GCF DOCUMENTATION PROJECTS

Concept Note

Project/Programme Title:	Solar for Health Programme: Enabling the provision of sustainable low-carbon energy services to public health facilities in Sub-Saharan Africa
Country(ies):	Liberia, Malawi, Namibia, Zambia, Zimbabwe
National Designated Authority(ies) (NDA):	Environmental Protection Agency, Liberia Environmental Affairs Department, Malawi Ministry of Environment and Tourism, Namibia Ministry of National Development Planning, Zambia Climate Change Management Department, Ministry of Environment, Water and Climate, Zimbabwe
Accredited Entity(ies) (AE):	United Nations Development Programme (UNDP)
Date of first submission/ version number:	*[YYYY-MM-DD] [V.0]*
Date of current submission/ version number	*[YYYY-MM-DD] [V.0]*

Notes

- The maximum number of pages should **not exceed 12 pages**, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.
- As per the Information Disclosure Policy, the concept note, and additional documents provided to the Secretariat can be disclosed unless marked by the Accredited Entity(ies) (or NDAs) as confidential.
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A. Project/Programme Summary (max. 1 page)			
A.1. Project or programme	☐ Project ☒ Programme	**A.2. Public or private sector**	☒ Public sector ☐ Private sector
A.3. Is the CN submitted in response to an RFP?	Yes ☐ No ☒ If yes, specify the RFP: _____	**A.4. Confidentiality[1]**	☐ Confidential ☒ Not confidential
A.5. Indicate the result areas for the project/programme	Mitigation: Reduced emissions from: ☒ Energy access and power generation ☐ Low emission transport ☐ Buildings, cities and industries and appliances ☐ Forestry and land use Adaptation: Increased resilience of: ☐ Most vulnerable people and communities ☒ Health and well-being, and food and water security ☐ Infrastructure and built environment ☐ Ecosystem and ecosystem services		
A.6. Estimated mitigation impact (tCO2eq over lifespan)	1,015,151	**A.7. Estimated adaptation impact (number of direct beneficiaries and % of population)**	33.65M
A.8. Indicative total project cost (GCF + co-finance)	Amount: US$ 144,810,000	**A.9. Indicative GCF funding requested**	Amount: US$ 128,820,000
A.10. Mark the type of financial instrument requested for the GCF funding	☒ Grant ☐ Reimbursable grant ☐ Guarantees ☐ Equity ☐ Subordinated loan ☐ Senior Loan ☐ Other: specify_____		
A.11. Estimated duration of project/ programme:	a) disbursement period: 7 years b) repayment period, if applicable: not applicable	**A.12. Estimated project/ Programme lifespan**	20 years.
A.13. Is funding from the Project Preparation Facility requested?[2]	Yes ☒ No ☐ Other support received ☐ If so, by who:	**A.14. ESS category[3]**	☐ A or I-1 ☒ B or I-2 ☐ C or I-3
A.15. Is the CN aligned with your accreditation standard?	Yes ☒ No ☐	**A.16. Has the CN been shared with the NDA?**	Yes ☒ No ☐
A.17. AMA signed (if submitted by AE)	Yes ☒ No ☐ If no, specify the status of AMA negotiations and expected date of signing:	**A.18. Is the CN included in the Entity Work Programme?**	Yes ☒ No ☐
A.19. Project/Programme rationale, objectives and	**Programme rationale.** Approximately 25% of health facilities in Sub-Saharan Africa (SSA) have no access to electricity while a further 28% do not have reliable access to		

[1] Concept notes (or sections of) not marked as confidential may be published in accordance with the Information Disclosure Policy (Decision B.12/35) and the Review of the Initial Proposal Approval Process (Decision B.17/18).
[2] See here for access to project preparation support request template and guidelines
[3] Refer to the Fund's environmental and social safeguards (Decision B.07/02)

approach of programme/project (max 100 words)	power and experience frequent outages that affect the continuity and quality of care. Many facilities are compelled to rely on fossil-fuel generators, either as the primary on-site energy source or as a back-up measure for unreliable grids. High dependency on fossil fuels and increasing energy demand for healthcare delivery (including for cold-chain storage of vaccines/medicines) could drive an increase in GHG emissions in the health sector for decades to come. It is therefore important to increase access to sustainable, renewable energy in such health care facilities through the use of cost-effective, rapidly deployable and reliable solar energy solutions to support a reduction in GHG emissions and strengthen the quality and resilience of health care, including surveillance for climate-sensitive diseases. **Programme objectives** The Programme aims to (1) increase access to sustainable renewable energy in over 3,000 rural and urban public health facilities in five target countries in SSA, thereby reducing over 1 million tonnes of CO2 emissions over the lifetime of the programme; (2) strengthen the quality and continuity of health care services in SSA (including cold chain storage for vaccines/medicines) through increasing access to stable, reliable and cost-effective solar energy, thereby benefiting over 33.65 million beneficiaries; and (3) strengthen service continuity and surveillance of climate-sensitive or emerging diseases. **Programme approach**. Utilising innovative, scalable and rapidly-deployable distributed renewable energy solutions, supported by private sector-led business and financing models to ensure the affordability and sustainability of the provision of renewable energy services to health facilities.

B.1. Context and baseline (max. 2 pages)

Energy access. This Programme will cover five Sub-Saharan African (SSA) countries with significant energy access gaps Liberia, Malawi, Namibia, Zambia, and Zimbabwe. The overall energy access rate for these countries is 29%, which is well below the overall energy access rate for SSA which is 47% – a region that is home to more than half of the 789 million people in the world without access to electricity[4]**.** Similarly, energy access is a challenge for the health sector where electricity supply is either unavailable or unreliable in a significant number of health facilities across SSA. Studies show that approximately 25% of health facilities have no access to electricity while a further 28% face frequent power outages, leading to reduced health care quality, treatment outcomes and surveillance data interruptions.[5] Inadequate power supply has been found to be the single most common cause of medical device failure based on data from 33 hospitals in 10 developing countries.[6] The lack of access to reliable energy disproportionately affects rural healthcare facilities located in areas where the poorest population lives, but also affects non-rural health facilities, e.g. by restricting treatment times, or the range of services that can be offered, including the provision of vacciness and other medicines requiring cold chain storage.

The health sector and climate change.

- **Mitigation**: The combination of high dependency on high-cost fossil fuels to meet the basic health sector energy needs and the increasing energy demand for healthcare delivery will drive an increase in GHG emissions in the health sector for decades to come, unless the baseline pathway is redirected toward sustainable energy solutions. More reliable and clean energy supply will not just address acute shortages, but also enable additional services to be provided.

  Advances in medical techniques and devices, and the development of vaccines and treatments that often require refrigeration, are driving not only growth in healthcare expenditures but also the energy intensity of healthcare services. The availability of sustainable cold chains to safely store and preserve medicine, vaccines as well as food was already inadequate, and has now become more urgent with the COVID-19 pandemic. [OBJ] Organization of Economic Co-operation and Development (OECD) countries spent an average of 12.4% of Gross Domestic Product (GDP) on health care in 2018, compared to 5% in SSA. In OECD countries health sectors accounted for about 5% of their national carbon footprints, surpassing sectors like aviation or shipping.[7]

[4] IEA, IRENA, UNSD, World Bank, WHO. 2020. Tracking SDG 7: The Energy Progress Report. World Bank, Washington DC. © World Bank. License: Creative Commons Attribution—NonCommercial 3.0 IGO (CC BY-NC 3.0 IGO).

[5] Adair-Rohani et al, Global Health Science and Practice, August 1, 2013 vol. 1 no. 2 p. 249-261

[6] WHO (2010) Medical devices: managing the mismatch: an outcome of the priority medical devices project.

[7] Peter-Paul Pichler et al 2019 Environ. Res. Lett. 14 064004, International comparison of health care carbon footprints

- **Adaptation**: Increasing temperatures in the five beneficiary countries are expected to favour the development and replication of pathogens, thus resulting in the increase of climate-sensitive diseases such as malaria, dengue fever and chikungunya, heat stress and other health issues amid limited data availability and capacity to analyse and monitor their spread or even assess their risks. Several diseases are sensitive to rising temperatures. SSA accounts for approximately 70% of the world's malaria burden[8]. In 2019, 228 million cases and 405,000 deaths were recorded in SSA, despite successful control efforts that have reduced transmission in many locations over the past 20 years. At the same time, diseases caused by arthropod-borne viruses such as dengue and chikungunya are increasing along with globally warming temperatures. Malaria transmission for instance peaks at 25°C, whereas dengue transmission peaks at 29°C. Warming temperatures in the African continent are expected to favour transmission of dengue over malaria[9].

