CLIMATE INVESTMENT FUNDS

CTF -DPSP IV/GESP

PROJECT TITLE: ACCELERATING ENERGY STORAGE SYSTEMS PROGRAM

COUNTRY: GLOBAL

MDB: INTERNATIONAL FINANCE CORPORTATION (IFC)

Cover Page for CTF Project/Program Approval Request[a] Global Energy Storage Program (GESP / DPSP-IV)				
Country/Region	Global		**CIF Project ID#**	**Auto Generated by CIF AU**
Type of CIF Investment:		Public	**X**	Private
Project/Program Title (same as in CCH)	Accelerating Energy Storage Systems Program			
Sector, Theme and Technology	Energy Storage			
Project Lifetime	20 years			
Is this a private sector program composed of sub-projects?			Yes	**X**
			No	

Financial Products, Terms and Amounts (same as CCH)		
Financial Product	**USD** (million)	**EUR** (million)[b]
Grant	8.000	
Fee on grant		
MPIS (for private sector only)	0.750	
Public sector loan (Senior loan)		
First loss guarantees		
Second loss guarantees		
Equity		
Senior loan		
Senior loans in local currency hedged		
Subordinated debt / mezzanine instruments with income participation	32.610	
Subordinated debt/mezzanine instruments with convertible features		
Convertible grants and contingent recovery grants/loans		
Other (please specify)		
Total	**41.360**	
Implementing MDB(s)	International Finance Corporation (IFC)	

MDB Focal Point and Project/Program Task Team Leader (TTL)	
Headquarters-Focal Point:	Tendai Madenyika Andrey Shlyakhtenko
TTL	Matthew McClymont
National Implementing Agency:	Private sector

Brief Description of Project/Program (including objectives and expected outcomes) [c]

IFC's Global Accelerating Energy Storage Systems Program (the "Program") seeks to help kick-start and accelerate transformative investments and private finance in energy storage and renewable energy (RE) across several developing countries, in line with the stated objectives of the CTF DPSP IV Global Energy Storage Program (GESP).

The Program objective is to catalyze impact on the energy storage market and ecosystem in developing countries, as well as increase the use of RE and improve grid reliability, stability, and power quality, while reducing carbon emissions. By utilizing innovative de-risking structures that use blended concessional finance, the Program aims to support pilot and potentially game-changing investments in energy storage markets that currently face significant barriers and high first-mover costs.

IFC is closely engaged to establish and support adequate conditions and finance for first-moving standalone energy storage or RE + energy storage projects that face a substantial cost disadvantage compared to those that include other technologies. As a result, IFC expects that a significant amount of concessionality is needed to level the playing field between RE + storage and traditional thermal alternatives. Accelerating the scale up of energy storage investments globally will contribute to driving overall cost reductions through growing economies of scale and technology improvements that reduce materials needs. Cost decreases will also occur across the manufacturing value chain. In turn, this will drive down the investment cost of storage systems, as well as the cost of financing, leading to a boost in global energy storage deployment to decarbonize existing power systems.

The Program is asking for all the funds within IFC's Global Energy Storage Program funding allocation, i.e., both grant or Viability Gap Financing (VGF) and non-grant resources. At this time, however, IFC is seeking CTF Trust Fund Committee (TFC) approval for non-grant resources only due to pressing funding needs for some of the advanced energy storage sub-projects in IFC's pipeline. Given the ongoing broader CTF grant discussion,1 once TFC consideration of grant requests resumes, IFC shall then seek TFC approval for the VGF funds requested under this Program proposal.

Consistency with CTF investment criteria	
a. Potential GHG emissions savings	Please see Section 2.1
b. Cost-effectiveness	Please see Section 2.2
c. Demonstration potential at scale	Please see Section 2.3

[1] In February 2023, during the Intersessional meeting of the CTF Trust Fund Committee (TFC), the Committee decided to pause approval of all grant requests indefinitely.

d. Development impact	Please see Section 2.4
e. Implementation potential	Please see Section 2.5
f. Additional costs and risk premium	Please see Section 2.6
Additional CTF investment criteria for private sector projects/ programs	
g. Financial sustainability	Please see Section 2.7
h. Effective utilization of concessional finance (including a detailed analysis on how the proposal meets the minimum concessionality principles, and on how it is aligned with the blended concessional finance principles)	Please see Section 2.8 For analysis on how the proposal meets the minimum concessionality principles and on how it is aligned with the blended concessional finance principles please see Section 2.9
i. Mitigation of market distortions	Please see Section 2.9
j. Risks	Please see section 2.10
For DPSP projects/programs in non-CTF countries, explain consistency with FIP, PPCR, or SREP Investment Criteria and/or national energy policy and strategy	
Sub-projects under this *Program* will seek synergies, where practical, with work being undertaken under CIF Country Investment Plans, the Nationally Determined Contributions under the Paris Agreement, as well as by other development partners. Each sub-project will also be consistent with directions of the respective country's national energy policy and strategy.	
Stakeholder Engagement	
Stakeholder engagement will take place at the sub-project development stage and will follow the IFC rules and procedures. The work will be organized in an effective way, similar to other projects undertaken by IFC in RE markets across number of countries.	
Gender Considerations	
Gender aspects will be given thorough consideration and addressed at the sub-project level depending on the issues and opportunities that are identified at the appraisal stage for each sub-project. IFC is committed to working with private sector clients to increase women's participation as leaders, employees, and entrepreneurs in corporate value chains within RE to ensure both women and men benefit from the growing sector. Gender considerations under the *Program* will build on IFC's efforts to bridge the gender gap in the RE sector, including the five-year Energy2Equal program launched in 2019 in partnership with the Government of Canada to reduce gender gaps in the RE sector workforce in Sub-Saharan Africa and increase research and data on the business case for women's participation.	

For projects/programs with activities in countries assessed as being at moderate or high risk of debt distress, macro-economic analysis to evaluate the potential for the CTF project or program to impact the country's debt sustainability	
Investments undertaken by IFC are not expected to require sovereign guarantees and, therefore, will not necessarily be reflected in the country's debt service requirements, thereby not affecting the country's debt sustainability.	
For public sector projects/programs, analysis of how the project/program facilitates private sector investment	
N/A	
Indicators and Targets	
Project/Program Timeline	
Expected start date of implementation[d]	Q2 2023
Expected end date of implementation[d]	N/A
Expected investment lifetime in years (for estimating lifetime targets)	20
Core Indicators	➢ **Targets**
B1. GHG emissions reduced or avoided (Tons CO_2e) - over lifetime - in a representative year	 5,553,108 277,655
B3. Installed capacity of RE as a result of CTF interventions (MW)	172 (solar)
GESP-specific indicators[2]	**Targets**
Energy rating (MWh) (Please provide disaggregation)	207
Power rating (MW) (Please provide disaggregation)	85
Regulations, codes or standards for energy storage solutions (#) (Please provide disaggregation)	N/A
Other project-specific indicators **(Project specific indicators may vary among operations, and thus are not mandatory to report. Regardless, CIF AU encourages them to be reported on wherever possible)**	**Targets**
Number of innovative energy storage sub-projects implemented (#)	2
Development co-benefit indicators (as applicable)	**Targets**
Enhanced energy access (MWh/year)	TBC
Co-financing	

[2] Energy and power ratings are based on electrochemical storage technology for utility-scale applications.

