetlands restoration processes;
- (b) strengthening of community-based associations;
- (c) the establishment of a regional inter-agency water board;
- (d) partnerships with regional and national universities and research centres for the long-term and continuous provision of training programmes;
- (e) the promotion of entrepreneurship among communities and producer associations to increase income sources;
- (f) support to municipal and regional authorities to ensure O&M costs are taken into account in their budgetary planning; and
- (g) the prioritization of low-maintenance technical solutions.³⁹

20. Municipalities currently spend USD 6, 800 per month to maintain the current pumping systems. Money saved by using solar panels to power the water extraction pumps will allow municipalities to further invest in system maintenance.⁴⁰

³⁸ Funding proposal, page 84.

³⁹ Funding proposal, page 42.

⁴⁰ Please see paragraph 4, above, on the sustainability of these systems. Also in funding proposal, page 25.

21. Hydro-climatological stations will be integrated into the network of the Institute of Hydrology, Meteorology and Environmental Studies (IDEAM), therefore O&M costs of the new stations will be taken care by the institution and by the University of Cordoba and the Regional Corporation for the Sinú and San Jorge Rivers' Valleys (CVS) that will use the information collected.⁴¹

22. Annex XIII (g) of the funding proposal package presents a detailed description of considerations regarding O&M costs for a 20-year life-span for water provision infrastructure, wetland management and hydro-climatological equipment. The iTAP reviewed these figures and found them to be reasonable for these tasks.

23. Component 2 includes the development of market assessments and investigations on the potential for livelihood diversification presented by the agro-ecological systems, with the objective of identifying and consequently promoting the implementation of climate-resilient economic opportunities in line with the community wetland restoration plans.⁴² If alternative agricultural practices are successfully developed, it will encourage private investment in the sector, contributing to long-term sustainability.

Contribution to the regulatory framework and policies

24. The proposed project will contribute to the enactment of the following laws:

- (a) National Code of Renewable Natural Resources (Law 2811 of 1974), which aims at achieving the preservation and restoration of the environment and the conservation, improvement and rational use of renewable natural resources;
- (b) National System for Disaster Risk Management (Law 1523 of 2012), aimed at ensuring adequate disaster risk management, through the establishment of public, private and community institutions, pertaining policies, standards, processes, resources, plans, strategies, tools and mechanisms; and
- (c) National System of Climate Change (SISCLIMA), which encourages the development of policies, plans, programmes, incentives, projects and methodologies in the field of climate change, in order to achieve the inclusion of climate variables in the design and planning of development projects.⁴³

Potential for scaling up and replication

25. The generation of a knowledge base under Component 1 and the involvement of national level agencies will facilitate the scaling up and replication of the proposed project on other wetland areas in Colombia. A clear description of a theory of change for the replication of the project activities is presented in the funding proposal.⁴⁴

26. The results from the research activities on alternative climate-smart agricultural practices will help promote this kind of productive practices in other regions with similar environmental conditions.

⁴¹ Funding proposal, page 43.

⁴² Funding proposal, page 29.

⁴³ [Funding proposal, annex II] Feasibility Study, pages 83 to 85.

⁴⁴ Funding proposal, page 49.

1.3 Sustainable development potential

Scale: High

Environmental co-benefits

27. As a result of wetland and channels restoration and conservation activities, and the implementation of climate-smart agro-diverse practices, the proposed project could entail environmental co-benefits including:

- (a) reduced erosion of agricultural land and riverbanks and reduced siltation of wetland channels;
- (b) improved microclimate;
- (c) improved water quality;
- (d) increased biodiversity; and
- (e) enhanced carbon storage.

Social co-benefits

28. Project activities will increase water and food security through the provision of climate-resilient water infrastructure, the establishment of home gardens and the promotion of agro-diverse practices.

29. The water provision infrastructure to be installed will ensure the continuous availability of water and reduce the risk of water contamination during floods, thereby contributing to improved health conditions. Home gardens will also improve health conditions by allowing direct access to a more diverse and independent food sources.

Economic co-benefits

30. The implementation of alternative livelihoods and the improved efficiency of agricultural productivity thanks to capacity-building activities and to a more efficient seasonal weather forecasting and early warning system will help to increase household incomes.

31. The surplus production in home gardens can be sold to serve as auxiliary income.

32. Water availability will represent savings on transport, because the families usually rent motorbikes to transport water from distant locations in cases of water shortage.

33. Restored wetland and reconditioned channels are expected to improve crop, livestock and fish production, due to their drought and flood regulation function.

34. Works related to water infrastructure, wetland restoration and channel reconditioning will create temporary employment opportunities for locals.

35. The reduced incidence of disasters thanks to the drought and flood regulation function of wetland and channels is expected to reduce the annual expected loss in La Mojana by 78 per cent.⁴⁵

36. Health benefits mentioned under social co-benefits (above) will reduce expenses of the national health system.

Gender-sensitive development impact

37. The present proposal recognizes the relatively high vulnerability of women in the targeted area regarding employment opportunities, technical assistance in relation to

⁴⁵ Funding proposal, pages 52 and 53.

agricultural activities and access to loans. Therefore, female-headed households are prioritized for the establishment of home gardens and rainwater harvesting infrastructure.⁴⁶

38. Wetland restoration plans also prioritize the participation of women's organizations on the implementation and monitoring activities. Thirty-five women's organizations were identified to receive training on wetland management and adaptive agro-productive activities.⁴⁷

39. A detailed gender action plan is included as an annex to the funding proposal.

1.4 Needs of the recipient

Scale: High

Vulnerability of the country

40. La Mojana is located in a large floodplain between the northern foothills of the Andes and the plains in the Caribbean region, with annual precipitation varying between 1,000 mm and 4,500 mm. For this reason, La Mojana is greatly vulnerable to floods. According to IDEAM, 74.8 per cent of La Mojana is susceptible to flooding and has a high percentage of area with high vulnerability (60 per cent). During the flooding events of 2010 and 2011, 11 towns were affected. The National Disaster Management Unit (UNGRD) reported 180,569 people affected, 19 health centres destroyed, 180 educational sites affected, 9,395 homes destroyed and 316,641 hectares affected.⁴⁸

41. The region is also significantly vulnerable to droughts. In the drought of 2015 and 2016, at a national level more than 200 towns were declared in emergency due to water shortages. According to the report by UNGRD, the effects of the drought reached 719 municipalities in 28 departments of the country and 367 municipalities were declared in public emergency due to partial shortages and water rationing, in addition to the impacts on agriculture and forest fires.⁴⁸

42. According to Government statistics, in 2005 almost 84 per cent of the population of La Mojana was classified as poor, and only 49 per cent had access to health services.