  There are no clear statistics for dengue cases because of underreporting and misclassifying, but according to WHO estimates, there are around 100-400 million cases globally every year. It is also clear that the number is on the rise: Before 1970, only nine countries had experienced severe dengue epidemics, but now the disease is endemic in more than 100 countries. While the Americas, South-East Asia and Western Pacific regions are still the most seriously affected, dengue epidemics are also becoming more common in the Africa region[10].

Table 1. Dengue outbreaks in sub-Saharan Africa between 2009-2017

Year	Countries	Cases	Deaths
2017	Burkina Faso	9,029	18
	Côte d'Ivoire	623	2
2016	Burkina Faso	1,266	15
2009	Cape Verde	16,744	–

Source: Africa CDC[11]

The limited monitoring capacity at the government level as well as at the health facility level to monitor climate variables and anticipate the effects of climate on health and on determinants of health undermine the adaptive capabilities of communities in SSA. Lack of data and information on climate variability and related health impacts represents a serious hindrance to planning, management and decision-making. Further, the inability and/or limited capacity of personnel to interpret relevant data significantly affects efforts to manage climate induced disease and outbreaks in a timely manner.

In addition, health sector policies and strategies in the five beneficiary countries do not fully incorporate potential climate change impacts on health. National health policies, strategies and plans seldom consider climate change impacts on health as a key driver of resource planning and investment needs. Improving energy sectoral policies while failing to integrate climate change and health related strategies in the policy frameworks will have a significant bearing on future investments in climate resilient health infrastructure, such as affordable, reliable clean energy, hygienic healthcare facilities, data and health-climate information systems, and capacities of personnel at all levels, to support last mile interventions that will benefit the most vulnerable communities.

The five participant countries are also increasingly exposed to extreme climatic events exacerbated by climate change including flood and droughts, which in particular affect the availability of electricity due to the high dependency on hydropower resources, therefore posing a serious risk to their electricity supply . In Zambia for example, in 2014-2015, a drought led to a decline of 50 percent of the country's hydroelectric generation and during the dry season in 2019, Zambia experienced electricity price hikes and outages as a result of low water levels in hydropower systems. The proposed programme will thus also contribute to establish a more climate resilient energy system for the health sector in the participating countries.

[8] World Health Organization, 2020. World Malaria Report 2020: 20 years of global progress and challenges.

[9] Mordecai E.A., Ryan S.J., Caldwell J.M., Shah M.M. & LaBeaud A.D., 2020. Climate change could shift disease burden from malaria to arboviruses in Africa. Lancet Planetary Health 4:9, E416-E423.

[10] World Health Organization, 2021. Dengue and severe dengue. Accessed at: https://www.who.int/news-room/fact-sheets/detail/dengue-and-severe-dengue

[11] Africa CDC, 2021. Dengue fever. Accessed at: https://africacdc.org/disease/dengue-fever/

Financing gaps and overall context. Public sector health facilities in the five beneficiary countries rely on national budget allocations to cover their yearly operations. Electricity supply for health centres relies on diesel for off-grid facilities. For those connected to the grid, the service provided by power distribution companies is intermittent, often leaving no other choice to health centres than having a back-up diesel generator. Amid challenges stemming from fossil fuel-based generation in off-grid areas and intermittency in on-grid areas, the five beneficiary countries are limited in their ability to adopt a low carbon and climate resilient path. Indeed, yearly operations allocations to public health centres are unable to finance the acquisition of new solar equipment and limit their ability to pay for energy- as-a-service. To this challenge comes an insufficient domestic and international financing appetite to provide capital for renewable energy operations that would focus on serving public health facilities. In addition, the high off-taker counterparty risk associated with energy services to such public health centres has limited private sector engagement in setting-up dedicated energy supply operations. Other requirements such as the need for uninterrupted electricity service, which are imposed by risks of dealing with human lives during clinical operations, have made small Health - Energy Service Companies (H-ESCOs) operators reluctant to invest in the opportunity of electrifying public health centres as a commercially viable activity.

Risks and opportunities on electricity-health nexus. Without reliable access to electricity, health facilities are not able to power essential medical devices such as ventilators, autoclaves and operating rooms; X-ray and imaging equipment; systems to pump, filter and heat water to ensure requisite hygiene practices; or to run and maintain cold chain equipment that enable storage and distribution of vaccines and other medications, including the COVID-19 vaccine. Furthermore, higher energy demand devices – conceived to function in high-income countries with reliable electrical power grids – can leave hospitals and clinics in poorer countries struggling to find generators, fuel or batteries. In sub-Saharan Africa, up to 70% of medical equipment stands idle, according to WHO's Guidelines for health care equipment donations, in part due to maintenance challenges, but also due to lack of reliable energy supply to keep them operating.[12] Moreover, electricity allows for lighting of health facilities to enable night-time service provision and increase safety of health workers, which can also be a factor in attracting and retaining skilled health workers and providing faster life-saving emergency response. Coupled with communications equipment, it can enable remote health applications and facilitate public health education and the dissemination of information. Table 2 below sets out the coverage of health facilities that the Programme is expecting to electrify by country.

Health facilities without reliable access to power are compelled to rely on costly to run and polluting diesel or gasoline backup generators, either as the primary on-site energy source or as a common stopgap measure to unreliable grids. A recent International Finance Corporation (IFC) report estimates there are 6.5 million generators in SSA supplying 9% of electricity demand.[13] The reason for this high level of on-site generation is that hospitals and many health facilities are often open 24 hours a day and require constant power supply to provide lighting, and power medical appliances, fridges, heating, ventilation, and where available air conditioning systems to control room temperature and pressurization. Without on-site generator backup, health facilities connected to unreliable grids would be exposed to grid outages with consequences ranging from equipment damage to putting lives at risk.

Table 2. Health facilities selection [14]

Country	Health care facilities	Facilities Government owned	Public Off-grid facilities	Catchment population (millions)	Total population (millions)	% total population covered	Total facilities in scope

12 https://www.who.int/bulletin/volumes/91/1/13-020113.pdf?ua=1

13 IFC (2019), The Dirty Footprint of the Broken Grid - The Impacts of Fossil Fuel Back-up Generators in Developing Countries, September 2019

14 **Table data source:**

Liberia

Solar for Health (S4H) innovative financing feasibility study in Liberia, Malawi, Namibia, Zambia and Zimbabwe UNDP PRC/ZWE/RFP/0008/7/8/2019 _ Liberia – country report July 24, 2020.

Solar for Health (S4H) innovative financing feasibility study: Liberia summary report, July 2020.

Malawi

Solar for Health (S4H) innovative financing feasibility study in Liberia, Malawi, Namibia, Zambia and Zimbabwe UNDP PRC/ZWE/RFP/0008/7/8/2019_Malawi – country report July 24, 2020.

Solar for Health (S4H) innovative financing feasibility study: Malawi summary report, July 2020.

Namibia

Solar for Health (S4H) innovative financing feasibility study in Liberia, Malawi, Namibia, Zambia and Zimbabwe UNDP PRC/ZWE/RFP/0008/7/8/2019

Namibia – country report July 24, 2020.

Solar for Health (S4H) innovative financing feasibility study: Namibia summary report, July 2020.

Zambia

Solar for Health (S4H) innovative financing feasibility study in Liberia, Malawi, Namibia, Zambia and Zimbabwe UNDP PRC/ZWE/RFP/0008/7/8/2019_Zambia – country report July 24, 2020.

Solar for Health (S4H) innovative financing feasibility study: Zambia summary report, July 2020.

Zimbabwe

UNDP Solar for Health Interventions, November 2020.

Liberia	936	468	411	2.85	4.8m	59.3%	464
Malawi	8,369	568	374	15	18m	83%	447
Namibia	589	350	103	0.9	2.5m	36%	103*
Zambia	3,003	2,304	1,641	5.4	18m	30%	941
Zimbabwe	1,047	1,184**	-	9.5	14.4m	65.9%	1,047
Total		**4,874**	**2,529**	**33.65**	**57.7**	**58%**	**3,002**

* 100% of off-grid facilities.
** Facilities already have solar battery systems installed through an UNDP intervention but require O&M support.