	Please specify as appropriate	Amount (in million USD)
MDB 1	IFC	160.0
MDB 2 (if any)		
Government		
Private Sector		555.0
Bilateral		
Others (please specify)		
Total		**715.0**

Expected Date of MDB Approval

IFC expects that the first investment under the *Program* could reach IFC Board approval as soon as Q2 2023, however, the proposed timeline is subject to adjustments. IFC's experience in implementing similar first-in-country RE IPPs is that they can take longer to reach financial closure than initial estimates, given considerable first-mover challenges.

NOTES:

[a] This cover page is to be completed and submitted together with the MDB project/program proposal when requesting CTF funding approval by the Trust Fund Committee.

[b] For products denominated in EUR, please also provide USD equivalent in the column to the left

[c] Please provide the information in the cover page or indicate page/section numbers in the accompanying project/program proposal where such information can be found.

[d] Insert "not applicable" (N/A) if dates cannot be determined at the time of submission (e.g. private sector programs)

[e] Insert value N/A if indicator is not applicable to the project/program.

Version: November 2022

CTF PRIVATE SECTOR PROPOSAL

Name of Project or Program	**Accelerating Energy Storage Systems Program**
CTF amount requested	Investment – up to USD 32.610 million Grants – up to USD 8.000 million Implementation and supervision budget – USD 0.750 million Total amount – up to USD 41.360 million
Country targeted	Global
Indicate if proposal is a Project or Program	Program

1 DETAILED DESCRIPTION OF THE PROGRAM

1.1 Proposal Context

IFC's Global **Accelerating Energy Storage Systems Program (the "*Program*") seeks to help kick-start and accelerate transformative investments and private finance in energy storage and renewable energy (RE) across several developing countries**, in line with the stated objectives of the CTF DPSP IV Global Energy Storage Program (GESP).

As decided in the June 2019 CTF Trust Fund Committee meeting, the GESP was established to make concessional climate finance available for all CIF countries to support them in accelerating the deployment of energy storage solutions to scale up RE development. **A major objective of the GESP is to support international progress toward fully decarbonized power generation, and transmission and distribution systems on a timescale consistent with achieving the overall objectives of the Paris Agreement**. Energy storage will play a critical role in moving the world toward a clean energy transformation by integrating variable RE into existing and developing power grids, increasing the penetration of RE into power systems, creating a more flexible and reliable grid system, improving energy access, and promoting the electrification of different economic sectors. The GESP considers three main types of storage technologies, i.e., chemical/electrochemical, mechanical, and thermal, which can be deployed along the electricity value chain.

The *Program* is asking for all the funds within IFC's GESP funding allocation, i.e., both grant or Viability Gap Financing (VGF) and non-grant resources. At this time, however, IFC is seeking CTF Trust Fund Committee (TFC) approval for non-grant resources only due to pressing funding needs for some of the advanced energy storage sub-projects in IFC's pipeline. Given the ongoing broader CTF grant discussion, once TFC consideration of grant requests resumes, IFC shall then seek TFC approval for the VGF funds requested under this *Program* proposal.

The objective of the *Program* is to catalyze impact on the energy storage market and ecosystem in developing countries, as well as increase the use of RE and improve grid reliability, stability, and power quality, while reducing carbon emissions. In all, the *Program* seeks to level the field between RE and thermal energy, not only in terms of cost, but also quality of power. By utilizing innovative de-risking structures that use blended concessional finance, the *Program* aims to support pilot and potentially game-changing investments in energy storage markets that currently face significant barriers and high first-mover costs.

IFC is closely engaged to establish and support adequate conditions and finance for first-moving standalone energy storage or RE + energy storage projects that face a substantial cost disadvantage compared to those that include other technologies. As a result, IFC expects that a significant amount of concessionality is needed to level the playing field between RE + storage and traditional thermal alternatives. Accelerating the scale up of energy storage investments globally will contribute to driving overall cost reductions through growing economies of scale and technology improvements that reduce materials needs. Cost decreases will also occur across the manufacturing value chain. In turn, this will drive down the investment cost of storage systems, as well as the cost of financing, leading to a boost in global energy storage deployment to decarbonize existing power systems.

Sub-projects targeted by the *Program* will be aligned with efforts under the USD 1.0 billion World Bank Group (WBG) program to accelerate investments in battery storage to increase developing countries' use of wind and solar power, improve energy security, increase grid reliability, stability, and power quality, as well as expand access to electricity, while reducing carbon emissions. In addition to investments, the WBG is also supporting the development of policies and regulations required to promote deployment of energy storage and the implementation of procurement practices in favor of economically feasible and environmentally friendly battery technologies.

IFC will seek to ensure that activities under the *Program* have synergies with the work being undertaken under CIF Country Investment Plans, the Nationally Determined Contributions (NDCs) under the Paris Agreement, as well as by other development partners – all of which will help targeted countries meet their commitments under the Paris Agreement on Climate Change and UN Sustainable Development Goals (SDGs).

1.2 Energy Storage Sector Context

Energy storage is a crucial tool for enabling the effective integration of RE and unlocking the benefits of local generation and a clean, resilient, dispatchable energy supply that can directly compete with fossil fuel-based generation. Energy storage solutions are needed most in developing countries, where power grids are weak and cannot take full advantage of intermittent solar and wind resources. They are also vital in emerging economies where a rapid increase in energy demand, especially during peak hours, needs to be urgently met by installing new generation capacity. The energy storage market, however, remains small and primarily concentrated in regions with highly developed economies mainly because energy storage systems (ESS) are expensive.

The significant upfront investment required for ESS is difficult to overcome without government support (including appropriate regulatory frameworks) and/or low-cost financing. The US Inflation Reduction Act passed in August 2022, for example, seeks to boost the competitiveness of new grid-scale storage projects in the US through an investment tax credit for standalone energy storage that is expected to reduce the capital cost of ESS equipment by approximately 30 percent.[3] Bloomberg New Energy Finance (BloombergNEF), forecasts that the law will drive roughly 30 GW/111 GWh of energy storage built from 2022 to 2030 in the US, and contribute to the 15-fold growth in the global energy storage market expected by the end of the decade (411 GW/1,194 GWh).[4] By 2030, China and the US are expected to remain the two largest markets, with over 50 percent of global storage installations.