43. Over 42 per cent of the population has no access to drinking water and, where water is available, the access is extremely unequal. [For example,] 20 per cent of the population in Magangué lack access to water. In contrast, more than 80 per cent of the population in Achi, Ayapel and San Jacinto del Cauca do not have access to safe water.⁴⁹

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

44. The regional economy is highly dependent on agriculture. The main economic activities are livestock production, followed by silvo-pastoral systems, agricultural production and fishing and hunting. In terms of land use by activity, 70 per cent of the land is under pasture followed by 24 per cent under traditional and mechanized rice production.⁵⁰

45. Paradoxically, agricultural activity constitutes a main driver of floods by undermining the natural water regulating function of the ecosystem.

46. The average illiteracy rate in La Mojana is 42 per cent, which is double the national average of 19 per cent.

⁴⁶ Funding proposal, page 54.

⁴⁷ Funding proposal, page 30.

⁴⁸ Funding proposal, page 56.

⁴⁹ Funding proposal, page 8.

⁵⁰ Funding proposal, page 9.

Absence of alternative source of financing

47. The Government of Colombia has allocated approximately USD 70 million for the adaptation action plan for La Mojana, but still falls short. As the proposed project is not profitable and has a public service nature, finding private investors is not plausible.

The need for strengthening institutions and implementation capacity

48. Economic activity in the region is predominantly informal and for this reason tax collection is very low. The financial capacity of municipalities is limited, and the level of institutional development is low. Project activities will address these barriers by strengthening producer associations and upmarket linkages, and supporting municipal-level development planning processes.⁴⁸

1.5 Country ownership

Scale: High

Alignment with priorities in the country's national climate strategy

49. The National Development Plan contemplates green growth as one of main cross-cutting strategies. Climate change adaptation and disaster risk reduction is one of the three goals of the green growth strategy.

50. The proposed project is also in-line with the national policies for land-use planning, agriculture and water resource management, and the sectoral guidelines of the National Plan for Adaptation to Climate Change (PNACC), directly related to Colombia's (intended) nationally determined contribution.⁵¹

Capacity of accredited or executing entities to deliver

51. The accredited entity is the UNDP, which has extensive experience in this kind of projects. The work of the UNDP's work in Colombia includes supporting the implementation of at least 32 projects related to enhancing biodiversity, sustainable energy, sustainable land management and forestry, climate change adaptation, and disaster risk reduction. UNDP also participated in the development of the PNACC and the National Low Carbon Strategy.⁵²

52. The executing entity is the National Adaptation Fund (NAF). The NAF was created in response to the flooding events of 2010 – 2011 caused by La Niña phenomenon, which put the country in a state of economic, social and ecological emergency. The NAF manages public long-term investments on integrated projects for risk reduction and adaptation to climate change, with an annual budget of approximately USD 400,000. The NAF has been working on the design of La Mojana Action Plan since 2013.⁵³

Engagement with civil society organizations and other relevant stakeholders

53. The project is an initiative of the Government of Colombia, which requested, through the national designated authority, the support of the UNDP for the design and implementation of this project.

54. Consulted government sectors during project design include different technical divisions of the Department of National Planning and the Ministry of Environment and Sustainable Development, the Women's Council, IDEAM and relevant municipal authorities. Private sector associations, such as the Rice Producers Federation (FEDEARROZ) and the

⁵¹ Funding proposal, page 58.

⁵² Funding proposal, page 59.

⁵³ [Funding proposal, annex II] Feasibility Study, page 88.

Federation of Cattle-ranchers of Colombia (FEDEGAN) and regional autonomous corporations (e.g. CORPOMOJANA, CVS, South Bolivar Corporation) were also consulted.

55. The following non-governmental organizations (NGOs) and women organization were also consulted during the inception of the project: Ruta Pacifica, Ambiente y Sociedad, DeJusticia, Corporación Humanas, Sisma Mujer Corporation, Casa de la Mujer, Red Nacional de la Mujer.

56. Regarding the local population, meetings were held with 16 communities, where a total of 590 people participated, including small holders, producer associations and women’s organizations.

57. Zenú indigenous communities were also consulted. Meetings served to assess the potential impact of the project on their natural resources, discuss the relationship of the project with the cultural characteristics of the Zenú people, evaluate the need for capacity strengthening and to determine recommendations for project activities.

1.6 Efficiency and effectiveness

Scale: Medium

Cost-effectiveness and efficiency

58. The proposed financial structure is in-line with the project expenditure estimations.

59. The Government of Colombia will provide co-financing to cover approximately 65 per cent of project costs. Being of a public service, non-profit nature, GCF funding is not likely to crowd out private investment. The GCF investment will benefit 0.42 per cent of Colombia’s total population.

Financial viability

60. In the scenario with no GCF funding, loans from multi-national financing institutions (MFI) would be necessary. The following table presents the financial internal rate of return (FIRR), the weighted average cost of capital (WACC) and the net present value (NPV) with and without GCF funding, for each project activity:

Activity	Scenarios	FIRR	WACC	NPV
		%	%	USD
2.1.1	Scenario 1) No participation from GCF, MFI loans are arranged	8.52	21.06	-8,057,011
	Scenario 2) Government of Colombia co-financing supported by the GCF participation	16.51	6.60	13,062,411
2.1.2	Scenario 1) No participation from GCF, MFI loans are arranged	12.51	21.06	-8,087,498
	Scenario 2) Government of Colombia co-financing supported by the GCF participation	21.95	6.60	30,242,331
2.1.3	Scenario 1) No participation from GCF, MFI loans are arranged	10.87	21.06	-1,600,550
	Scenario 2) Government of Colombia co-financing supported by the GCF participation	19.62	6.60	4,247,541
4.2.1	Scenario 1) No participation from GCF, MFI loans are arranged	110.00	21.06	15,975,929
	Scenario 2) Government of Colombia co-financing supported by the GCF participation	75.00	6.60	63,355,774

61. As the table shows, the investments would only be financially viable with GCF funding.

62. Considerations on long-term financial sustainability are presented under the section “*Contribution to the creation of an enabling environment*”.

Application of best practices

63. The application of best practice depends on the knowledge and experience gained during the execution of the ongoing project *Reducing risk and vulnerability to climate change in the region of La Depresión Momposina in Colombia* implemented by the Ministry of Environment and the NAF in three municipalities of La Mojana. Knowledge gained includes the results of climate vulnerability, hydrological, socio-economic and environmental assessments, the application of rain water harvesting and storage techniques, the use of solar pumps for water extraction and improved piping for distribution, and the experience on rural extension programmes.