Building on technological change. The opportunity the Programme aims to build upon is a function of a number of converging disruptive trends, including: dramatic cost reductions in equipment and the resulting levelized cost for electricity compared to fossil fuel alternatives (solar modules, batteries); gains in technology and hardware performance (energy efficient appliances); and the advent of new business and financial models, supported by digitalization and cellular communications, eliminating the need for upfront payments for solar equipment on the part of the end user (third-party ownership models). A broad range of cost-effective technology solutions are now available: off-grid small-scale solar power distribution networks (mini-grids), small photovoltaic (PV) solar systems, PV solar-powered refrigerators, PV arrays with batteries (stand-alone or hybrid system with a back-up fuel-based generator). These opportunities are already being used to improve the service provision of health centres in more advanced markets, while issues around the Ability to Pay and structural questions around service contracts still undermine the transformation of public sector owned health centres in nascent markets such as the ones considered in this proposal.

Shifting the health and energy paradigm in Sub-Saharan Africa. The opportunity for distributed renewable energy solutions to provide cost-effective, rapidly deployable and reliable energy supply for health facilities is becoming a central solution to operate a qualitative change in the electrification of health facilities through Energy-as-a-Service (EaS) models. Governments in the five countries targeted by the Programme are currently at a tipping point to determine a development path that avoids the “lock in” of carbon intensive technologies for the foreseeable future, which would come with negative impacts on their ability to achieve low-carbon, sustainable growth. Renewable energy solutions such as wind and solar are already some of the most affordable alternatives available to provide energy services and fuel a green economic recovery from the COVID-19 crisis. Additionally, they are important technologies to create local jobs, enhance economic competitiveness and make energy systems more resilient to future crises and climate change impacts.

Further, the energy sector across the five beneficiary countries is organized in a way that devolves electricity distribution operations to either Regional or National Distribution companies. Existing policies enable private sector involvement in power generation operations with different levels of complexity at entry. The Technical Assistance Component of this P rogramme aims to create a level playing field for H-ESCOs to reduce market entry barriers through conducive arrangements with existing power distributors with the introduction of policy instruments that addresses the electrification gaps of public health centres.

COVID-19 response. The COVID-19 crisis is highlighting the importance of reliable and affordable access to electricity to enable health systems to respond to rapidly increasing demand generated by disease outbreaks, while simultaneously striving to maintain essential health service delivery. As countries move to strengthen their health systems in response to pandemics, ensuring reliable access to electricity for health facilities is of paramount importance, especially given the need to deploy electronic systems to manage the supply chain of vaccines and medicines. At the same time, ensuring that their access to energy is expanded through renewable energy sources will be critical to reduce current and future GHG emissions driven by increasing energy demand for healthcare delivery. The World Health Organization’s (WHO) prescriptions for a healthy and green recovery from COVID-19 stress the importance of investing in essential services such as water and sanitation and clean energy in healthcare facilities. Further, the COVID-19 pandemic underscored the critical role of telehealth and telemedicine in healthcare delivery--services for which access to reliable energy is critical.

B.2. Project/Programme description (max. 3 pages)

Programme rationale. The Programme’s theory of change is detailed in **Annex 2**. The Programme is designed to deliver a **new paradigm for funding renewable energy supply for health** by addressing both supply and demand-side barriers that are undermining access to modern solar energy services to health facilities in the five beneficiary countries. It will deliver an innovative and replicable financing scheme for clean power supply for health facilities. In seeking to address the health sector’s financial limitations for expanding access to clean energy, public and donor funding has traditionally been used for the purchase and installation of solar assets in health facilities. In some cases, the technology provider commits to provide operations and maintenance (O&M) for the equipment for a period ranging from 1 to 3 years. However, the broadly recognized limitation of this model is that it fails to ensure adequate O&M over the lifespan of procured solar assets, including safe disposal of discarded equipment at the end of energy systems’ lifetime, which is usually from 10 to 20 years. This often results in premature malfunction of solar systems due to a failure to replace batteries when required or even due to minor incidents that are left unattended. This model also does not support private sector participation and/or attract the expertise that could otherwise drive innovation and support the long-term sustainability of clean energy systems.

To ensure the sustainable operation of the solar energy systems, the implementation of innovative business and financing models, led by the private sector, are needed. The Programme will shift the focus from pure CAPEX financing for the installation of energy generating assets to an impact driven model, which rewards the delivery of clean, reliable and affordable energy services by energy service providers. This shift in delivery model will give health facilities access to energy without having to incur upfront equipment procurement costs, while at the same time providing service providers the incentive to ensure service quality and reliability over time. The proposed model also enables the private sector to mobilize finance from local commercial banks and improve local capacity in financing renewable energy addressing off-taker risks. This model also offers the opportunity to expand clean energy services to a wider set of consumers, with the health facilities acting as anchor customers in unserved areas and can thus lead to wider social and economic benefits.

Overcoming barriers to success. Despite the social and economic benefits of renewable energy sources and the enormous potential to develop distributed renewable energy solutions for health facilities, SSA countries face several barriers and challenges to seizing this opportunity:

- The health sector has a limited ability to pay for energy-as-a-service. New, third-party ownership or leasing business models[15] for solar systems remove the need for health facilities making an upfront-investment, but nonetheless involve ongoing 'Energy-as-a-Service' (EaS)[16] payments on the part of the off-taker or end-user. EaS contracts require in the initial years that the off-taker has a solid balance-sheet and honours payments on time, else the investment is too risky for private sector energy companies. Many public health facilities in SSA are underfunded and, at current cost of service levels, are unable to make these payments and/or guarantee the availability of budget for the term of the service, thus making them an insufficiently reliable off-taker for energy service providers to engage with. In addition, governments have limited technical capacity to tender and administer EaS contracts.

- Insufficient public and private, domestic and international financing for energy capital costs. The level of investments required to ensure access to electricity for health facilities in SSA exceeds the current availability of financing. In addition, the small size of projects, often located in hard-to-reach locations, are less attractive for investors and distributed renewable energy service providers, resulting in high-financing costs.

- Energy access needs for health facilities do not get translated into energy sector policies and plans for the health sector. Infrastructure and basic service needs for health facilities are rarely factored into national infrastructure planning. Hence, energy infrastructure in health facilities remains insufficient to effectively address basic health service needs, or additional demand driven by a pandemic or by climate-sensitive diseases and climate change impacts on health.

- High off-taker counterparty risk for the private sector. Traditional commercial off-grid energy investors have expressed little appetite for accepting uncovered public counterparty risk in SSA. This has significantly limited access to affordable capital for energy service providers, especially those with a focus on public health infrastructure. Where local financing may be available, it can come at prohibitively onerous terms, to address the high inflation and steady currency depreciation that further reduces investor appetite.

In the broader context of health and climate, significant barriers remain and pose a challenge for the health care system across SSA to respond to the increasing needs of its population, in light of a changing climate. These include the following:

- Limited data availability and capacity to analyze and monitor climate-sensitive diseases and assess risks. There is limited monitoring capacity at the government level as well as at the health facility level to monitor climate variables and anticipate the effects of climate on health and on determinants of health. Lack of data and information on climate variability and related health impacts represents a serious hindrance to planning, management and decision-making. Further, the inability and/or limited capacity of personnel to interpret relevant data significantly affects efforts to manage climate induced disease and outbreaks in a timely manner.

- Health policies and strategies do not fully incorporate potential climate change impacts on health. National health policies, strategies and plans seldom consider climate change impacts on health as a key driver of resource planning and investment needs. Taking a sectoral approach that fails to integrate climate change and health related policies and strategies will have a significant bearing on future investments in climate resilient health infrastructure, such as

[15] In a third-party ownership business model, the energy assets remain the property of the energy service provider. Whereas in a leasing business model the ownership of the assets is transferred to the end-user after a determined period of services by the energy service provider.

[16] Energy-as-a-service contract can take the form of a Power Purchase Agreement (PPA) or a lease contract. Lease contract can include as well modalities such as lease-to-own.

affordable, reliable clean energy, hygienic healthcare facilities, data and health-climate information systems, capacities of personnel at all levels, and last mile interventions that will benefit the most vulnerable communities.

Programme approach. The Programme will comprehensively address the barriers set out above through a combination of technical assistance, policy dialogue, aggregated procurement, and a financial mechanism that will strengthen the health sector´s ability to pay for energy services through an energy-as-a-service approach. It will use these tools to promote new approaches to enable the participation of the private sector in reliable and clean energy service delivery for the health sector in the target countries thereby providing enhanced access to health services, both in terms of the number of patients that can be serviced, and the range of services that can be supplied. It will further deliver data and information trends of climate induced diseases in integration with existing climate information service systems in the five beneficiary countries, improving the adaptive capabilities of the beneficiaries on climate change induced effects on health.