The most widely used storage technology is pumped-storage hydropower, which has significant potential in several regions. The technology is mature, and costs are site-specific. From a technology perspective, the potential to reduce the total installed cost is low; lead times for project development tend to be long, and it is not as modular as some of the new and emerging energy storage technologies that can scale

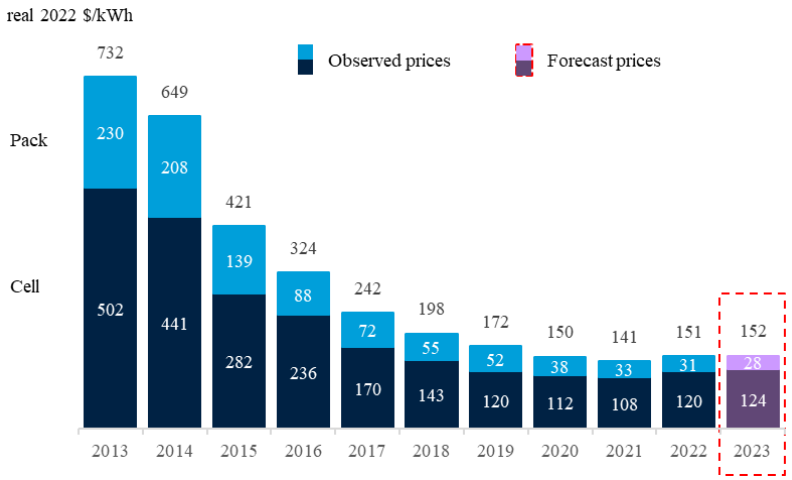
[3] https://www.energy-storage.news/energy-storage-industry-hails-transformational-inflation-reduction-act/

[4] BloombergNEF. 2022. *2H 2022 Energy Storage Market Outlook*. https://about.bnef.com/blog/global-energy-storage-market-to-grow-15-fold-by-2030/

down to very small sizes.[5] Another type of energy storage technology that has quickly become a new asset class with a multitude of uses is batteries. As performance improves and costs fall, batteries are paving the way for the electrical vehicle market and are already critical for consumer electronics, such as mobile phones. Their versality makes them attractive. Affordable battery-powered energy storage is the missing link between generating intermittent RE – for example, in a solar mini-grid – and delivering it to end-users when they need it. Battery energy storage systems (BESS) serve as generators when they release stored energy and can perform transmission/distribution functions and provide ancillary services. They are the most scalable type of grid-scale storage, and the market has seen strong growth in recent years.[6] Battery energy storage has unique advantages – being modular, fast responding, and readily deployable. The technology is proven, but the economics continue to evolve.

In 2019, prices for fully installed four-hour utility-scale BESS ranged from $300 to $446/kWh, meaning that a 20 MW/80 MWh storage system would cost between USD 24 and 36 million.[7] Although costs have fallen in recent years, they increased in 2022 due to rising raw material and component prices and remain above $300/kWh.[8] Roughly half of current BESS costs are attributable to battery cells. The remaining costs derive from the process of packing the cells into battery packs, adding cooling, software control systems, and any remaining balance of plant costs. Before the onset of the COVID-19 pandemic, the cost of some battery energy storage technologies had fallen 87% in real terms from 2010 prices, which were above $1,100/kWh.[9] Battery costs are expected to remain high in 2023 before dropping in 2024. Thereafter, they are expected to continue declining over time due to several factors, including technology improvements, manufacturing and supply chain economies of scale, competition between manufacturers, greater product integration ahead of installation, and more overall industry expertise.

Figure 1: Near-term lithium-ion battery cell and pack price forecast



Source: BloombergNEF

To meet global climate goals, advances in new technologies are essential. One such example is green hydrogen, which is produced using a RE-powered electrolyzer powered that splits water into hydrogen and oxygen through a process called electrolysis. Green hydrogen is a vital part of the energy transition and has potential for energy storage, since it can be used directly in fuel cells or burned when required

[5] IRENA (2017), Electricity Storage and Renewables: Costs and Markets to 2030, International Renewable Energy Agency, Abu Dhabi.
[6] IEA (2023). https://www.iea.org/reports/grid-scale-storage
[7] BNEF (2019). Energy Storage System Costs Survey 2019.
[8] BNEF (2023). Top 10 Energy Storage Trends in 2023.
[9] BNEF (2019). https://about.bnef.com/blog/battery-pack-prices-fall-as-market-ramps-up-with-market-average-at-156-kwh-in-2019/?sf113554299=1

without resulting in CO2 emissions. Evolution of green hydrogen production from its current nascent stage, however, will require targeted investments of concessional capital to mobilize the needed level of private investment for impact on a transformative scale, and to de-risk green hydrogen pilots in higher-risk developing country contexts.

Renewable sources of energy coupled with energy storage have the potential to decarbonize power systems while providing reliable, dispatchable electricity. Energy storage, amongst other components of power system flexibility, is essential to achieving a high penetration of variable RE such as solar PV and wind and displacing fossil-fuel generation. RE systems with energy storage can also replace expensive diesel generators in island settings, small-to-medium sized grids, and industrial applications.

Demonstrating the performance of energy storage technologies and systems in frontier markets without significant cost is a key barrier for grid-level ESS deployment at scale. Catalyzing activity involving novel technology and a new operating environment entails higher risk that must be shared between the public, power sector actors, and/or developers. Sustained market engagement can be sensitive to poor early performance, though learning from early experience can help to recalibrate market expectations. Inadequate demonstration of performance in frontier markets – including most developing countries – increases risks for safety, functionality, and profitability of ESS deployments and could hobble market development.

1.3 Country Context

IFC's ***Accelerating Energy Storage Systems Program*** has a global focus and will support a pipeline of private sector storage projects in several developing countries, starting with the most advanced ones in Colombia and the Philippines.

Colombia

Climate change is a major issue for Colombia. The country is increasingly vulnerable to flooding, landslides, and water shortages, all of which impacts agriculture, human health, economic activities, and critical infrastructure. In December 2020, Colombia demonstrated commitment to delivering on its climate and sustainability targets by releasing revised NDCs, pledging to reduce greenhouse gas (GHG) emissions by 51 percent in 2030, compared to the "business as usual" (BAU) scenario, and working towards achieving carbon neutrality by 2050.

Colombia is highly dependent on hydroelectric energy, which supplies about 67 percent of annual generation capacity. Fossil-fuel based power plants (mainly gas, followed by coal and liquid fuels) account for 31 percent of installed capacity, while the remaining two percent is made up of biomass (1.2 percent), solar (0.8 percent), and wind (0.1 percent).[10] Under normal or high hydrological conditions, approximately 80 percent of the country's energy demand is met through hydropower plants. The system, however, is vulnerable to extreme weather events caused by the El Niño effect and droughts, which can impact continuity of service, exert upward pressure on electricity tariffs, and lead to increased fossil-fuel based power generation to compensate for decreased hydropower output.

To reduce reliance on hydropower, Colombia's **National Energy Plan 2020-2050** seeks to expand non-conventional renewable energy (NCRE) sources to up to 45 percent of the country's total electric power production by 2050. The plan has an ambitious target of installing almost 20 GW of renewable generation (excluding hydro) by 2050, roughly the equivalent of Colombia's current total power generation capacity of 17,761 MW.[11] The country is readying new regulations for battery storage and electromobility to guarantee a seamless shift to a low-carbon economy.