64. The project will implement climate-resilient agricultural best practices developed by FEDEARROZ and FEDEGAN.

65. As part of the research on agro-ecological systems based livelihood diversification (activity 4.1), the service provider (possibly the Universidad de Cordoba and Universidad de Sucre) will support at least nine indigenous associations on the identification and gathering of local knowledge and traditional agricultural practices relevant for climate change adaptation and will facilitate in-field testing of those production practices in their communities.⁵⁴

66. Project activities include the provision of a more abundant and continuous source of water to approximately 25,000 households. For the rurally dispersed population,⁵⁵ the project will provide rainwater harvesting and storage systems for 4,878 households. Each household will have its own roof top collection system and a 5,000-litre storage tank. In areas with semi-dispersed population,⁵⁶ the project will install communal rainwater collection and storage systems, where one roof top collection system and a 20,000-litre tank will provide water for four households. Water distribution to the other three households will be done manually, by carrying it on containers. For rural communities that have water extraction and distribution systems (the so-called micro-aqueducts), adaptation works will be carried out in order to increase climate resilience. These works will include the adaptation of pumping wells to prevent infiltration of surface water (flood protection), the replacement of existing pumping systems by more resilient solar-powered pumping systems and the construction or repair of storage tanks.

67. This project activity related to climate-resilient water provision will build upon the experiences of the NGO “Tiempos de Vida” in the community of Emaus, which is located on the northern area of Magangué in an area of tropical dry forest.

68. Regarding the required rooftop surface and tank capacity, it should be noted that even though calculations considered a reduction of 35 per cent in annual average precipitation due to the effects of climate change,⁵⁷ an average rainfall for La Mojana of 2,800 mm was used, not taking into account that 4 of the 11 municipalities of La Mojana have an annual average precipitation of 1,800 mm. Also, the percentage of water lost due to the actions of the first flush diverters was not considered. Calculations made by the iTAP show that using a minimum roof top surface of 53 m² instead of 46 m² on communal water systems would be enough to provide

⁵⁴ Funding proposal, pages 32 and 33.

⁵⁵ Considered as areas where households are located at a minimum of 500 metres from each other.

⁵⁶ Considered as areas where households are located at a maximum of 500 metres from each other.

⁵⁷ Reduction of 35 per cent by 2050, according to the study *Nuevos Escenarios de Cambio Climático 2011-2100* (IDEAM 2016). Please see funding proposal, Annex II, Feasibility study, page 227.

water for 4 families using a 20,000-litre tank. For individual household systems, a 14 m² of roof top surface would suffice.⁵⁸

69. Budget estimations do not include the construction of roof structures for households where the existent roof top surface is less than the minimum needed. This is only pertinent for communal systems, where 53 m² should be considered as the minimum required roof top surface. The iTAP recommends that the costs are re-estimated and addressed by the project.

70. The lack of sanitation systems and waste sludge management was identified as a key barrier. For this reason, and given that households will have a more abundant and continuous supply of water, the project should consider including research activities on low-cost household level techniques for wastewater treatment and reuse for agricultural purposes. The waste sludge generated in wastewater treatment systems, and even on septic tanks and latrines, has the potential for reuse as fertilizer if treated and used in an adequate manner.⁵⁹

II. Overall remarks from the independent Technical Advisory Panel

71. The iTAP recommends the Board consider the approval of this project subject to the following conditions and recommendations:

72. Prior to the second disbursement, the accredited entity must provide a report satisfactory to GCF Secretariat that:

- (a) The management, operation, maintenance, and monitoring schemes of the mini-aqueducts are developed and operational; and
- (b) the programme and coverage of the agro-ecological systems is being implemented by the service provider, as indicated in the funding proposal, specifying the recipient communities and the management and monitoring arrangements.

73. The iTAP recommends that the project proponents ensure the participation of women in water committees by formulating and implementing criteria pertaining to these committees, in which the number of women and men involved in the management of these organizations is balanced. Proof of balanced participation should be provided to GCF Secretariat.

⁵⁸ The funding proposal states that the needed roof surface to fill the 5,000-litre storage tanks is only 2 m². This was calculated using an online tool (from Rhino rain harvesting tanks). The error resides in the fact that 2 m² of roof surface will collect a little more than 5,000 litres during a whole year, considering a rainfall average of 2,800 mm, which is the annual average rainfall for La Mojana. However, 4 of the 11 municipalities included in the project have an annual average rainfall of 1,800 mm. And most importantly, this calculation considers that water will be collected and stored during 8 months of the year, to be used during the 4 dry months. On a situation where most households have no access to water provision infrastructure and rely solely on surface water from wetlands, channels and superficial wells this assumption is not realistic.

⁵⁹ It is noted that 4,878 households benefited by the implementation of home gardens will be provided with guidance and materials to enable the reuse of grey water.

Independent Technical Advisory Panel's review of FP057

Proposal name:	Climate Action for Rural Development: community-based adaptation and mitigation in Argentina (Unit for Rural Change, UCAR)
Accredited Entity:	Unit for Rural Change
Project size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: Medium

1. The objective of the proposed project is to promote the low-carbon and resilient development of the northern region of Argentina by promoting the incorporation of adaptation and mitigation measures in territorial planning. The project, which is managed by the Unit for Rural Change (UCAR), under the Ministry of Agroindustry, has three components. Component 1 will develop capacity-building and community-based adaptation by developing mitigation and adaptation plans (MAPs) in selected microregions in the northern provinces of Argentina and in this process, promote capacity-building. Component 2 is on adaptation and mitigation actions, providing the necessary financing to support the microregion in the implementation of the selected priority actions and projects established in the MAPs. Component 3 is on project management and monitoring and evaluation activities, encompassing managerial and supervision activities at the national and territorial levels.
2. The programme is expected to benefit about 5,750 families (around 28,750 beneficiaries accounting for 0.05 per cent of Argentina's population) distributed as follows: 4,000 families (20,000 beneficiaries) living in rural areas who benefit from systemic public projects; and 1,750 families (8,750 beneficiaries) of small-scale family producers and rural workers, benefiting from grants and revolving funds.
3. The programme includes the development of MAPs in five microregions of the selected provinces through a participatory process that will engage several public and private sector actors and in this process transfer knowledge on climate change adaptation and mitigation. It also envisages the development of public investments that will be decided in coordination with the municipalities. However, the range of these investments is broad and could include anything from alternative energy, road infrastructure, water facilities, conservation, health, and restoration and forest investments among other options.
4. The list of possible investments would be prioritized in the process of development of the MAPs in each microregion. However, it is very important to ensure that these investments have clear adaptation and mitigation impacts. In response to a question from the independent Technical Advisory Panel (TAP) on how to ensure resilient investments, the answer by UCAR was that the Inter-jurisdictional Cabinet on Climate Change is preparing climate change guidelines for public investment but that in the meanwhile the programme will adopt international standards
5. The programme will also fund: grants for collective off-farm and in-farm investments for associations and organizations of small holders; small self-managed revolving funds (only USD 500,000 in total) for rural producers and its members.
6. The proposal anticipates investments in a wide range of activities, from seed banks, soil and conservation, agroforestry and silvo-pastoral systems, to integrated pest management, crop rotation and diversification, post-harvesting storage, community feeding systems, shade houses

and diversification on production, among others. iTAP considers that the climate change impacts of the grant facilities will depend on a good operations manual that establishes clear criteria of how investments are made under the MAP frameworks.