Programme structure. The Programme is structured to respond to the barriers and overcome them, by bringing together development institutions, the public and the private sector in a well-structured intervention that will combine donor funding and government budget allocations to incentivize private sector investors to offer power supply on a performance-based contract basis to health facilities in five countries.

The proposed mechanism is designed to continue to function after the end of the implementation period, leaving sustainable support frameworks, institutions and regulatory systems in place that ensure both the long-term sustainability of the intervention and its scale-up by broadening the provision of reliable and clean power to other health and public clients and into other sectors. Figure 1 below outlines the Programme structure which is described in further detail below.

Table 3 Role of stakeholders

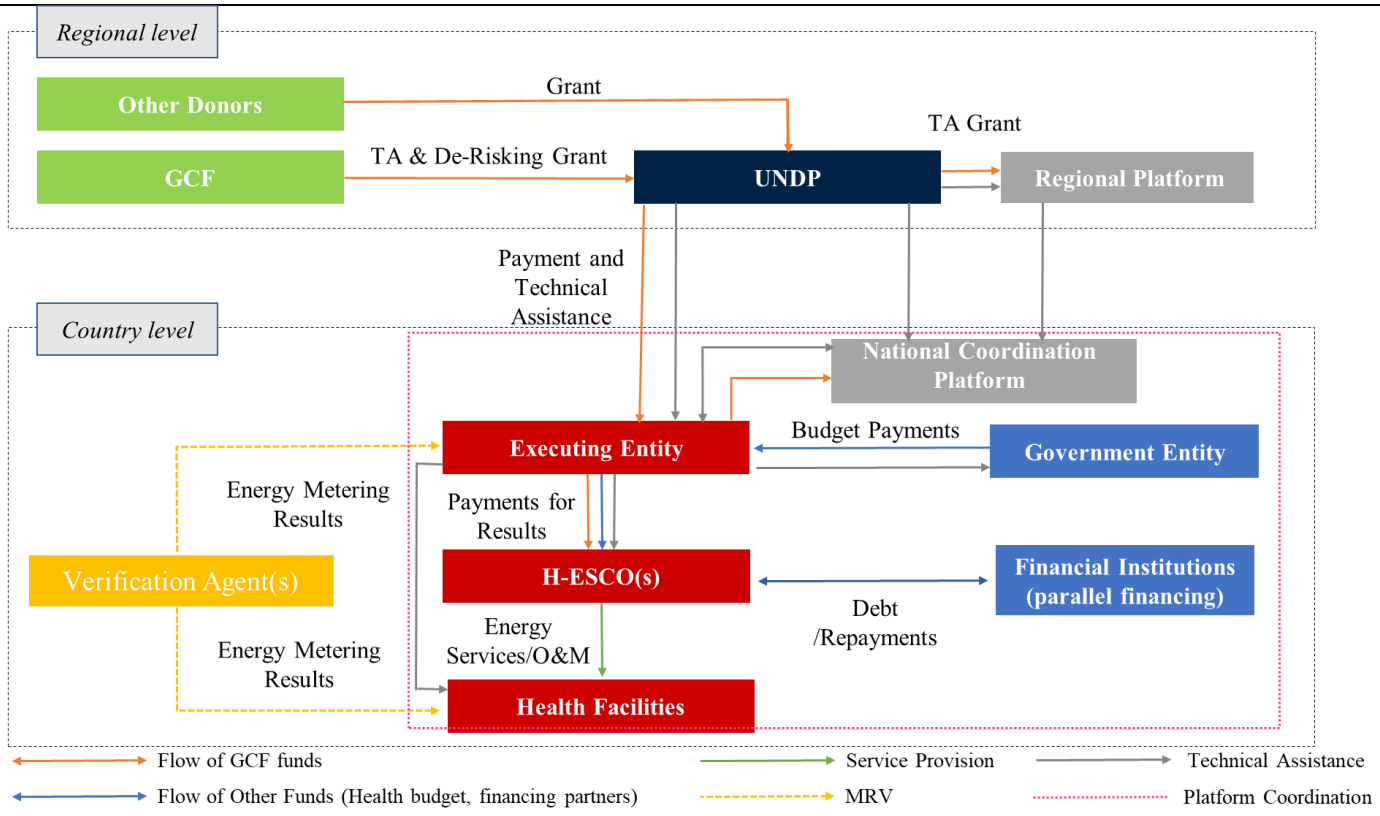
Stakeholder	Role
GCF	Financing Partner in the Programme. Proceeds from the GCF will be used to de-risk renewable energy supply for health centers by covering a portion of service costs alongside payments by the government. The GCF will further cover a portion of Technical Assistance necessary to strengthen institutional and regulatory frameworks to enable an innovative EaS model.
UNDP	UNDP's overall role as an Accredited Entity is to provide oversight and quality assurance. This role includes: (i) day-to-day oversight supervision, (ii) oversight of project reporting, (iii) oversight of project completion. It also includes oversight roles in relation to knowledge-management. Upon request from the government and based on the capacity assessment of the executing entity in each country, UNDP may provide support services for the procurement of H-ESCOs. Implementation arrangement details will be provided at the funding proposal stage for each country.
Regional Coordination Platform (RCP)	The RCP is a cross-border knowledge sharing and regional coordination forum which will be established for the programme and implemented by UNDP in partnership with Sustainable Energy for All (SEforAll) and the World Health Organization (WHO). The RCP will enable participating countries to share information and knowledge and learn from each other,[17] enabling dissemination of best practice and standardized tools that will benefit both H-ESCOs and policy makers. It will also be the entry point for future additional countries willing to deploy the H-ESCO

[17] The Regional coordination platform will build upon existing partnership such as the Health and Energy Platform of Action (HEPA) and Powering Health Care of which UNDP, SEforALL and WHO are partners.

	model. As such, the RCP is an important element in the scaling up of the model (using sound implementation practices and data from the 5 countries.	
Country Executing Entity	These are either Ministries of Energy in each country, or the Ministry of Health and/or Rural Electrification Fund as defined in each country. They will be recipients of technical assistance for capacity building and training to enable them to be competent parties to EaS contracts, including tendering H-ESCOs for the health facilities. The Executing Entities will contract Energy Service Providers that will construct and maintain solar systems to deliver clean electricity to health facilities. The Executing Entity will also host the PMU which will provide overall guidance and oversight with regards to the project´s execution.	
H-ESCOs	Health - Energy Service Companies are private sector operators that will be selected and contracted by the Executing Entity. They will mobilize finance from local commercial banks, the market and other DFIs to set-up the solar assets that will provide energy services to the health facilities. They will install the solar energy systems, operate and maintain them over their lifetime. Their incentive will be defined under the EaS contracts. A financial model will be submitted with the full funding proposal with sensitivity analysis that demonstrates the conditions for the model viability.	
Financial Institutions / Financing Partners	They will be either commercial banks or DFIs that will provide finance to selected H-ESCOs for the construction of solar energy systems. EaS contracts will be an important piece to provide the necessary comfort to financial institutions, and therefore enable unlocking market financial contribution towards renewable energy. Development finance institutions (DFI), impact investors and local financial institutions will be key in providing CAPEX finance to the Health-Energy Service Companies (H-ESCOs) and will be allowed to participate in both the regional and national platforms to ensure full information sharing. The DFIs engagement process has started and more details will be provided at the Funding Proposal stage. DFI financing to the H-ESCO will be considered as parallel financing.	
Independent Verification Agent	The Independent Verification Agent will verify the amount of energy service delivered by H-ESCOs to Health Centers and provide periodic reports to the Executing Entity. The reports of the Independent Verifier will also include the amount of CO_2eq displaced, providing to the program a viable and credible climate impact reporting feature.	
National Coordination Platform	The programme being at the nexus of Health and Energy will require coordinated efforts between line ministries, Ministry of Finance and agencies with related mandates such as energy regulators and rural electrification agencies. Other stakeholders such as Electricity Distribution companies will also have to be involved in the	

	countries having passed a Net Metering law. The National Coordination Platform is the place where all these relevant stakeholders will meet to tackle any issue of concern related to the Programme implementation. National coordination platforms are a critical element of the Programme in each beneficiary country. They will bring together the national executing entity (EE), government agencies, development partners, users and energy suppliers, and financial institutions to be able to overall coordinate the efforts in the electrification of health facilities at the national level and ensure the integration of energy and health sector stakeholders. The national platforms will be administered through the EE in each country. The Secretariat of the national coordination platforms may be placed inside the Ministries of Health, or other relevant institutions such as rural energy agencies, depending on the institutional arrangements defined in each country.
Government Entity	This is the government entity in charge of allocating and administering the budget for the energy yearly expenses for health centers to the EaS contracts.
Health Facilities	These are the end users of energy services. 3,002 public health facilities across rural and urban public health facilities have been pre-identified as targets for the provision of sustainable low-carbon energy services. Participant health facilities will be government owned and will be either with no access to electricity or connected to the grid but relying on costly and polluting diesel generators for their energy needs as backup due to limited grid reliability.