[10] Colombia CIF REI Country Investment Plan. https://www.cif.org/sites/cif_enc/files/meeting-documents/gcap_colombia_rep_ip2.pdf

[11] Colombia CIF REI Country Investment Plan. https://www.cif.org/sites/cif_enc/files/meeting-documents/gcap_colombia_rep_ip2.pdf.

Between 2019 and 2021, the Mining and Energy and Planning Unit (UPME) conducted three long-term auctions for NCRE and awarded contracts for 2.1 GW of wind and solar projects. Most of the projects were expected to come online during 2022 – 2023 but have since been delayed either due to changes in project economics post-COVID-19 or delays in the construction of transmission lines necessary to evacuate the generated electricity. Inadequate transmission infrastructure will limit the potential development of NCRE if regions with excellent renewable resources remain poorly interconnected with the national grid. One such example is La Guajira, a department on Colombia's northern Caribbean coast that has excellent wind resources year-round but is poorly interconnected with the national grid and has one of the lowest levels of energy access in the country. All the wind capacity awarded in the first auction is located there, representing over 75 percent of total capacity awarded in the auction.[12]

RE + energy storage could contribute to Colombia's plan for enhancing electricity system reliability by helping defer costly investments for the upgrade of transmission and distribution infrastructure in regions.

Philippines

The Philippines ratified the Paris Agreement in 2017 and submitted its NDC in 2021. Relative to a BAU scenario, the country commits to reducing emissions by 75 percent in 2030, of which 2.7 percent is unconditional and 72.3 percent is conditional. The mitigation contribution is conditioned by the extent of financial resources that will be made available to the country, including technology development and transfer, and capacity building.

Currently, the country is experiencing an increasing demand for power driven by its rapidly growing population and economy. Energy capacity is around 26 GW and approximately 43 GW of additional capacity will be required by 2040. The Philippines is dependent on fossil fuels, which supply almost 80 percent of its energy needs. The primary energy mix consists of coal (47 percent), natural gas (22 percent), renewable energy (hydro, geothermal, wind, solar) (24 percent), and oil-based (6.2 percent).[13] Although the country produces fossil fuels to meet energy consumption, it remains a net energy importer. The country is heavily reliant on coal for power generation and mainly imports its requirements from Indonesia. According to government data, nearly 70 percent of the coal supply in 2020 was imported.[14] Excessive reliance on expensive imported coal is one of the primary reasons why the Philippines has the highest electricity prices in Southeast Asia.[15]

Natural gas supply is primarily sourced domestically. According to the Philippines Department of Energy (DOE), however, the country's main domestic natural gas field (Malampaya field) faces supply depletion by 2027. As a result, the country will need to depend on liquefied natural gas (LNG) imports to fuel gas-fired power plants with a combined capacity of more than 3 GW.[16] The country faces a mounting energy crisis, since the Malampaya gas fields supply 30 percent of the energy consumption of Luzon – the main northern island in the Philippines, which is the largest and most populous of the three island groups, as well as home to the country's capital, Manila. The transition to clean energy will help to end the dependence on expensive fossil fuel imports and lower electricity costs particularly for lower-income and vulnerable households, which is why energy security and self-sufficiency are key priorities for the government.

[12] Climatescope (2023). https://global-climatescope.org/markets/co/
[13] International Trade Administration U.S. Department of Commerce. Philippines Energy Market (April 2020). https://www.trade.gov/market-intelligence/philippines-energy-market
[14] https://www.reuters.com/markets/commodities/philippines-urges-indonesia-lift-coal-export-ban-2022-01-10/
[15] Institute for Energy Economics and Financial Analysis (IEEFA). The Philippine energy transition: Building a robust power market. https://ieefa.org/resources/philippine-energy-transition-building-robust-power-market
[16] Reuters (2023). https://www.reuters.com/business/energy/philippines-greenlights-seventh-lng-project-gears-up-gas-imports-2023-01-27/

RE accounts for a meaningful share of the energy mix due to a long-standing use of geothermal and hydropower resources for electricity generation, as well as biomass use by the industrial and residential sectors. The Renewable Energy Act of 2008, one of the landmark laws enacted by the government, seeks to: (i) accelerate the exploration and development of the country's RE sources, and (ii) increase utilization of RE by providing fiscal and non-fiscal incentives to private sector investors and equipment manufacturers or supplies. Since 2008, however, the share of RE has dropped by about 10 percentage points from a high point of around 34 percent.[17] To achieve the country's goals as required by the RE Act, the government's National Renewable Energy Program (NREP) 2020-2040 targets a 35 percent share of RE in the power generation mix by 2030 and a 50 percent share by 2040. ESS technology will be a key enabler of these targets.

In 2022, representing a significant shift in the country's energy policies, the Philippines DOE fully opened the RE sector to foreign ownership to incentivize foreign investments and increase the speed of the country's clean energy transition. With abundant RE sources such as geothermal, hydropower, solar and wind, energy storage is required to integrate larger shares of variable RE. Proposed changes to rules and regulations aimed at easing energy storage integration into power markets could spur greater interest in ESS technologies. All told, challenges to private sector investment must also be addressed for the Philippines to achieve its climate targets.

Gender Gap Analysis

Globally, women lag men in leadership and technical jobs in the RE sector and, according to the International Renewable Energy Agency, represent just one third of the RE workforce worldwide.[18] In the countries targeted by the *Program*, the gender gap is driven by unequal access to education, limited access to technical skills and training opportunities for women, as well as unfair company policies, among other factors. IFC is working with private sector clients – large companies and small firms – to close gender gaps and increase women's participation in the RE sector, which can help companies improve their business performance, foster innovation, attract more talent, and engage better with communities. It also creates more economic opportunities for women.

Gender-smart and inclusive interventions in the energy sector have the highest potential for impact: globally, the sector produces three-quarters of GHG emissions, 800 million people live without electricity and 3 billion people – primarily women and children – cook with biomass fuels, with significant implications on health and time poverty.[19] The sector offers opportunities to increase women's employment and entrepreneurship in renewable energy, drive the uptake of healthier and more environmentally friendly cooking practices, and ensure that large-scale energy transition programs do not inadvertently widen gender gaps. Gender-inclusive power sector planning, energy subsidy reforms, investing in energy access for women and other underserved groups, employing women in renewable energy companies (with a focus on non-traditional and technical roles), supporting women's entrepreneurship and enhancing women's voice and agency (in particular in decision making and leadership) inform and adapt strategic approaches in this space.

Gender aspects will be given thorough consideration and addressed at the sub-project level depending on the issues and opportunities that are identified at the appraisal stage for each sub-project. Additionally, gender considerations will build on IFC's efforts to bridge the gender gap in the RE sector and draw lessons from various ongoing initiatives, such as the five-year Energy2Equal program launched in 2019

[17] The Philippines News Agency (2023). https://www.pna.gov.ph/articles/1159659

[18] IRENA (2019), Renewable Energy: A Gender Perspective. IRENA, Abu Dhabi. https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective

[19] World Bank Group. 2021. World Bank Group Climate Change Action Plan 2021–2025: Supporting Green, Resilient, and Inclusive Development. World Bank, Washington, DC. https://openknowledge.worldbank.org/entities/publication/ee8a5cd7-ed72-542d-918b-d72e07f96c79

in partnership with the Government of Canada to reduce gender gaps in the RE sector workforce in Sub-Saharan Africa and increase research and data on the business case for women's participation.