1.2 Paradigm shift potential

Scale: High

7. The project is promoting community-based adaptation by supporting selected microregions in five provinces in developing MAPs and then investing in climate change actions at the provincial, community association and family levels. The development of plans and the consequent investments could change the way development is currently being thought of at the provincial level, implying a paradigm shift. Decentralizing climate change actions to the territorial level is needed in all countries. However, there are three suggestions from the TAP to ensure that the MAPs end up designing innovative climate change models up scalable to all other provinces in Argentina:

- (a) First, the range of possible investments is very broad and could lead to disperse investments that may not end up having a real impact at the microregion level. Therefore, the selection of projects should be prioritized according to impact indicators in each region, specifically at the MAP preparation stage;
- (b) Second, the MAPs expect to influence the development plans of the provinces, but there is not a proper link or action or institutional agreement in place to make this happen. It is recommended that UCAR make a proper agreement with each of the provinces and/or the selected municipalities in each of the microregions to ensure that the plans are embedded in the current or future development plans and in the land-use plans; and
- (c) Third, the climate component of the project is supported only by five experts and additional consultants, which will not necessarily strengthen the capacity on climate change of UCAR, the provinces or the communities. It is therefore important to support the capacity of UCAR as well as the municipalities and other relevant actors in the microregions to develop their own plans and ensure that they involve relevant personnel able to adopt and manage these plans after project completion.

8. The proposal states in section E2.3 that UCAR will work with the National Institute of Agriculture Technology (INTA), an executing partner that develops technology considering the needs and context of rural producers. It is recommended by the TAP that UCAR include proper arrangements and budget provisions to develop agreements with INTA and other relevant Argentinian institutions capable of bringing innovative climate change options to the provinces.

Potential for knowledge and learning

9. The project will develop a series of 20 forums and 45 sub-forums and several other meetings to produce the climate change plans. In these forums, there is a potential to learn and exchange knowledge if relevant climate change expertise is available to assist in the formulation of MAPs. The project will also develop a network to exchange experiences between provinces and will also support a monitoring and evaluation system with the stakeholders to learn from experiences and be able to replicate successful actions.

10. The theory of change illustrates the main barriers, activities, outputs and outcomes, with a logical sequence of changes aiming to raise awareness on climate change and generate the capacity to design and implement local adaptive and mitigation strategies.

Contribution to the creation of an enabling environment

11. The project will involve different stakeholders to promote articulation, coordination and collaboration during the implementation of the programme, and to improve their technical capacity to design climate change solutions. The logical sequence of activities will give relevant stakeholders the opportunity to design a regional plan and learn during the process, and to select and prioritize the portfolio of relevant climate change investments that could be financed by this project and other financial sources. One of the crucial outcomes of this process should be to develop a replicable model of a MAP as well as to support municipalities, provinces and communities in their ability to formulate climate change projects.

Contribution to the regulatory framework and policies

12. The project will involve public entities at the provincial level. However, the TAP notes that there could be a stronger emphasis towards influencing public instruments such as land-use plans or development plans of the municipalities and provinces. The project could also have a stronger outcome to ensure that climate change becomes a transformational component of the strategies of both UCAR and the Ministry of Agroindustry to be able to scale up actions on climate change to other provinces in the country.

13. The proposed project can also influence the development of the national adaptation plan that will be developed by the Ministry of Environment and Sustainable Development with money from the GCF readiness programme Potential for scaling up and replication

14. The project will have the potential for replication to other provinces and to scale up the model if successful, ensuring that it involves relevant sectorial and territorial actors such as the Under-Secretary of Water Resources and the Ministry of Energy and Mining, among others.

15. It will also have the potential to fund innovative local solutions by sharing successful funded projects among the different associations and communities involved.

1.3 Sustainable development potential

Scale: High

Environmental co-benefits

16. The design of climate change plans could tackle environmental priorities such as water, soil and forest conservation that will eventually evolve into practical territorial policies and actions. Moreover, it is essential to teach rural communities about man-made environmental actions that are currently reducing the capacity to adapt to climate change, in order to reverse the trends. The selection of projects will also be crucial in order to set models of environmental management that drive adaptation and mitigation benefits in different forms. It will be important to have solid assessments of the environmental and climate change situations of the microregions, to be able to design workable MAPs based both on science and local knowledge.

Social co-benefits

17. Social co-benefits include capacity-building on climate change for rural communities and the creation of networks that will cooperate and create good cohesive structures to understand climate change and deliver appropriate solutions.

18. The proposal will also increase income generation by providing financial schemes that will eventually improve agricultural practices and productivity. The project could have co-benefits such as increased food security, water access, soil fertility and, in general, better living conditions.

Economic co-benefits

19. The economic co-benefits are directly related to the selection of projects in a way that could prove aggregated impacts. For example, only one small-scale energy project will not make a difference, but an efficient solution that could be used by several communities will clearly be an economic benefit. The economic benefits could include energy and water savings, increase in agriculture production and income from managing waste streams.
20. The development of public and community-type projects could involve additional labour options for the communities and increase in salaries or income.

Gender-sensitive development impact

21. The proposal includes a gender action plan to empower woman and to ensure their participation in the development of the climate change plan as well as in all instances of action. The financing schemes will give priority to organizations that are led by woman, and knowledge sharing and capacity-building programmes will ensure equal participation for men and woman.