Figure 1: Diagram of flow of funds for the Programme



Financial flows. Within each country programme, energy service payments will flow based on performance of the H-ESCOs, through a Performance-Based Energy Payment (PBP) mechanism, when providing electricity to health facilities at specified reliability levels. The GCF proceeds to the Programme will pay for part of the energy service delivered by H-ESCOs to health facilities (EaS price). The remaining portion of the EaS price will be paid by the Government off-taker in alignment with their ability to pay. The purpose is to enable Government contribution (demand-side barriers) and enable private sector investment while addressing issues of viability and comfort typically raised by lenders when approached by the private sector (supply-side barriers). The proportion of contribution by Government versus Programme to the EaS price will be determined for each country based on the outcome of the feasibility study and the financial model which will be provided along with the full Funding Proposal. The guiding principle would however be that at minimum, ordinary government budget contribution is required. The EaS price will be such that it covers the initial investment costs and ongoing O&M of the renewable energy assets through the duration of the EaS contract and the Program implementation period. A reserve fund will be established to cover the necessary replacement of shorter-life items such as batteries (replacement and disposal). At the end of the Programme implementation and the end of the EaS contract, asset ownership will be transferred to the government. Until the end of the lifetime of the asset, the O&M cost, significantly lower than d iesel cost, will be covered by the government budget and H-ESCOs will continue to provide O&M services through an EaS price reflective of the cost of O&M.

Monitoring and verification.

Mitigation: A centralized Solar for Health digital platform (encompassing all countries in the programme) will be established to collect and analyse data for the Programme. Through its live integrations with energy systems and the platform's remote monitoring capabilities, streamlined workflow, and customizable algorithms, the digital platform manager will verify the performance of H-ESCOs on a connection-by-connection basis, confirming that a customer is receiving power at specified reliability levels. By integrating with the on-site hardware, the digital platform will show the level of energy being delivered and consumed at each connection point and allow for efficient management of grant disbursements. The digital platform manager will act as a verification agent. In addition to the one-time verification of performance, the data platform manager will be used for long term monitoring of sites to track program performance over time. The data platform manager will track data related to energy consumption, generation, and payment data, providing dashboards with KPIs related to system uptime, technical performance, and consumption and payment patterns over time.

Adaptation: Climate adaptation impacts could be measured by the number of beneficiaries with improved access to information on climate-sensitive diseases and trends. Verification will be through national statistics because of improved policy frameworks strengthening the surveillance and informing on outbreaks of such diseases. The

level of energy services provided by H-ESCOs and monitored by the data platform will also be a measure of the adaptive co-benefit of health centres. In the absence of long historic records on baseline data, this aspect will be treated as a co-benefit.

Programme outputs and activities. The Programme comprises the following components, outputs, and activities

Table 4: Project structure: Components, Outcomes, Outputs and Activities

Component	Outcome	Output	Activities
Component 1: Solar EaS for health facilities	Outcome 1: Access to clean, affordable and reliable energy services for 3,002 health facilities across the 5 countries	Output 1.1: Preparation of Performance-based Energy Payment mechanism for EaS	Activity 1.1.1: Multi-layer GIS mapping of targeted health facilities including detailed demand forecast for prioritized centers
			Activity 1.1.2: Detailed design of PBP mechanism and tools, including minimum service requirement
			Activity 1.1.3: Development of Technical requirements for procurement, business model and O&M strategy.
			Activity 1.1.4: Directory of providers including Pre-screening of H-ESCOs
		Output 1.2: Delivery of Solar EaS to health facilities	Activity 1.2.1: Procurement of H-ESCOs to design, install, operate and maintain solar systems for health centers
		Output 1.3: Verification, EaS administration and end of life exit	Activity 1.3.1: Set-up of independent verification and independent verification reports
			Activity 1.3.2: EaS administration by Executing Entity
			Activity 1.3.3: Ownership transfer to Government and preparation of post EaS initial contract arrangements.
Component 2: Surveillance and information systems for climate sensitive diseases	Outcome 2: Information and surveillance system for climate induced diseases in 5 countries	Output 2.1: Strengthened surveillance of climate sensitive diseases (vector/water borne) to inform future outbreaks	Activity: 2.1.1: Guidelines and SOPs for an integrated surveillance system; train health centre personnel on climate sensitive diseases, including emergency plans for responding to diseases and outbreaks
			Activity: 2.1.2: Train health centre personnel on climate sensitive diseases, including emergency plans for responding to diseases and outbreaks
		Output 2.2: Strengthened data monitoring and information systems on climate induced diseases and trends	Activity 2.2.1: Deployment of a Climate-sensitive diseases and trends monitoring system
Component 3: Technical Assistance	Outcome 3: Improved policy and institutional systems for enabling private sector	Output 3.1: Policy dialogue and regulatory development	Activity 3.1.1: Development of policy and regulatory plans to expand existing arrangements to EaS for health facilities

	investments in energy and health nexus		Activity 3.1.2: Development of an integrated plan for expanding energy access to health facilities considering climate change scenarios
			Activity 3.1.3: Integration of climate risk management into national and sub-national level health sector planning and investments
		Output 3.2: Trainings	Activity 3.2.1: Design and roll out of training of trainers (ToT) schemes to increase the number of technicians available in the market (to be managed by the government counterparts).
			Activity 3.2.2: Design and roll out of trainings on surveillance and information systems for climate sensitive diseases
			Activity 3.2.3: Trainings for strengthening institutional capacities of governments and communities to deal with the health and climate change nexus
		Output 3.3 : Regional and national knowledge platforms on energy and health are operationalized and informing countries´ interventions	Activity 3.3.1: Establishment of a regional platform to share lessons learned and good practices related to Climate Change and Health in the SSA region in partnership with SE4All and WHO
			Activity 3.3.2: Establishment of national coordination platforms to coordinate the efforts in the electrification of health facilities at the national level and ensure the integration of energy and health sector stakeholders
			Activity 3.3.3: Development of knowledge products and dissemination of guidelines and training material through platform and partner agencies

Programme outcomes. The integrated delivery of programme activities will ensure the Programme's objective to be achieved, which is the establishment of a replicable and scalable financial mechanism for clean and reliable power supply to health facilities in five Sub-Saharan African countries, and a system for information and trends on climate-sensitive diseases. This will result in ca. 1 million tCO_2eq reductions over the lifetime of the Programme and directly benefit ca. 33.65 million people[18] by providing improved availability of quality health services, enhanced capacity of healthcare workers, and strengthened resilience of health facilities as well as of the beneficiaries through improved access to information on climate-sensitive diseases and resilience to extreme climatic events. This is expected to significantly improve health outcomes across the region and improve patient comfort as well as deliver better-quality treatment. This will also lead to reduced inequalities in health service provision and is expected to lead to improvements in gender-related outcomes by enabling health service provision 24 hours a day, as needed for instance in maternal and child health.

Experience of the accredited entity. Since 2017, UNDP is spearheading Solar for Health interventions as a means of connecting two vital sectors – energy and health – to help countries advance universal health coverage (UHC) while protecting the environment. Through these interventions, UNDP has supported countries to install solar photovoltaic systems in over 900 health centres and storage facilities in Zimbabwe, Sudan, Zambia, South Sudan, Namibia, Nepal, Angola, Liberia, Chad, Uganda, Yemen and Libya. The installation of this systems have been made through a traditional

[18] Estimate based on the catchment population of the health facilities in the 5 countires.

approach of purchasing, installaing and transferring the solar assets in health facilities through grant funding. Although this model address the financial limitation of the health sector in these countries, it has limitiation to ensure the sustainability of the solar assets during their lifetime. Building on the lessons from similar interventions[19], UNDP has developed the energy-as-a-service approach proposed for this Programme.