1.4 Barriers to Private Sector Investment

Utility-scale applications of energy storage technologies are nascent. As a result, first-movers face significant market barriers akin to those faced by developers of first-in-kind RE projects. Even projects awarded with PPAs are likely to encounter various challenges in reaching financial closure. Key barriers include:

- *High upfront and technology costs*. The high upfront and technology costs for ESS remain the most significant barrier to growth. Despite the major reductions in system costs that have been achieved over the past several years, utility-scale energy storage remains an expensive technology. The significant upfront investment required is difficult to overcome without government support and/or low-cost financing. Approximately 95 percent of grid-scale storage deployments use lithium-ion batteries. Over the next decade, the scale of lithium-ion battery production is expected to increase, driven mostly by electric vehicles, which will lead to a fall in system costs. Economies of scale and technology improvements that reduce material needs will drive overall cost reductions, and cost decreases will occur across the manufacturing value chain;

- *Market transparency*. The energy storage market is less mature than solar PV and wind, and the rapid improvement of economics has not been adequately disseminated. The successful demonstration of ESS projects at scale will increase market transparency and result in storage technology being considered more often in the solution set;

- *Lack of familiarity with storage technology among utilities*. A lack of familiarity with newer technologies that are used in utility-scale ESS and limited local technical experience to operate and maintain the installed systems have restricted the energy storage market in many non-OECD markets, except for China. It is critical for energy ministries, national electric utilities, power system regulators, and other large commercial and industrial customers to be educated on the potential benefits of energy storage. Piloting commercial-scale storage projects could provide reference cases to demonstrate the value of the nascent technology;

- *Underdeveloped grid infrastructure*. The overall stability of the electrical grid in a particular country or region is an important consideration in determining the potential market for stationary ESS. In most developing countries, power grids are weak and cannot take full advantage of the solar and wind potential. The stability of the grid will influence the type of ESS that will be deployed, and how they are used;

- *Regulators and financiers*. Batteries and other ESS can perform transmission/distribution functions and provide ancillary services, all while simultaneously serving as generators when they release stored energy. These multiple possibilities pose challenges for regulators since current global electricity regulation regimes divide assets into generation and non-generation. The regulatory framework to adequately value and compensate for the service that batteries provide is often lacking. As a result, the increased cost brought on by the addition of ESS is not offset by similar increases in revenue. Appropriate regulatory and policy environments and procurement practices need to be fostered to help drive down the cost of batteries at scale and to ensure financial arrangements that will create confidence in cost recovery for developers. Following successful pilot projects and accumulated experience, regulators will be able to better assess and value the benefits of storage systems, as well as create compensation schemes to attract more storage; and

- *Lack of conducive regulatory environments*. A main obstacle to faster adoption of ESS is a lack of regulatory certainty, since some potential income streams depend on regulatory framework, e.g., the remuneration of ancillary services. Apart from China, no other emerging market had comprehensive storage regulations in place, as of February 2020.

While governments are primarily focusing on addressing the last two barriers listed above, the successful implementation of pilot projects can help create significant momentum in overcoming all the barriers listed. The first pilot projects will undoubtedly face adverse conditions, such as risky markets and low on-the-ground capacity, leading to higher technology costs and project risks, thus making concessional support critical. While these barriers add complexity to projects, initial successes in these markets can help governments further enhance the policy and regulatory environment for developers and investors, contributing to continued sector growth and a reduction to future project costs.

1.5 Summary of the Proposed Program

The ***Accelerating Energy Storage Systems Program*** will have a global focus and support a pipeline of private sector energy storage projects in several developing countries.

- The *Program* will promote clean energy innovation by supporting projects that advance the adoption of energy storage and demonstrate the viability and/or large-scale application of battery storage solutions. The successful execution and operation of energy storage projects across a range of geographies and applications will help ESS technology become cost-competitive, achieved in part by growing economies of scale in the manufacturing of energy storage units, technology improvements that reduce material needs, and cost decreases across the manufacturing value chain. At the local level, it is expected that growth of the energy storage market in target countries will lead to increased capacity to provide related services, including manufacturing of project components, and maintenance of systems, among other benefits.

- The *Program* will aim to address the barriers to private sector investment and catalyze further scale-up of RE by supporting first-mover private sector utility-scale RE + storage projects in developing countries. IFC has been supporting innovative uses and business models utilizing solar and wind technology to improve the cost of electricity supply from RE-power generation. Affordable battery-power energy storage is the missing link between the intermittent nature of RE and the demand for firm, predictable and dispatchable power. Much progress has been achieved towards reaching this objective; however, further concessional support is needed in the next phase of RE market development to promote system reliability through the direct inclusion of the *storage component* into RE plants.

- By utilizing innovative de-risking structures that use blended concessional finance, CTF GESP concessional funds for the *Program* will support private sector RE generation projects with storage configurations, which will be structured to address and overcome the barriers that inhibit market transformation.

- The *Program* will support a pipeline of RE + storage projects in a manner that will increase attractiveness of project structures that involve RE + storage and generate positive demonstration effects across the respective regions. This will help to incentivize private sector developers, increase competition, and drive down the tariffs to levels competitive with those of thermal generation, enable the global transition to sustainable energy and net zero emissions economies.

1.6 Investment Services component

Energy storage is capital intensive, and costs have risen recently due to increased demand and supply chain constraints, especially for technologies that follow best sourcing practices. As a result, ESS

deployment remains concentrated mainly in developed countries that benefit from the higher purchasing power of end consumers and government subsidies. Concessional finance through the range of financial instruments available to the CTF GESP will support the deployment of ESS at scale in developing countries. It is widely acknowledged that the project cost gap between RE + storage and thermal generation remains significant. As a result, the need for concessional resources such as Viability Gap Financing (VGF) is pronounced and a large amount of concessionality might be needed to level the playing field.

IFC will continue developing its pipeline with a view to support three to four projects that can establish a track record to help accelerate the deployment of ESS to decarbonize existing power systems. IFC will efficiently structure the existing CTF GESP concessional resources and continue monitoring the market to determine whether alternative approaches are needed. CTF financing will leverage at least the same amount in IFC financing. As the composition of all projects under the *Program* is not yet known, it is difficult to provide precise estimates of financial leverage and other broad parameters at this time. However, IFC expects the *Program* leverage to achieve around 18x of the CTF amount or more (including IFC, other development finance institutions, private sector, etc.).

(in USD millions)	**CTF (A)**	**IFC**	**Other**
Total Financing for Sub-Projects	40.610	160	555
Total co-financing mobilized **(B)**		715	
CTF Leverage Ratio (A:B)		**1:18**	

The *Program* presents a unique opportunity to support the global decarbonization agenda. The expected sub-projects have high demonstration potential, since RE + storage or standalone ESS will help show how storage technology can integrate power from intermittent RE such as solar PV and wind into the grid. This is especially important given the amount of RE already in operation and planned addition of more RE capacity in future. Replication in other countries can reasonably be expected.