1.4 Needs of the recipient

Scale: High

Economic and social development level of the country and vulnerability

22. Argentina is one of the largest economies in Latin America, with a gross domestic product (GDP) of more than USD 550 billion. Within its 2.8 million square kilometres of territory, Argentina is endowed with extraordinary fertile lands and has enormous potential for renewable energy. It is a leading food producer with large-scale agricultural and livestock industries⁶⁰. However, the great north of Argentina, composed of the North West (NOA) and North East (NEA) regions, faces a totally different reality.
23. According to the proposal, the GDP per capita in the north barely exceeds half of the national average. This region accounts for 20 per cent of the country's population and 54 per cent of the country's households with "unsatisfied basic needs"). Likewise, 57 per cent of the country's population who are illiterate are in this region, whose provinces show levels of illiteracy (2.5–5.5 per cent) that are higher than the national average (2 per cent).
24. The land tenure is composed of small farms, owned by farmers with little capital to ensure sustainable and resilient investments. The population of indigenous groups in one of the highest in the country, with 3.5 per cent of the population of the NOA region identifying as descendants or pertaining to an indigenous people⁶¹, compared with the national average, 2.4 per cent.
25. The selected provinces have different landscapes and ecosystems but, according to the climate projections, the occurrence of extreme precipitation will be intensified in this region as well as the temperature increase. This situation aggravates the social conditions as well as the institutional weakness. The deterioration of ecosystems including evidence of desertification, has worsened the living conditions of the poor, who are facing difficulties in coping with environmental deterioration and climate change.

⁶⁰ World Bank overview 2016.

⁶¹ CNPhyV, 2010. Could be accessed through: <http://www.estadistica.lapampa.gov.ar/estadistica-de-poblacion-demografia/181-cnphyv-2010.html>

The need for strengthening institutions and implementation capacity

26. The northern provinces have weaker institutions that need to build capacity regarding climate change. The project foresees the involvement of public and private institutions and communities, but the TAP considers that there should be a stronger emphasis to influence land-use plans and the development plans of the municipalities and five provinces. It will be difficult for UCAR alone to influence the provincial governments unless there is a stronger support from the Ministry of Environment and Sustainable Development and other relevant ministries to develop MAPs as a commitment to decentralize climate actions at the territorial level, using the northern provinces as an example.

27. There is also a need to strengthen the capacity of the agriculture associations and communities to cope with climate change. It will be important to prioritize interventions that could be scalable and have a potential for knowledge sharing. On-the-job training will be promoted during the project for the implementation of the adaptation and mitigation activities.

28. UCAR will rely mainly on external consultants to deliver the climate change components of the project. iTAP recommends ensuring a more permanent climate change unit able to assist the provinces in developing climate change plans and actions in coordination with the Environmental Policy, Climate Change and Sustainable Development Secretariat of the Ministry of Environment and Sustainable Development.

1.5 Country ownership

Scale: High

Alignment with priorities in the country's national climate strategy

29. Argentina ratified the United Nations Framework Convention on Climate Change (UNFCCC) in 1993 and the Kyoto Protocol in 2001. In December 2015, the country established the Ministry of Environment and Sustainable Development, vested with significant institutional duties. The new Ministry relies on the Secretary for Environmental Policy, Climate Change and Sustainable Development which hosts the Directorate for Climate Change and is responsible for the adoption and coordination of policies and actions relating to climate change. Additionally, the Inter-Jurisdictional Cabinet on Climate Change was established on 25 July 2016 for the purposes of articulating policies on climate change and increase the population's awareness of their relevance and significance. Among these core duties is a duty to align the national and provincial governments with regard to actions on mitigation and adaptation. Argentina has also delivered its third national communication to the UNFCCC (November 2015), and submitted its intended nationally determined contribution.

30. The UCAR proposal is in line with the national strategy and the proposed National Plan on Response to Climate Change. The project relies on a strong coordination with all the relevant institutions that form part of the Inter-Jurisdictional Cabinet on Climate Change, especially with the ministries that could be relevant for the public investments such as the Ministry of Energy and Mining, the Ministry of Transport and the Secretariat of Water Resources.

Capacity of accredited or executing entities to deliver

31. The mission of UCAR is to manage all programmes and projects of the Ministry of Agroindustry that have partial or total financing through external resources. UCAR has been recently accredited as an accredited entity by the GCF. In this proposal, UCAR is acting as an implementer and as the accredited entity.

32. The activities of UCAR are mostly related to rural agriculture, so the proposal states that the whole financial volume is related to adaptive capacities. Currently, UCAR manages a portfolio of over USD 1,300 million of ongoing programmes and USD 1,276 million of completed programmes. In line with this amount of resources, the TAP considers that additional

co-financing could be sought from other projects currently being managed by UCAR for rural development of the northern provinces.

33. The project should ensure the capacity-building of UCAR as a direct access entity of GCF to deliver and implement climate change plans of an intersectoral nature. In this context, the TAP considers that it is advisable to ensure there is a permanent group able to manage climate change and upscale this project to other provinces in Argentina.

Engagement with civil society organizations and other relevant stakeholders

34. Consultations have taken place at the microregion level with different stakeholders and workshops (one per region) were undertaken. Consultation with indigenous communities also took place.

35. The project foresees the need to undertake many forums during the first year to design the plans and projects. However, the TAP notes that the proposal mentions that there are other methods to ensure the preparation of workable plans, including translating science into practical tools for communities such as climate change manuals, designing training courses for relevant stakeholders and undertaking on-the-job training or rural schools (Escuelas de campo) that could be more useful for the microregions.

1.6 Efficiency and effectiveness

Scale: Medium

Cost-effectiveness and efficiency

36. The total cost of the project is USD 26,827,124, of which UCAR is asking GCF to provide USD 22,055,875.

37. Component 1 of the project to develop five MAPs has a cost of USD 1.9 million. The project expects to provide 20 forums and 45 inter-forums, as well as 18 workshops, 16 training forums, one learning exchange and 10 meetings for institutional agreements. The effectiveness of the investment will depend on the quality of the forums and the capacity of UCAR to have relevant experts that will design the forums in such a way as to end up with good climate change plans and a relevant portfolio of projects aligned with each of the plans. Again, the TAP considers that, in addition to those forums the project should explore other options such as rural school methodologies, training tools and other relevant methods to ensure capacity-building and ownership of the plans by the microregions.

38. Component 2 is mainly devoted to investing in projects: USD 10 million in climate change infrastructure projects (USD 2 million per province), USD 9.5 million for grants and only USD 0.5 million for revolving funds. The effectiveness of these grants will depend on the smart selection of projects, prioritized from the MAPs.

39. The amount devoted to revolving funds seems too small to accomplish lasting results. The project expects to have two revolving funds of USD 50,000 each per microregion. The TAP recommends the revision of these funds based on the transaction costs of establishing and managing revolving funds compared with the foreseen investment.

40. Component 3 is for management and monitoring and evaluation, with an estimated investment of USD 3.5 million. The resources will be used to hire consultants (29 as per the project budget) to manage and evaluate the project. Apart from these persons, the project will rely on the capacity of five consultants on climate change (one per region) and five additional consultants who will assist in the preparation of climate change plans during the first year. Additional consultants will be hired for project preparation support.