This Programme also builds on the much larger investment and knowledge generated by UNDP's active energy portfolio focused on expanding access to clean energy, including the promotion of renewable energy and energy efficiency, in more than 110 countries, representing US$1 billion in grant financing and leveraging US$ 6 billion in co-financing. The portfolio of ongoing projects in Africa alone amounts to 47 projects, with an emphasis on off-grid electrification, across 27 countries.

Risks. The Programme will have a comprehensive risk management system in line with the UNDP's risk assessment and risk management framework for projects. Risks will be thoroughly assessed during preparation of each sub-project under the Programme. A Risk Management Plan identifying clear mitigation measures and responsibilities of relevant agencies will also be in place. Lessons learned in managing risk in early projects will be applied to managing later sub-projects in the pipeline, to ensure continuous learning across countries and sub-projects, and to apply best risk management practice. Projects under the Programme will be implemented through national partners which will put a strong focus on risk management and mitigation.

Table 3: Risks and Risk Mitigation

Stage in Cycle	Risk	Mitigation	Risk Owner
Start-up	- Lack of capacity in target ministries	- Involvement and capacity building of key sectoral ministries	- UNDP
Governance	- Lack of coordination between multiple stakeholders	- Strong PMU and effective coordination. Embed capacity in the PMU to work closely with key stakeholders and facilitate engagement through the national coordination platform	- UNDP
Procurement	- Integrity risks	- Adherence to UNDP procurement policies and procedures	- UNDP
	- Insufficient interest/lack of competition	- Market analysis prior to tender	- PMU
Implementation	- Inadequately specified solutions lead to delays in implementation and/or insufficient supply	- Detailed design at tender stage - Close supervision of implementation	- PMU
Stakeholder / Social / Gender	- Insufficient consultation	- Adherence to relevant UNDP/GCF policies and guidelines	- PMU
Financial Management	- Failure to adequately budget for installation cost overruns	- Prudent budgeting procedure	- PMU
	- Failure to adequately budget for O&M after the end of the PPA	- Prudent budgeting procedure	- PMU
	- Failure by the government to provide committed funding	- Robust contractual structures and government commitments - Involvement of all government stakeholders in National Platform	- UNDP
Operation & Maintenance (O&M)	- Supplier failure	- Results-based payment - Preparation for the government to take over systems after finalization of the PPA.	- Ministry
	- System operation beyond project end fails	- Assurance of appropriate hand-over arrangements and post-project O&M budgeting	- UNDP
Risk to Climate Impact Results	- Performance failure leading to increased use of fossil fuels	- Attention at tender stage - Close supervision of implementation	- PMU

B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)

[19] Eg. UN Foundation and SEforALL. 2019. Lasting impact – Sustainable off-grid solar delivery models to power health and education

a. Paradigm shift potential

The Programme's paradigm shift comes from pursuing three separate but linked approaches:

- The Programme will design and deliver an approach that will make the provision of clean energy supply to health facilities in the participating country a sustainable private sector activity by switching from the traditional asset finance-focused grant approach to an Energy-as-a-Service approach that will consider the lifetime of the asset, the opportunity of reducing the risk induced by limited ability to pay by the off-taker, and the use of government recurrent budget allocation as a contributor to the EaS payments.
- The Programme will provide training and capacity building to enable and reduce the cost of the continued maintenance of distributed renewable assets such as solar and storage installations, even in remote locations. It will further develop knowledge products related to electrifying health facilities as part of climate strategies and disseminate the products to enable replication and scale-up.
- The Programme will deliver data and information trends of climate induced diseases in the five beneficiary countries, improving the adaptive capabilities of the beneficiaries on climate change induced effects on health.

Baseline pathways will lead to progressively unaffordable and continuously underserving health facilities due to continuity of high level of payments on diesel fuel, and the consequent electricity undersupply which limits the scope of health care services that can be provided. This is particularly relevant as the need for expanding healthcare access both in terms of scale of population served and scope of services provided is expected to grow. Increase of climate induced diseases will remain unmonitored and countries will continue to have limited capacity to analyse and monitor their spread and assess their risks.

Creating enabling frameworks. The Programme will create enabling frameworks for increasing renewable energy supply through private sector participation. It will create a new class of private sector operators and enhance the regulatory and legal frameworks under which energy is supplied sustainably to the public sector in the Programme countries. The Programme will also strengthen surveillance systems of climate sensitive diseases (vector/water borne) to inform future outbreaks in the five countries.

Promoting innovation. The Programme is highly innovative, delivering a new financing approach to public sector electricity provision, as well as introducing at scale new technologies to the health sector to provide clean and reliable access to electricity.

Sharing knowledge and replicating transformational investments. The regional and national platforms will enable the Programme to rapidly share information across participants and stakeholders, drive learning, and ensure that successful approaches are rapidly replicated.

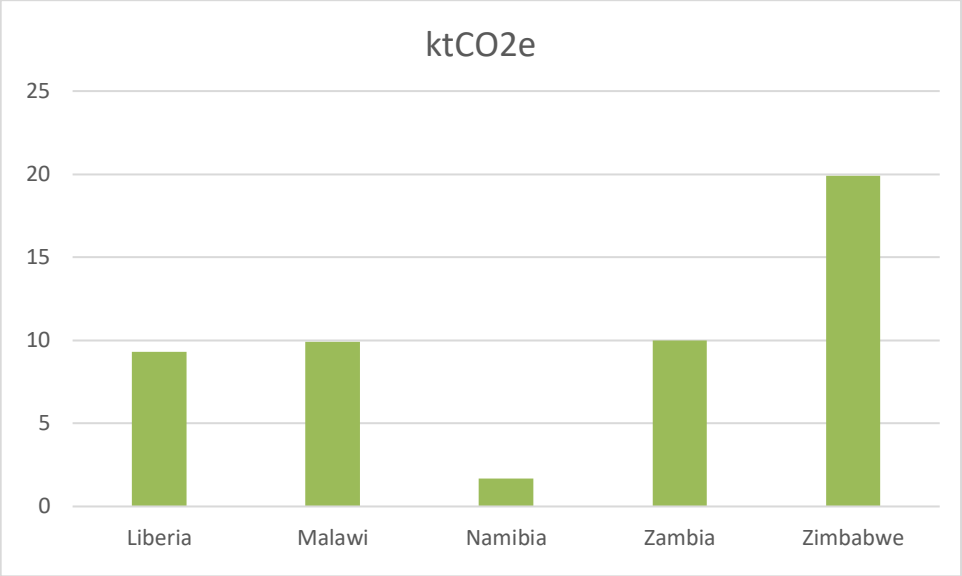
Private sector participation. The selected H-ESCO(s) would be in a position to utilise the low-risk, stable and medium-term income generated from the EaS contracts under this Programme to grow and expand their activities into commercial micro-grid systems if the local demand conditions and regulations allow for it. Raising finance for micro-grids is a challenging undertaking for current micro-grid providers in the region, who often have to generate demand in parallel with supply, and then face payment issues with many of their clients, while operating multiple diverse micro-grids in remote locations. The Programme overcomes these barriers by providing an anchor client with stable electricity demand and stable payments for a foreseeable future within a coherent framework.

b. Impact potential, GHG emission reduction and SDG alignment Click here to enter text.

Mitigation: The Programme is expected to **reduce and avoid emissions** of both GHG and local air pollutants. For facilities that currently use some form of energy – be it grid power, diesel or kerosene – installing solar energy will replace the use of fossil fuels and reduce current emissions. Under an assumption that facilities with currently no or limited use of energy will get access and increase energy use over time, installing solar energy can avoid that facilities meet their future energy needs with fossil fuels.

The GHG and local air pollutant emissions reduced per facility depends on the amount of energy consumed, the source of that energy (e.g. genset vs grid) and how much of that consumption is replaced by the solar energy solution. The emission reductions for each country further depends on the individual countries' grid emissions. Based on the assumptions that make up the main investment scenario, the Programme expects to reduce and avoid emissions by approximately **51 ktCO$_2$e/year for the five countries together**, assuming solar assets are installed at all facilities or **1,015 ktCO2e over the 20-year lifetime of the program**.