The final decision to provide CTF funding to a sub-project will be subject to a full due diligence process and approval by the IFC Board, as well as an internal IFC approval body governing blended concessional finance operations. Furthermore, each sub-project will be required to meet IFC environmental, social, governance and other compliance requirements, as well as all country-specific regulatory requirements. IFC's participation in the sub-projects will ensure that IFC's Performance Standards, including Environmental and Social guidelines, are implemented early in the project development cycle. Investments undertaken by IFC are not expected to require sovereign guarantees (except government guarantees to PPAs where necessary). Therefore, they will not necessarily be reflected in the country's debt service requirements, and thereby not affect the country's debt sustainability.

1.7 Program's strategy to achieve market transformation

The *Program* will continue playing a broad transformational role in the RE sector by supporting transformative utility-scale energy storage projects. Sub-projects funded under the *Program* will seek to establish a track record and demonstrate the viability of financing standalone ESS and dispatchable RE + storage projects by the private sector in complex and evolving regulatory environments. The *Program* will also help to establish project financing standards and reference documentation for future ESS projects.

In the long term, the need for concessionality is expected to diminish because: (i) the perception of risk will fall, prompting greater interest of commercial investors, lowering the cost of capital, and enabling future projects to achieve reasonable returns; and (ii) the domestic market will mature and build capacity in understanding the technology (equipment supply, engineering, advisors etc.), while global markets

will continue to grow and equipment costs will continue to fall. The *Program* will further benefit from synergies with the efforts of the country governments in promoting energy storage technologies.

2 FIT WITH INVESTMENT CRITERIA

2.1 Potential GHG Emissions Savings

The GHG emissions reduction estimates presented in this proposal are based on the conservative options of potential design. If the final design of the sub-projects will result in different technical configurations of the energy storage systems, the updated target GHG emissions savings estimates will be reported at the MDB approval milestone.

Calculations of potential GHG emissions savings are based on the following assumptions[20]:

- Expected total installed capacity: at least 172 MW for RE and 207 MW/828 MWh for storage;
- Weighted average Combined Margin Emission factor for solar/wind[21]: 0.543 tCO_2e/MWh (Philippines) and 0.309 tCO_2e/MWh (Colombia);
- Weighted average Capacity factor (based on indicative industry benchmark): 29%; and
- Anticipated lifetime of sub-projects: 20 years.[22]

The *Program* is expected to directly generate GHG emission reductions of about 277,655 tCO_2e over a representative year and about 5,553,108 tCO_2e over the life of the sub-projects.

Given that the *Program* may result in an uptake of RE + battery storage projects, triggering a series of follow-up projects, IFC anticipates that these activities may result in increased stakeholders' capacity, enhanced sector knowledge, and noticeable replication effect. For example, assuming a multiple of at least 4x, the *Program* could potentially lead to an ***indirect*** GHG emissions savings of 22,212,434 tCO_2e.

2.2 Cost-Effectiveness

Based on the above calculations and overall size of the investment component of this *Program* of approximately USD 40.610 million, the implied direct GHG emission reductions per CTF USD will be 0.137 tCO_2e/USD (or USD 7.31/tCO_2e) over the life of the sub-projects.

With the total investment cost of all sub-projects estimated to be around USD 755.61 million, the total investment per direct lifetime GHG emission reductions is expected to be around USD 136/tCO2e.

2.3 Demonstration Potential at Scale

The *Program* will support projects that advance the adoption of energy storage and demonstrate the viability and/or large-scale application of energy storage solutions. Sub-projects targeted by the *Program* will be aligned with efforts under the USD 1.0 billion WBG program to accelerate large-scale demonstration projects in developing countries. In addition to investments, the WBG is supporting the development of policies and regulations required to promote deployment of energy storage and the implementation of procurement practices in favor of economically feasible and environmentally friendly

[20] Expectations are based on performance of solar PV + electrochemical battery storage plants. The GHG emissions savings assumptions are associated with the solar PV component of the plant, which is enabled by the battery storage.
[21] For grid-connected renewable energy, IFC follows the International Finance Institution (IFI) Approach to GHG Assessment in Renewable Energy. GHG emissions are estimated based on the combined margin emission factor.
[22] The IFC GHG accounting methodology provides guidance on calculation of the GHG emission reductions on the basis of one representative year. To assess the amount of the lifetime GHG savings, an indicative average life of physical assets is assumed to be around 20 years. Actual values of lifetime for individual assets and sub-projects may vary and are likely to be different from the lifetime of the financial instruments.

battery technologies. IFC will seek to ensure that activities under the *Program* have synergies with the work being undertaken under CIF Country Investment Plans, other development partners, and are in line with country climate targets.

Colombia's National Energy Plan 2020-2050 seeks to expand non-conventional RE sources to up to 45 percent of the country's total electric power production by 2050. The plan has an ambitious target of installing almost 20 GW of renewable generation (excluding hydro) by 2050, roughly the equivalent of Colombia's current total power generation capacity. Similarly, the Philippines' National Renewable Energy Program 2020-2040 targets a 35 percent share of RE in the power generation mix by 2030 and a 50 percent share by 2040. These targets reflect growing global intent to diversify away from coal and transition towards cleaner energy. ESS technology will be a key enabler of these targets. Solar PV and wind generation are fully proven, both technically and commercially, and there are widespread examples of successful application at scale around the world. The energy storage market is less mature in comparison.

CTF support is expected to be critical to enable the development of utility-scale energy storage projects in target countries to enable the integration of power from intermittent RE into the grid, which could provide the impetus for a significant market scale-up. Success of the first-mover projects will demonstrate the role utility-scale battery storage configurations can play in satisfying an already significant power demand that continues to grow.

2.4 Development Impact / Co-benefits

Sub-projects under this *Program* are expected to enable and accelerate utility-scale battery storage solutions. Overcoming barriers to financing utility-scale standalone ESS and RE + storage projects will help target countries achieve a more diversified and sustainable energy mix and set them onto a cleaner growth path. Hence, the *Program* will mainly contribute to the realization of SD7 (affordable and clean energy) and SDG13 (climate action), which seek to ensure access to affordable, reliable, sustainable, and modern energy for all, and take urgent action to combat climate change and its impacts, respectively. The *Program* is expected to generate the following additional benefits:

- Economic recovery/growth and decarbonization. The *Program* will help diversify the power mix and add desperately needed capacity, which will not only help spur economic recovery and growth, but also support the decarbonization agenda. In the Philippines, the transition to clean energy will help to end the dependence on expensive fossil fuel imports and lower electricity costs particularly for lower-income and vulnerable households and improve the quality of life. Increasing NCRE + storage deployment, in Colombia for example, will reduce the vulnerability of power systems that are susceptible to climate change impacts such as drought (e.g., hydropower-based power systems) and obviate the need to increase fossil-fuel based power generation to compensate for decreased output;

- Local employment. The *Program* will help to stimulate growth in local employment, as local labor – men and women – will be engaged during project construction and operation. Also, energy and economic growth are linked: by delivering reliable and cost-efficient energy to the grid, the sub-projects will allow for the expansion of businesses, local supply chains, and opportunities for communities, especially those affected by the coal transition. Higher growth is expected to create jobs, leading to lower unemployment; and

- Spill-over effects. Accelerating the development of the energy storage sector will stabilize power supply in the respective countries and regions. Additionally, it is expected that the potential development of the sector in other countries and emerging markets will also receive a boost.