41. The number of persons involved in the project seems high. What is more important is that the investment in personnel is for external consultants, so once the project finishes the

capacity will not necessarily remain within UCAR and the provinces. It is therefore advisable to make institutional agreements with provinces and municipalities to hire climate change experts and create posts on a permanent basis, with the understanding that the project will pay their salaries for the first five years and the municipalities or provinces could absorb them afterwards, ensuring the sustainability of the programmes. It is also advisable to have a similar arrangement within UCAR to ensure a permanent group of people managing climate change during and after the project completion.

42. The total cost of implementing the five MAPs could exceed the GCF investment of the proposed territorial public investments, the grants and the revolving funds. Therefore, the project should ensure additional financial resources are able to implement the plans in an integrated manner, including additional national and territorial public resources as well as private resources. The financial strategy could include co-financing from other sources within the UCAR portfolio of projects.

43. Depending on the nature of public investments, there should also be an agreement to operate and maintain these investments by the municipalities or provinces.

II. Overall remarks from the independent Technical Advisory Panel

44. The independent TAP recognizes the importance attached by the Board of having more engagement and participation by direct access entities such as UCAR in GCF activities. The recommendations and conditions in this report have therefore been carefully prepared with the goal of effective development and enhancement of UCAR as a direct access entity. The independent TAP therefore recommends that the Board approve the project subject to the following conditions:

Conditions:

- (a) Prior to the first disbursement, the accredited entity shall deliver the commitment letters from the relevant regional authorities (provinces and/or municipalities) to ensure that the MAPs to be prepared under component 1 of the programme will be adopted within their development planning processes, including possible staffing and managerial capacities; and
- (b) The accredited entity shall deliver to the GCF, in form and substance satisfactory to the GCF Secretariat, the investment and operations manual for the two outputs under component 2 of the programme, including financial management and eligibility criteria for selecting the grantees.

Covenant to be included in the funded activity agreement:

- (a) Together with the mid-term review submitted to the GCF, the accredited entity shall deliver to the GCF, in form and substance satisfactory to the GCF Secretariat, the five MAPs and their portfolio of projects, including evidence of adequate co-financing arrangements for their implementation.

Independent Technical Advisory Panel's review of FP058

Proposal name:	Responding to the increasing risk of drought: building gender-responsive resilience of the most vulnerable communities
Accredited entity:	Ministry of Finance and Economic Cooperation (MOFEC)
Project size:	Small

I. Assessment of the independent Technical Advisory Panel

1.1 Impact potential

Scale: N/A

1. Ethiopia is one of the most vulnerable countries to climate change. The country has been facing increasing variability of rainfall and chronic drought-led food insecurity. The majority of the population in Ethiopia depends on rain-fed subsistence agriculture. However, with 60 per cent of the country being dry land, carrying out crop agriculture and pastoral livelihoods is extremely difficult. In recent years, rain-fed crop production has been facing steep challenges because of reductions in all three rainy seasons across the country (there are, of course, considerable spatial variabilities too). In 2015–16, the country experienced one of the worst droughts in decades, where one tenth of the country's population faced catastrophic food shortages.

2. Ethiopia is becoming a climate change hot-spot. The average surface temperature is likely to increase by up to 2.7°C by the end of the century, compounded by very high uncertainties in rainfall availability where projections range from –25 per cent to +30 per cent by 2050. The areas that are subject to withdrawal of rainfall will face high levels of aridity and severe shortfalls of top soil moisture, leading to crop loss. On the other hand, the areas likely to receive increased rainfall during peak monsoon will face increased risk of flooding.

3. Most of the agriculture is carried out by smallholders with little land holdings (55 per cent of the farmers having <1 ha), and with dwindling rainfall and virtually no alternative modality to address crop loss the smallholder farmers have been facing chronic food insecurity, starvation and are forced to migrate. The overall results have been disastrous, in terms of malnutrition and poverty.

4. The proposal has three distinct and specific objectives, in addition to the overarching objective of building the resilience of vulnerable communities towards addressing climate change-induced droughts. The specific objectives are:

- (a) improved access to water to build resilient livelihoods;
- (b) management of natural resources for improved water availability; and
- (c) the creation of an enabling environment. Overall, the proposal is seeking to implement integrated water resources management (IWRM); however, the coverage of the IWRM effort will be limited to only 66 kebeles (the smallest administrative unit of Ethiopia, similar to a neighbourhood) of 22 woredas (districts) out of the total 770 woredas that make up the country. Almost all these target woredas are non-contiguous and spread across the country.

5. The proposal states that the total number of direct beneficiaries will be 330,000, while the indirect beneficiaries will be in the order of 990,000. Thus, the direct and total beneficiaries

represent only about 0.34 and 1.38 per cent of the total national population, respectively. In addition, ecosystem-based adaptation through a natural resources management (NRM) regime will provide for soil conservation benefit to 2,850 ha of land, while about 5,000 ha of degraded forest lands will be brought under reforestation. Since the NRM and forest management activities are to be carried out in non-contiguous and highly dispersed locations, ecosystem-wide substantive benefits may not be realized. Moreover, as per the woreda-based planning, both local and exotic tree varieties will be planted, which will serve development purposes, but not contribute to ecological harmony.

6. The proposal presents an estimated budget of USD 49.961 million, of which USD 45.003 million is sought as concessional finance from the GCF. The project activities are to be implemented within 5 years of commencement of the project.

7. Despite the high vulnerability to climate-induced droughts and degradation of forest areas, and the low coverage of benefits (only 0.3 per cent of the population and soil conservation benefits in 7,850 ha of land) in dispersed locations across the country, the iTAP finds the impact potential to be only “Medium”.

1.2 Paradigm shift potential

Scale: N/A

8. The proposed project is not innovative as such; rather, it calls for a modal shift from rain-fed agriculture to ground-water abstraction-based irrigated agriculture (in Component 1). The only marginal innovation is in the use of solar technology, which appears to be a mere necessity in the absence of a reliable power supply through power grid services. Component 2 deals with NRM practices, which have been ongoing for decades in Ethiopia. The support for enabling environment (in Component 3) might be influencing a paradigm shift in defining the policy and regulatory regime for establishing rights on consumption of ground-water and the equitable use of the precious resource. However, such objectives can only be realized in the long term, which is generally longer than the project’s duration.