Figure 3: Annual CO_2 emissions reductions per country



Adaptation: The Programme will further deliver information systems for climate sensitive diseases benefitting 33.65 million people. The climate-sensitive diseases information and surveillance systems will provide forecasts on future outbreaks and thus reduce communities' exposure risks. The Programme will improve the duration of access to health services by improving the current energy access levels of health facilities, where 50% of the direct beneficiaries will be women.

c. Sustainable development potential

The Programme contributes significantly to the SDG agenda, with at least five SDGs covered as primary beneficiaries. It is expected to benefit up to 33.65 million people in five countries, covering a significant part of the population.

Table 4: Mapping Impacts and GCF Results Areas

SDG	SDG Description	Priority of Impact	Mapped GCF Results Area
3	*Health & Well Being*	*Primary*	- *Health, food, and water security*
5	Gender	Secondary	- Health, food, and water security
7	*Clean Energy*	*Primary*	- *Energy Mitigation*
8	Decent Work and Economic Growth	Secondary	- Livelihoods of people and communities
9	*Industry, Innovation, and Infrastructure*	*Primary*	- *Livelihoods of people and communities* - *Infrastructure and built environment*
11	*Sustainable Cities and Communities*	*Primary*	- *Infrastructure and built environment* - *Livelihoods of people and communities*
13	*Climate Action*	*Primary*	- *Infrastructure and built environment* - *Livelihoods of people and communities* - *Health, food, and water security* - *Ecosystems and ecosystem services*
17	Partnerships for the Goals	Secondary	- Infrastructure and built environment - Livelihoods of people and communities

-

The Programme is expected to have substantial economic, environment, social and gender- sensitive co-benefits which are also key for its long-term sustainability as set out in Section C3 below.

Economic:

(i) **Job creation in health service asset management**. The Programme will add employment at both the investment stage and through the training of technicians locally and within health facilities to operate and maintain the energy assets. This will add to technical capacity in the countries to establish and maintain renewable energy assets. H-ESCOs will also add to employment and economic growth by their establishment as new economic entities.

(ii) **Investment in social and economic assets of vulnerable communities**. Access to electricity enables lighting, enhancing safety for workers and users of health facilities, which is a factor in attracting and retaining skilled health workers and providing faster emergency response. This will improve the response capacity of health facilities in the five beneficiary countries, enhancing access to healthcare by the vulnerable communities in case affected by climate-sensitive diseases.

(iii) **Improvement in O&M and sustainable service delivery over the lifetime of the asset**. The Programme is designed with a sustainable O&M model in mind, thereby avoiding the key failing of traditional donor-funded

electrification programs. This will improve public sector management of long-life assets and reduce the life-time cost of energy provision to the health sector.In addition, it is expected that remote monitoring and digitilization will reduce O&M costs[20].

Environmental:

(iv) The Programme will reduce the risk of local pollution from diesel fuel spills and local air and noise pollution from the operation of diesel generators in health facilities.

Social:

(v) The Programme specifically recognizes the importance of gender inclusion and the protection of vulnerable groups, such as the elderly, in the project interventions and will provide more detail on the gender impacts during the development of the detailed Gender Assessment and Gender and Social Action Plan. Hence, the Programme not only incorporates renewable technologies that benefit women and vulnerable groups by improving the service level of the health facilities, but will also deliver gender-differentiated monitoring of impacts and will provide tailored training to women, with the aim of increasing the share of female technicians being able to service renewable energy installations.

(vi) The Programme will improve health outcomes across the region, from quantitative indicators such as better response rates to local outbreaks of infectious diseases such as Ebola or COVID-19 and climate induced disease, reduced neonatal mortality rates, improved access to medicines, to qualitative indicators such as improved patient comfort and better-quality treatment. This will also lead to reduced inequalities in health service provision and is expected to lead to improvements in gender-related outcomes.

d. Responsive to recipient needs

The countries in the Programme have been prioritized based on need as set out in the eligibility criteria, considering rates of electrification, vulnerability to climate change, challenges with health service delivery due to lack of electricity, financial capacity, geographic constraints and high disease burdens.

The Programme itself is designed to be responsive to the specific, climate-driven needs of the countries which have been set out in the relevant national development and climate strategies and are considered in the preliminary eligibility criteria which are set out in Annex 7.

More than 3,000 health facilities are concerned in the five beneficiary countries, with a catchment population of about 33.65M of people, with the need of improved health services. Domestic and public resources are not sufficient to mobilize market-based instruments. Liberia, Malawi and Zambia are among least developed countries. Namibia's economy has been facing significant headwinds with real output contracting according to the World Bank. Zimbabwe is in a recession which is projected to continue due to persistent climate shocks and domestic vulnerabilities worsened by COVID-19.

e. Promote country ownership

In addition to being aligned with the Nationally Determined Contributions, climate and development policies of the target countries, the Programme outputs connect with the existing long-term plans of the target countries. The technical assistance component of the Programme is targeted towards working with the country authorities to promote long-term changes in the health sector. See also Section B1 above and Annex 6 which contain further detail on how the Programme responds to the plans and needs of the target countries.

The Programme will further assist the five beneficiary countries in achieving their national development goals through improving the lives of their people along with access to improved health services.

f. Efficiency and effectiveness

The combination of technical assistance and investments in sustainable energy solutions in a multi-country program is expected to yield higher effectiveness compared to a single country/measure approach. First, this approach will lead to better outcomes at sub-project level by generating greater improvements than if the Programme were only a 'single project' approach. This is because it will be possible, over the life of the Programme, to apply lessons learned from projects across countries. Second, the Programme will address fundamental barriers to achieving affordable clean energy supply while maximizing local contribution in the EaS contracts. Combining a range of interventions is expected to lead to substantially higher impacts than if the Programme included only a single approach.

[20] Power for All, Fact Sheet, August 2019

The Programme will enable private sector H-ESCOs to everage investments using the EaS contract as a guaranteed revenue stream and collateral. It is expected that the Programme will mobilize parallel private sector investment for USD 99.6M (incl. debt and equity), thus leveraging USD0.89cts from the private sector for each 1USD of GCF investment.

The chosen business model also offers opportunities to tap into alternative savings streams, such as net metering[21], or providing energy services to a wider set of consumers when the regulation allows, that in the long run can improve the affordability of electricity for all end-users including health facilities, and will generate economic growth and employment in the target communities and regions.

The Programme will also apply best practices, for instance with the use of aggregated procurement to promote private sector investments in the H-ESCOs.

Finally, the introduction of a completely new institutional approach will provide the basis and a model for public procurement processes of clean energy supply that can easily be replicated by e.g. rural energy agencies or provincial governments to trigger private sector investment in a low-risk framework.

B.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)

Solar for Health pilot. Since 2017, UNDP has implemented a pilot Solar for Health Programme in Liberia, Malawi, Namibia, Zambia and Zimbabwe in partnership with the host governments, resulting in the installation of 7.7 MWp of installed capacity of solar battery systems to power health facilities. Throughout this pilot, UNDP has had extensive engagement with stakeholders from the government, health facilities and the energy sector.

Validation workshops – NDAs EoIs. To scale up this pilot, an innovative financing feasibility study has been developed through which multiple engagements have taken place at the country level with stakeholders, including government entities, health facilities, energy service providers, donor agencies, DFIs and financial institutions. At the end of the feasibility study a validation workshop was organized in the five participatinga countries, including the participation of representatives from the Ministry of Health, the Ministry of Energy, and the NDA, alongside stakeholders from the health and energy sector. Due to the COVID-19 pandemic, the validation workshops were organized virtually between August and September 2020. During the validation workshops, the GCF proposal was introduced to the stakeholders. As a result of this process, the NDAs from the five countries have submitted to UNDP letters of expression of interest in support of the development of this Programme.

National working groups. As part of the process for the development of this Programme, national working groups have been set up in each participating country, to ensure adequate representation from the relevant stakeholders (including gender balanced representation) at the national level during the consultation processes at both concept note and funding proposal stage. An initial session of the working group has been organized in each of the participating countries, where the concept note and the proposed EaS were discussed and inputs were provided.

B. Indicative Financing/Cost Information (max. 3 pages)

C.1. Financing by components (max ½ page)

The Programme's financing principles. The sub-projects foreseen under this Programme cannot be financed by the private sector or the host governments alone, for affordability reasons and due to the complexity of existing institutional arrangements and the counterparty risk faced by the energy service providers. GCF provision of grants for technical assistance and investment support will make a critical difference to the scale and impact of the investments undertaken under this Programme.