2.5 Implementation Potential

The global energy storage market is projected to grow 15-fold by 2030. However, much of that growth is expected to remain concentrated primarily in regions with highly developed economies. The *Program* aims to support a pipeline of standalone ESS and RE + energy storage projects in several developing countries to accelerate the rate of technology transfer. Projects in Colombia and the Philippines are most advanced, and both countries have strong potential for renewables growth. For example, solar, wind, and biomass resources have the most potential in Colombia. For solar and wind generation, there are regions in the country where solar radiation levels are above 4.5 Kwh/mt2/day and areas where wind speed is greater than 9 m/sec at a height of 80 m.[23] Both levels are above the global average of about 3.5 Kwh/mt2/day for solar and 7 m/sec for wind.[24] Colombia is readying new regulations for battery storage and electromobility to guarantee a seamless shift to a low-carbon economy. The *Program* will coordinate closely with other domestic programs, where applicable, and relevant government entities during implementation. By offering tailored financial instruments and utilizing creative de-risking structures that use blended concessional finance to catalyze new private sector investment, the *Program* is expected to establish a track-record by demonstrating the viability of commercial financing for utility-scale storage projects and contribute to accelerating development of the market.

2.6 Additional Costs & Risk Premium

The terms and amount of the CTF GESP funding to be provided under the *Program* will reflect the reality of the market. CTF GESP funding will seek to overcome barriers to market transformation for the *Program* with the minimum level of concessionality required.

2.7 Financial Sustainability

The objective of the *Program* is to catalyze impact on the energy storage market and ecosystem in developing countries, as well as increase the use of RE and improve grid reliability, stability and power quality, while reducing carbon emissions. The first-mover utility-scale energy storage projects are expected to require concessional funding support due to the high upfront and technology costs, high perceived risks, uncertainty, and lack of in-country experience. Over time, however, the need for concessional funds will likely diminish. The perception of risk will decrease, attracting greater interest from domestic and private sector investors. Equipment costs will also continue to fall, allowing for prevailing market tariffs to become sufficient to deliver desired rates of return to investors.

Thus, the development efforts, persistence, and high costs encountered by the early movers in the sector will ease the development and implementation process and lower entry costs for future project developers. These demonstration efforts will also improve the capacity of battery storage technology service providers and prove the technical and economic realities of RE + energy storage configurations. Through these mechanisms, the *Program* expects to promote the sustainability of utility-scale battery storage projects, thereby accelerating the development of the sector across emerging markets.

2.8 Effective Utilization of Concessional Finance

Concessional funding will:

- Enable selected sub-projects to obtain financing with terms not currently available on the market, but necessary for them to move forward;

[23] S&P Global Market Intelligence. 2021. *Colombia's prospects for renewables*. https://www.spglobal.com/marketintelligence/en/mi/research-analysis/colombias-prospects-for-renewables.html
[24] Ibid.

- Allow IFC and other commercial investors to provide financing to sub-projects, reaching financial closure;
- Set a precedent of successful projects;
- Directly enable the construction of a series of transformative utility-scale energy storage plants and indirectly stimulate the RE sector in countries where little to no RE capacity has been financed by private sector to date and where it may not yet be competitive;
- Encourage private sector participation in dispatchable utility-scale battery storage projects that can be replicated in other emerging markets.

2.9 Mitigation of Market Distortions and Application of DFI Enhanced Principles of Blended Concessional Finance

The proposed *Program* will not distort the market, since it will not be displacing any private sector investment, but rather will support such investment. The *Program* represents an important opportunity to innovate, since it will leverage and enable financing to enter the nascent energy storage market. Concessional finance will be directed towards addressing first-mover costs experienced by project developers seeking to provide new and evolving energy storage solutions, given the high cost of battery storage technology. The sub-projects will represent first-of-its-kind energy storage investments, therefore, initial market distortions cannot be foreseen or measured. After the initial investments, and as the markets mature and become better understood by financiers and developers, it is expected that commercial financing will flow, reducing the need for concessional funding.

The sub-projects supported under the *Program* will seek to minimize the use of CTF funds and maximize the leverage achieved from IFC and private sector financiers. Actual terms and structure of CTF funds will be tailored on a project-by-project basis and will be designed in a way to facilitate investment in a project, while adhering to the principle of minimal concessionality and avoiding market distortions. Each CTF project will be subject to IFC's own internal governance for blended concessional finance operations and will be reviewed by a corporate-level Blended Finance Committee.

The dedicated IFC team, working on the CTF tranche in each investment sub-project, as well as members of the Blended Finance Committee will carefully ensure that the sub-project structures respond to all DFI Enhanced Principles for Blended Concessional Finance for Private Sector Projects. Specifically:

- Economic Rationale for Blended Concessional Finance: While IFC will provide financing that is not readily available in the energy storage sector in the target countries, considering the market barriers discussed in section 1.5, CTF funds will help rebalance the risk-return profile for the private sector sponsors and lenders (including IFC) and support a competitive tariff for nascent ESS solutions. Without concessional funds from CTF, IFC would not proceed with the projects;
- Crowding-in and Minimum Concessionality: The "minimum concessionality" principle requires that subsidies should not be greater than necessary to induce the intended investment. The CTF investment will provide a subsidy to the projects' investors, but only to the extent necessary for them to be financially viable and proceed;
- Commercial Sustainability: Use of blended concessional finance co-investments in the energy storage sector in is expected to reduce over time as a track record is established, risks are better understood, and financiers are better able to assess and price relevant risks to enable further investment in the target countries and/or other emerging markets;
- Reinforcing Markets: Supportive regulatory environments for energy storage are now being increasingly developed, with the support from other development partners. The successful implementation of energy storage solutions such as BESS will help to clarify and reduce perceived regulatory risks, while also establishing a track record, which can in turn mobilize

additional investment from the private sector. This will also help highlight the benefits to regulators and law makers at the national and municipal levels; and

- Promoting High Standards: The final terms of the CTF tranche of all investments will be approved by IFC's Blended Finance Committee in line with the CTF funds risk tolerance, eligibility criteria, and parameters of this *Program*. All the parties to the legal agreements are or will be made aware that IFC is acting on its own account, as well as an implementing entity for CTF.