9. There is a theory of change, although it does not indicate how the target smallholders elsewhere will be able to subscribe to the irrigated agriculture with their own finance in the near future. The availability of ground-water for continued abstraction is highly uncertain, especially in the absence of any water-balance study. Given the nature of the support, it is hard to imagine that the smallholders outside the project’s target areas will be able to invest in irrigation on their own, or to sustain irrigated agriculture without financial support from external sources such as the GCF. Therefore, the real potential for scaling up of the concept is extremely restricted, owing to lack of financing capacity of the people and the country itself. On the other hand, due to extremely limited coverage of the project, the goods and services generated by the project cannot be perceived to be significant enough to offer a tangible springboard effect in other areas, involving a larger population and wider coverage. Therefore, the project cannot be considered as a potential game changer in the wake of climate change-induced droughts and associated food insecurity in Ethiopia.

10. Theoretically, there exists replication potential. However, replication will require significant financing. A basic cost analysis indicates that the project is not among the best value for money, because large amounts⁶² will be needed just to deliver water after pumping it to the surface from ground-water aquifers. However, replication potential does exist for Component 2. Indeed, Component 2 mimics the NRM activities involving degraded forest (in a tiny scale) which have already been practised at much wider scales over the past two to three decades. It is

⁶² Simple arithmetic suggests that, the estimated cost of delivering outcome of component-1 for the entire current population of Ethiopia will be in the order of over USD 6 billion.

claimed that NRM-related learning and knowledge will be generated from the project, which is an overstatement given that similar activities have been practised in large tract of lands and despite well-documented beneficial results, autonomous replication could not exhaust such potentials.

11. The proposed project is expected to contribute to the regulatory framework and policies, especially in controlling excessive abstraction of water from ground-water aquifers, expansion of ‘exclosures’ for the promotion of sustainable management of degraded forest lands, and so on. Scaling up, however, is likely to remain costly. Moreover, it may not even be possible without external financial support. The overall contribution of the project to climate-resilient development pathways for Ethiopia appears to be low, given the very low target in the context of huge demands within Ethiopia.

12. The iTAP views the paradigm shift potential of the proposed project to be “Medium to Low”.

1.3 Sustainable development potential

Scale: N/A

13. The project promises to contribute to a number of sustainable development goals (SDGs).

- (a) SDG-1: It will reduce hunger, especially of about 0.33 million people;
- (b) SDG-2: The project will address poverty issues, directly reducing poverty of about 0.33 million and indirectly of about 0.99 million people;
- (c) SDG-5: It will address gender equity, especially the 30 per cent of the beneficiary households where the head of the household is a woman;
- (d) SDG-13: It will deliver urgent climate actions towards reducing vulnerability to drought; and
- (e) SDG-15: It will counteract degradation of the terrestrial ecosystem and address issues concerning soil conservation.

14. The proposed project promises to address the core vulnerability of smallholders, poor households where irrigated agriculture is currently unaffordable. Therefore, it offers an excellent social development agenda. The health co-benefits emanating from the assured supply of quality water for drinking and sanitation purposes also serve social development agenda, which will particularly be helpful for women and children. The potential benefits for the households headed by women within the target beneficiary groups serves women, while an improvement in food security greatly helps the removal of gender-based inequalities in intra-household food distribution.

15. The project will also have a few environmental co-benefits. For example, these will be achieved through soil quality restoration, enhanced action in strengthening/regeneration of forest resources and re-vegetation of about 5,000 ha of degraded forest lands. Given the size of the population and the forested lands in Ethiopia, the summation of such co-benefits appears only marginally significant, especially considering the overall needs of Ethiopia towards achieving the SDGs as mentioned above. The contribution to the SDG agenda from the project is tiny, but it is in the right direction.

16. The revegetation will help with the sequestration of carbons; however, that co-benefit is not considered by the accredited entity (AE) to make it worth categorizing the project as a cross-cutting one. The use of solar technology will offset demand for conventional energy services, which can also be seen as a positive contribution to the global action on emission reduction. However, the other tangible benefit will be accrued from not generating electrical/electronic wastes (in the form of spent photovoltaic cells), because the solar pumps

are designed to be operational only in the presence of sunlight during the day-time, and the system is claimed to be free from any photovoltaic system.

17. Given the pros and cons of the project on sustainable development potential, the iTAP finds the potential to be only “Medium”.

1.4 Needs of the recipient

Scale: N/A

18. Ethiopia is already a global epicenter for persisting drought and hunger. The country is both an African vulnerable country and a least developed country (LDC), which indicates that it has little ability of its own to build resilience against climate change induced adverse effects. Out of its 96 million population, an overwhelming majority is poor, while most are dependent on natural rainfall to maintain subsistent agricultural production. In addition, 30 per cent of the farming households are led by women, having extremely limited capacity to safeguard their subsistent agriculture. Since rainfall has been declining, the current agriculture cannot provide for basic food and therefore a targeted effort is needed immediately. The need for urgent climate action in this regard is paramount.

19. The Government of Ethiopia has developed a Green Growth Strategy to create better opportunities for the economy as a whole, particularly for the agriculture sector. However, the necessary financial arrangements are not there to implement the strategy. The core of the problem is lack of investment in irrigation, although irrigation has already been introduced in Ethiopia. There is no lack of understanding regarding a solution, but the current economic condition of poor farmers does not support the adoption of the irrigation technologies. If there is availability of a sustainable source of water, urgent financing is needed for irrigation.

20. As an LDC, it appears extremely difficult for Ethiopia to address the situation itself. Although the United Nations Framework Convention on Climate Change (UNFCCC) calls for special preferential treatment to African vulnerable nations and to LDCs, Ethiopia has no choice but to apply for financial support to address the dire situation.

21. The much degraded forestry sector also needs revitalization. It has been proven that investment in forestry not only helps revegetation, it has a positive spin off co-benefit in watershed management. The NRM methods highlighted in the project are among the best practices. Many successful projects have been implemented in the past. There is also huge potential in terms of revegetating the remaining degraded forest areas. This has not been possible due to lack of mobilization of finance. Lack of financing did not allow replication of best NRM practices. In addition, there is a need for institutional and policy reform. Given the shortcomings, it appears that an investment of over USD 45 million (as indicated in the budget spread sheet) would be able to scratch only the surface of the overall need of resources in Ethiopia in order to solve the impending issues. However, as an LDC, financing is extremely difficult. The proposal provides for opportunities for the GCF finance to help overcome specific barriers to financing.

22. Component 3 calls for strengthening institutional capacity. Component 2 also has elements to strengthen implementation capacity and self-governance. The need to address institutional issues is typical of the LDCs and this project addresses some of the issues. The iTAP acknowledges that the need of the recipient to the proposed project is “High”.