In particular, GCF will be additional in this Programme by:

i. Providing resources for technical assistance that will enable the policy and regulatory framework and the upstream activities required to transition to an Energy-as-a-Service (EaS) model to provide reliable and clean electricity to health facilities; and to strengthen surveillance systems and data of climate sensitive diseases.

ii. Strengthening the ability to pay of the Government by contributing to the contracting of clean and reliable electricity services for health facilities and ensuring the long-term sustainability of the energy assets.

iii. Issuing bankable energy contracts to energy service providers, which will allow them to mobilize financing to support their activities.

[21] For countries that have a net metering regulation in place.

The Programme's financing composition. The Programme will be composed of GCF funds, government co-financing and parallel financing. During its duration, the Programme will invest about US$ 144.8 million, of which US$ 129 million will be requested as financing from the GCF. The use of GCF funding and the level of concessionality in the form of a grant is justified by the need to address the inability to fully recover the cost of investment in energy supply due to affordability constraints and limited ability to pay of the five countries. A detailed breakdown of the allocation of funds to projects and by funding provider is in **Annex 3.**

Table 5: Financing by Component

Components	Indicative cost	GCF financing		Co-financing		
		Amount	Financial Instru-ment	Amount	Financial Instrument	Name of Institution
	(US$ m)	(US$ m)		(US$ m)		
Component 1: Solar EaS for health facilities	$124.5	$111.5	Grant	$13.0	Gov't budget	Governments
Component 2: Surveillance and information systems for climate sensitive diseases	3.0	2.5	Grant	0.5	Grant	UNDP
Component 3: Technical Assistance	$11.2	$10	Grant	$1.2	Grant	UNDP
Programme Management	$6.1	$4.9	Grant	$1.2	Grant	UNDP
Indicative total cost (USD)	**$145**	**$129**		**15.9**		

Collaborating with the GCF. By implementing the Programme activities across countries over a span of ten years (2022-2031), and by working closely with different tiers of government (local, provincial and central), the Programme can effectively develop a robust and sustainable new approach to the delivery of clean energy services to health facilities by fully integrating a range of activities to cover the full lifetime of the energy generating assets and shifting from an asset-based to a service-based delivery model for energy in the health sector.

C.2. Justification of GCF funding request (max. 1 page)

Limitations if investments were made through loans. The projects foreseen under this Programme cannot be financed by the private sector or the host governments alone. On the one hand, the ability to pay for energy services by health centres does not provide sufficient grounds to the private sector to raise finance and invest. On the other hand, Government yearly allocations for energy services using d iesel are not sufficient to cover the cost of acquisition of new solar systems for health centres. A sovereign debt would also not work for the beneficiary countries due to headroom constraints and public debt ceiling.

Rationale and level of GCF concessionality. The use of GCF funding and the level of concessionality is justified for the following reasons:

- **Affordability**. It would not be possible for the target countries to undertake the investments without GCF support. Health budgets are not sufficient to undertake or guarantee the substantial outlay for the initial capital investment, and to ensure operations and maintenance over the lifetime of the energy assets.
- **Lack of capacity/skills**. In the absence of technical assistance support it would also not be possible to provide training to maintenance technicians, and it would not be possible to establish the foundational work such as designing the tender documentations and run the tenders.
- **De-risking**. From the perspective of the private sector H-ESCOs, GCF funding is critical for the assurance of long-term support and reliability of payments over the contractual period. The purpose of the EaS instrument is to guarantee a fair return over a specified time for energy services provided, thus de-risking H-ESCOs investments. Without this de-risking instrument, energy service providers will not take the risk to enter long term contracts for the provision of energy services to health facilities, given their lack of ability to pay.

Viability and efficiency of the GCF investment. GCF funding will ensure that the investments into the long-life clean energy assets will deliver viable outputs over the lifetime of the assets. It is also highly efficient by creating a new class of investor in the target countries, the H-ESCO, which can utilise the low-risk, long-term contracts for health center energy provision to expand into other sectors and deliver clean energy solutions there, such as through micro- or mini-grids. The impact of the Programme will be as much in providing the seed for a full transformation in the off-grid rural areas as it is for the health service delivery itself.

Replicability. Replicability and horizontal expansion into other sectors further enhance the effectiveness of the GCF investment, as the Programme is built around the idea of replicability. It will utilize the same basic approach across multiple countries, with participants in the Programme able to apply lessons learned by integrating them into other public energy supply projects. The regional platform will focus on providing a foundation for replicability and it will aim to seize the short-term opportunity for replicating this approach in other countries where UNDP has supported the solar electrification of health facilities through its Solar for Health initiative, namely: Sudan, South Sudan, Nepal, Angola, Liberia, Chad, Yemen and Libya.

C.3. Sustainability and replicability of the project (exit strategy) (max. 1 page)

Sustainability. The Programme's sustainability and exit strategy are rooted in the key elements of design and implementation. The long-term sustainability beyond the Programme implementation period is assured by the promotion of changes in the following areas:

- **Political, institutional arrangements, and governance.** The Programme will improve the governance and business processes within governments to engage with private sector H-ESCOs, attract private sector investment, and leverage development financing for the provision of energy services that can enhance health service delivery to poor and vulnerable populations.
- **Economy, public fiscals, and financial management.** The Programme will promote life-cycle budgeting for O&M for critical infrastructure in the health facilities by ensuring adequate budgeting during and after the end of the PPA period.
- **Social development and inclusiveness.** The Programme has a very clear focus on driving inclusiveness by targeting the amelioration of rural health provision for the rural poor and women as electricity provision enhances health service quality in general with a focus on maternal and child health. Healthier populations and saved lives also reduce healthcare costs and increase productivity, leading to stronger economies.
- **Technology, infrastructure, and service delivery.** The Programme will promote investment in climate-friendly infrastructure with renewable power supply, digital service delivery, remote monitoring, and O&M planning.
- **Legal, regulations, and policy.** The Programme will facilitate climate change integration into the health sector to provide finance for future health infrastructure investments.
- **Environment and nature conservation.** The Programme will promote the use of renewable power supply, reducing e.g., the risk of fuel spills in the local environment and improving local air quality.

Exit. At the end of the Programme, assets will be transferred to national ownership, with full responsibility for continued O&M and safe removal at End of Life falling on the relevant public agencies, be they a ministry or dedicated agency. The technical assistance and capacity-building component will focus on achieving a smooth handover, and Programme length will be adjusted to ensure that at least the initial phase of public ownership can be supported by the Programme, following the hand-over. A dedicated technical assistance Programme will ensure that a qualified operator continues to operate the assets under ownership of the Government within the Government budget constraints. This will include the required budgeting for continued O&M after the end of the EaS phase, required investment to cover and safely dispose of assets that have shorter life expectancies such as inverters and batteries. The effective structure of this arrangement will depend on the individual countries and will be determined in more detail during the FP phase.

Monitoring. At the project level, operational performance will be closely monitored through modern remote monitoring technologies and feed into a data aggregation platform. This will ensure that private sector H-ESCOs will throughout be incentivized to fully maintain the assets to ensure continued performance on which payments are based. At the P rogramme level, UNDP will monitor a range of indicators over the duration of the Programme to ensure comprehensive reporting of its impacts.

Country-specific data portals as well as a centralized data platform at regional level will be deployed and will be used to collect and analyze data for the comprehensive assessment of energy needs and energy access levels of public health facilities. In each country, donors, the government, and financing partners will be able to interact with data on a dedicated country-specific version of the platform and collaborate on preparatory activities using the data platform.

C. Supporting documents submitted (OPTIONAL)

☒ Map indicating the location of the project/programme (Annex 1)

☒ Diagram of the theory of change (Annex 2)

☐ Economic and financial model with key assumptions and potential stressed scenarios

☐ Pre-feasibility study

☐ Evaluation report of previous project

☐ Results of environmental and social risk screening

Other Annexes

- Budget **(Annex 3)**
- GHG Emission Reductions Modelling **(Annex 4)**
- Alignment with NDC Priorities **(Annex 5)**
- Initial Eligibility Criteria **(Annex 6)**

Self-awareness check boxes
Are you aware that the full Funding Proposal and Annexes will require these documents? Yes ☒ No ☐ • Feasibility Study • Environmental and social impact assessment or environmental and social management framework • Stakeholder consultations at national and project level implementation including with indigenous people if relevant • Gender assessment and action plan • Operations and maintenance plan if relevant • Loan or grant operation manual as appropriate • Co-financing commitment letters
Are you aware that a funding proposal from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes ☒ No ☐