2.10 Risks

Potential risks associated with the *Program* include:

- Implementation Risk. IFC will use CTF funds to help offset ESS costs and enhance the economic viability of RE + storage solutions to directly compete with thermal projects. This, however, may be insufficient to establish and support adequate conditions and finance to ensure storage technologies are cost-competitive with other generation options. As a result, the *Program* might not end up with any sub-projects if eligible storage projects are not cost-competitive.
  Mitigants. Sector engagement is ongoing to ensure sufficient pipeline. Approval of CTF funding for the *Program* will be a necessary pre-requisite for further engagement. Where applicable, potential terms of IFC's blended concessional finance package will be made available to all eligible bidders prior to the bid submission deadline to provide transparency and open access. With availability of the funds and certainty of the terms known before bid submission, bidders can structure their bids in a way that ensures all the subsidy provided by the CTF funds is passed through to the tariff, bringing the cost of ESS down to the level where it is more competitive with fossil fuel-based generation.
- Technology risk. Many ESS technologies are still under development. Battery technologies, for example, are inherently hazardous as they utilize materials that could potentially react violently with each other. A primary focus has been on the fire hazards associated with Lithium-ion batteries and the potential for a condition known as thermal runaway, which results from internal shorts inside a battery cell and can ultimately lead to the battery catching fire or exploding.
  Mitigants. Technology risks will be critically evaluated. IFC will ensure proper planning, risk assessment, storage methods, and response protocols are in place to manage technology risks.
- Country risk. Uncertain political, economic, and security outlooks could make the provision of long-tenor financing challenging.
  Mitigants: Sub-projects will be carefully selected and reviewed to ensure that (i) PPAs include standard protections, such as political force majeure, and (ii) other appropriate risk-mitigating products are in place, as necessary.
- Supply chain risk. Global supply chain disruptions, from raw materials to finished products, may affect the dynamics and speed of delivery of target sub-projects, which could result in delays.
  Mitigants: Despite the challenging logistics and price dynamics resulting from supply chain constraints, there is clear demand for energy storage. Major suppliers adapted measures to counter logistical bottlenecks during the pandemic, and most developers and contractors will factor potential disruptions in their schedules.
- Environmental and social risk: Sub-projects supported by the *Program* may give rise to environmental and social risks.
  Mitigants: IFC will adhere to its comprehensive Environmental & Social safeguards and policies to implement and monitor all underlying projects, as well as follow the "Equator Principles" in all projects similar to other large infrastructure projects financed by IFC.

3 PERFORMANCE INDICATORS[25]

The performance indicators outlined below are derived from the CTF Results Measurement Framework. These indicators will be tracked at least annually and will include:

Indicator	Current Baseline	Anticipated Impact
CTF Core Indicators:		
GHG emissions avoided (tCO_2e): - per annum - over the indicative 20-year life of sub-projects	0	277,655 5,553,108
Incremental financing leveraged (of all non-CTF parties), USD million	0	715
Installed capacity of RE as a result of CTF interventions (MW)	0	172 (solar)
GESP-Specific Indicators:[26]		
Energy rating (MWh)	0	207
Power capacity (MW)	0	85
Regulations, codes or standards for energy storage solutions issued (#)	N/A	N/A
Project-specific Indicators:		
Number of innovative energy storage sub-projects implemented (#)	0	2
Development Co-benefit Indicators (as applicable):		
Enhanced energy access (MWh/year)	0	TBC

[25] At this stage, not all the technical details are yet known to precisely determine the anticipated impact of the relevant performance indicators under the *Program*. This information will be updated at the IFC Board approval stage for each sub-project.

[26] Energy and power ratings are based on electrochemical storage technology for utility-scale applications.

Annex A: Email from CTF Trustee confirming cash availability for this project

Annex B: Updated IFC Global Energy Storage Program (GESP) Project Concept

Project title	**Accelerating Energy Storage Systems Program**	
Country or region	• Global	
Type of energy storage asset	• Electrochemical batteries (grid or mini-grid scale) • Other GESP-eligible technologies	
Implementing MDB	International Finance Corporation (IFC)	
Brief description (including project objectives and innovation aspects)	IFC's Accelerating Energy Storage Systems Program (the "*Program*") will utilize CTF funds under the DPSP IV Global Energy Storage Program to catalyze impact on the energy storage market and ecosystem in developing countries. Storage is a key component of IFC's power strategy, which is based on country-level approaches focused on supporting client countries' energy needs, energy security, and climate transition through universal access to affordable, reliable, and cleanest energy available. Energy storage is a crucial tool for enabling the effective integration of RE, as well as unlocking the benefits of local generation and a clean, resilient energy supply. Energy storage solutions are needed most in developing countries, where power grids are weak and cannot take full advantage of their solar and wind potential, as well as in emerging economies that experience a rapid increase in energy needs, especially during peak hours. Despite falling costs, energy storage systems (ESS) remain expensive – with a small market primarily in developed countries. The significant upfront investment required for ESS is difficult to overcome without government support and/or low-cost financing. The *Program* seeks to accelerate and/or kick-start transformative investments and private finance in energy storage and RE in low and middle-income countries. To this end, IFC will develop private sector programs and projects aimed at increasing RE integration, improving grid reliability, stability and power quality, while reducing carbon emissions. IFC's energy storage programs and projects will target several CIF countries where IFC already has a growing pipeline. IFC will leverage its Upstream practice and InfraVentures, where appropriate, and in doing so, seek to partner with credible sponsors and other private sector players to make early investments into projects that advance the nascent energy storage market in developing countries. In addition to investment activities, the platform will support IFC's ongoing upstream initiatives aimed at (i) addressing market barriers that prevent the scale up of energy storage lending activities; (ii) accelerating stable policy frameworks for storage projects; (iii) developing viable business models, and (iv) conducting grid analyses to determine the potential role for energy storage. The platform will, therefore, help to create additional investment opportunities through the successful implementation of these upstream initiatives.	
Expected CTF financing by financial instrument (USD M)	Senior Loans, Subordinated Loans, Equity and Quasi-Equity, Risk Sharing Facilities. Final selection of financing instruments will be done at the project level, reflecting specific project risks, macroeconomic conditions, sectoral dynamics, etc.	33
	Viability Gap Financing (Grants)	8
	Total	**41**
	IFC	160

Expected leveraging and co-financing by source (USD M)	Other lenders	555
	Total	**715**
Expected results (if available)	GHG emissions reduced or avoided (Tons CO_2e) - per annum - over the indicative 20-year life of sub-projects	 277,655 5,553,108
	Installed capacity of RE as a result of CTF interventions (MW)	172
	Energy rating (MWh)	207
	Power rating (MW)	85
	Regulations, codes or standards for energy storage solutions issued (number)	N/A
Expected dates of milestones	Submission to CTF Trust Fund Committee	March 2023
	MDB Approval	[September 2023]
Project status	IFC is gearing up to operationalize its storage strategy in key markets and has several ongoing upstream initiatives and investment leads that meet readiness criteria. Individual projects will follow IFC's business cycle and will be expected to reach Board approvals within timeframes consistent with experience of the current blended climate finance portfolio and the CTF Pipeline Management and Cancellation Policy.	