1.5 Country ownership

Scale: N/A

23. The objectives set out by the project are in alignment with the Green Growth Strategy (2011) of Ethiopia. The elements of the project have been emphasized in the national adaptation programme of action of the country. The national communications to the UNFCCC

secretariat have highlighted the need for adaptive actions on aspects which are central to the proposed activities. The recently submitted nationally determined contribution document of Ethiopia (2015) also highlights the importance of activities that are at the core of the current proposal. In addition, the objectives of the project are in line with the climate resilient strategy for water (2014) and climate-resilient strategy for agriculture and forest (2014), the Ethiopian Program of Adaptation to Climate Change (2011) and the sustainable land management programme of Ethiopia. The country also has a REDD+ strategy. The ideas to achieve resilience for poor communities that are affected by drought and subsequent land degradation in Ethiopia have been truly captured by the proposal, which indicates country ownership.

24. The project promises that a community-based intervention strategy will be followed, which is a recognized modality to deliver resilience. As part of the interventions, issues regarding policy and regulatory frameworks and their strengthening have been integrated in the proposal.

25. The AE, the Ministry of Finance and Economic Cooperation (MOFEC) of Ethiopia, is a national organization, which reflects high country ownership. Further, the AE, as the custodian of the proposal, is the national agency having the mandate to implement similar projects. MOFEC has capacity and long-standing experience of overseeing financial management and programme implementation nationally. This included the implementation of climate change mitigation and adaptation initiatives valued at over USD 400 million, across the six priority sectors, namely agriculture, water and energy, forestry, buildings, industry, and transport. The AE partnerships at different tiers, including those with the Ministry of Agriculture and Natural Resources and other federal executing entities, is proven. However, capacity-building of partners, particularly those established in the lower tier of governance, appears to be a prerequisite towards smooth implementation of the project. The iTAP found that a good institutional arrangement within a collaborative framework is proposed, which is likely to result in improved inter-agency coordination.

26. The evidence of holding 22 woreda-based consultations have been provided in the feasibility study. However, the selection of these woredas did not follow specific logic, in line with cause and effect relationships regarding climate change. The selected woredas do not match with the priority woredas where climate change related vulnerabilities are prioritized and well documented. As a result, although the development objectives of the project are fully justified, the climate change adaptation objectives do not follow the best approach. Had geographic targeting been done (i.e. involving priority woredas), similar rigour in consultations could have produced far more useful results. However, the consultations did include a large number of participants representing national agencies in the Government, both federal and local, civil society organizations, farmers and women, which contributed to country ownership. The national designated authority was involved in developing the proposed project with the AE, and has issued a no-objection letter.

27. The iTAP concludes that country ownership of the proposed project is evident.

1.6 Efficiency and effectiveness

Scale: N/A

28. Ethiopia in an African LDC, requesting grant support of USD 45.003 million out of a total budget of USD 49.961 million. The Government of Ethiopia offers co-financing amounting to USD 4.958 million (10 per cent of the total budgeted amount). The target beneficiaries are poor smallholders and key national institutions. The entire financing is aimed at creating public goods and services, with no profit-making motivation around the activities. The alternative financing for Ethiopia in implementing such a project would have been borrowing from international organizations, which is not a desirable modality at the current state of the

economy in Ethiopia. Given that an African LDC deserves special preferential treatment under the UNFCCC in receiving GCF support, the significant full concessional financing is justified.

29. The majority of the estimated financial cost is dedicated to creating irrigation facilities. The financial cost estimates are based on unit prices, where the unit price for irrigation equipment (i.e. solar-powered pumps) appears much higher than comparable technologies available internationally. The procurement needs to include a careful examination of sources and technologies to make the project more cost-effective. Given that the target for implementing a variety of resilience-building efforts in NRM and restoration of degraded forest lands is very small (compared to the vast tracts of Ethiopian forest lands), the cost estimated for Component 2 does not reflect best value for money. The entire component could have been more cost-effective. The overall cost-effectiveness therefore is low.

30. The environmental cost regarding the abstraction of ground-water must also be efficient. No reference has been made to any scientific (i.e. hydro-geological) water-balance study on rates of abstraction as against available and projected recharging of the aquifer for any of the target woredas. This leaves a critical data void. The reference made to limiting the diameter of well/tube may be a helpful safeguard against excessive ground-water abstraction, but it cannot guarantee against any potential mining (i.e. over-exploitation) of the precious resource. If the latter takes place in the foreseeable future, the project will be responsible for causing such mining of ground-water resources and it will severely restrict inter-generational equity in the use of ground-water, perhaps demeaning the fundamental rights of future generations in Ethiopia. A careful approach in effective use of ground-water resources is central to build long-term resilience.

31. The proposal presents an economic internal rate of return (EIRR) analysis for the project period of 15 years, indicating the non-availability of benefit data for a government-run project that generates public goods. The economic analysis uses a discount rate of about 10 per cent, which is perhaps typical among LDCs (8 to 10 per cent). It is claimed that the economic net present value appears to be positive with a 10 per cent discount rate, indicating that the project is financially viable. The EIRR is estimated at 20 per cent, which indicates that considerable cost-efficiency is likely to be achieved during the project duration. The sensitivity analysis suggests that either a 10 per cent increase in investment cost or a 10 per cent decrease in projected benefits reduces the estimated EIRR by about half. However, the analysis does not indicate whether the impact of the occurrence of both (higher investment cost as well as lower benefits) simultaneously would still be positive or not. The iTAP finds considerable financial risks associated with the project, although large uncertainties remain regarding the inability to plug in all benefit streams and removing overestimated cost elements.

32. The iTAP is of the view that the proposed project is moderate in efficiency and effectiveness.

II. Overall remarks from the independent Technical Advisory Panel

33. The iTAP recommends that the Board approve the project, recognizing the urgency of the issues associated with climate change and drought in Ethiopia. The iTAP also suggests that the Board consider the following covenant and condition:

- (a) **Covenant:** The accredited entity shall ensure that the GCF proceeds from the first disbursement will be exclusively used to finance components 2 and 3 of the project.
- (b) **Condition:** Prior to the second disbursement, the accredited entity shall submit to the GCF, in a form and substance satisfactory to the GCF Secretariat, the results of a completed water-balance study, including borehole data at different strata where exploitable groundwater exists in all 66 target kebeles, confirming the feasibility to

maintain the balance of the water tables of the respective aquifers at positive or neutral levels throughout the expected project lifespan of the water pumping activities (i.e. 22 years after commencement of Component 1).

34. The iTAP also recommends the following:
- (a) Strengthen Component 3 by committing to community-centric knowledge management and cross-learning activities, taking into consideration that the quoted unit price for solar-powered motors is on the higher side and there is a possibility to 'save' part of the budgeted amount and re-invest in knowledge management activities.
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