



Solar for Health (S4H) innovative financing feasibility study: Namibia summary report

Table of contents:

- 1. Energy demand and financing need***
- 2. S4H coordination platform financing model***
- 3. S4H social, economic, and environmental impact***
- 4. UNDP role and implementation roadmap***

1. Energy demand and financing need

Many rural healthcare facilities in Namibia struggle with unreliable access to electricity, and off-grid solutions have yet to scale

The Government of Namibia (GoN) targets universal access to electricity in urban and in rural areas by 2030 with 70% to come from renewable energy sources. In comparison to poorer Sub-Saharan African countries, energy access rates in Namibia are relatively high at 56% nationally (77% in urban areas and 29% in rural populations), though 60% of total energy demand is imported from large regional neighbours. The GoN aims to end external reliance and become self-sufficient by 2030, particularly by leveraging its considerable solar and wind resources to develop the renewable energy sector.

GoN's national energy plan, however, is largely focused on grid extension strategies. With Namibia's low population density (c.3 people per km²) and high regional income inequalities, grid expansion and energy access to rural populations can be difficult and prohibitively costly. An off-grid development strategy will be key to universal electrification, but GoN's off-grid regulatory frameworks and development plans remain immature with sometimes limited incentives. There is growing support for renewable off-grid solutions, including, for example, the Solar Revolving Fund that provides subsidised loans to individuals as well as tax exemptions for the sale and purchase of renewable energy systems. But despite progressive liberalisation, some of the Ministry of Mines and Energy's (MoME) policies can still be considered as generally protective of the national power utility company, NamPower, to the detriment of broader renewable energy sector development. For example, Namibia no longer regulates an official feed-in-tariff for independent power producer (IPP) resale into the grid and IPPs are capped at distributing >30% of an on-grid customer's total energy supply.

In the healthcare sector, specifically, 70% of Namibia's 350 public healthcare facilities are already connected to the grid and benefit from a generally reliable power supply as Namibia does not suffer from load shedding and power cuts to the extent of other Sub-Saharan African countries. Nevertheless, achieving universal and reliable energy access remains an ever-present challenge in the rural hinterlands where the remaining 103 off-grid healthcare facilities are mostly located. Providing energy access to these marginal unconnected rural facilities becomes increasingly costly, given high geographic distances from urban economic centres and low income levels.

UNDP's Solar for Health (S4H) programme aims to address these issues and bring reliable and clean energy to healthcare facilities across Namibia. By strengthening access to reliable solar energy, the S4H programme can significantly impact the quality of public healthcare, particularly for the most disadvantaged and remote populations, whilst also supporting local green growth and climate action. Specifically, S4H directly contributes to the following social, economic, and environmental Sustainable Development Goal (SDG) outcomes in Namibia:

- **Social:** SDG3 (Good Health and Well-being); SDG10 (Reduced Inequalities);

- **Economic:** SDG8 (Decent Work and Economic Growth); SDG9 (Industry, Innovation, and Infrastructure); and
- **Environmental:** SDG7 (Affordable and Clean Energy); SDG13 (Climate Action).

An estimated US\$2.1m in financing is needed to provide reliable solar energy access to off-grid healthcare facilities

An estimated US\$2.1m in investment capital is needed in Namibia to finance the capital expenditures required to provide energy access to healthcare facilities, over an initial 7-year investment timeline.

The investment sizing assumes the following:

- **Healthcare facilities within scope:** public off-grid facilities without any access to energy, as well as those with existing diesel generators, were assumed within scope for this study. Facilities connected to the grid have been excluded from scope as the grid is considered generally reliable and a more cost-effective alternative. The Ministry of Health and Social Services (MHSS) has expressed interest in scaling the S4H programme more broadly to also include on-grid facilities; a further assessment during programme implementation, however, will be needed to determine if such an off-grid solar solution would indeed be cost-effective for these specific facilities;
- **Energy needs, O&M, and autonomy assessment:** an average energy needs and O&M assessment is assumed for different categories of healthcare facilities (from rural clinics to large hospitals) based on regional usage benchmarks. The exact needs assessment of each target facility will need to be conducted by MHSS with the support of the Namibia Energy Institute (NEI) to determine exact solar PV system sizing and investment need. Additionally, autonomy (i.e., through lithium batteries) is estimated at one day for off-grid facilities, given high solar irradiance in Namibia. Incorporating a hybrid solution with a diesel generator as a back-up solution, where financially relevant, can reduce total investment need;
- **Diesel versus off-grid solar for energy needs:** although the estimated levelised cost of energy (LCOE) of solar PV systems (US\$0.69/kWh) is greater than that of diesel generation (US\$0.35/kWh) over the initial contract period, the investment sizing assumes the social and environmental benefits from providing off-grid solar energy to all public healthcare facilities within scope outweigh this unit cost difference. Furthermore, this conservative costing analysis: (i) is based on benchmark retail prices for diesel in urban centres and does not factor in transportation and other middlemen costs that may increase transaction costs to rural healthcare facilities, (ii) does not incorporate CAPEX costs for generators (as it is assumed many healthcare facilities may already have the relevant systems; this, however, is often not the case), and (iii) estimates unit cost based on 7-years of operation (given minimal marginal operations cost, unit costs should decline further as solar PV systems are used past this initial investment timeline and as replacement battery costs decline). Finally, diesel value chains may also experience other unreliability/unavailability supply issues that can generally hinder reliable energy access. Consequently, this can make any costing analysis an unfair comparison as off-grid solar costs are typically greater given the inherent systems needed to ensure continuous and reliable energy access; and
- **Investment timeline:** an initial 7-year timeline covering initial capital expenditures and long-term O&M. A properly maintained panel can last up to 25-30 years, a lithium-ion battery lifetime ranges between 5-15 years. Investment financing is structured on an 7-year timeline, though this may be extended if investors show a preference/appetite for longer investment horizons (i.e., in which case a new battery might have to be purchased prior to a new financing cycle).

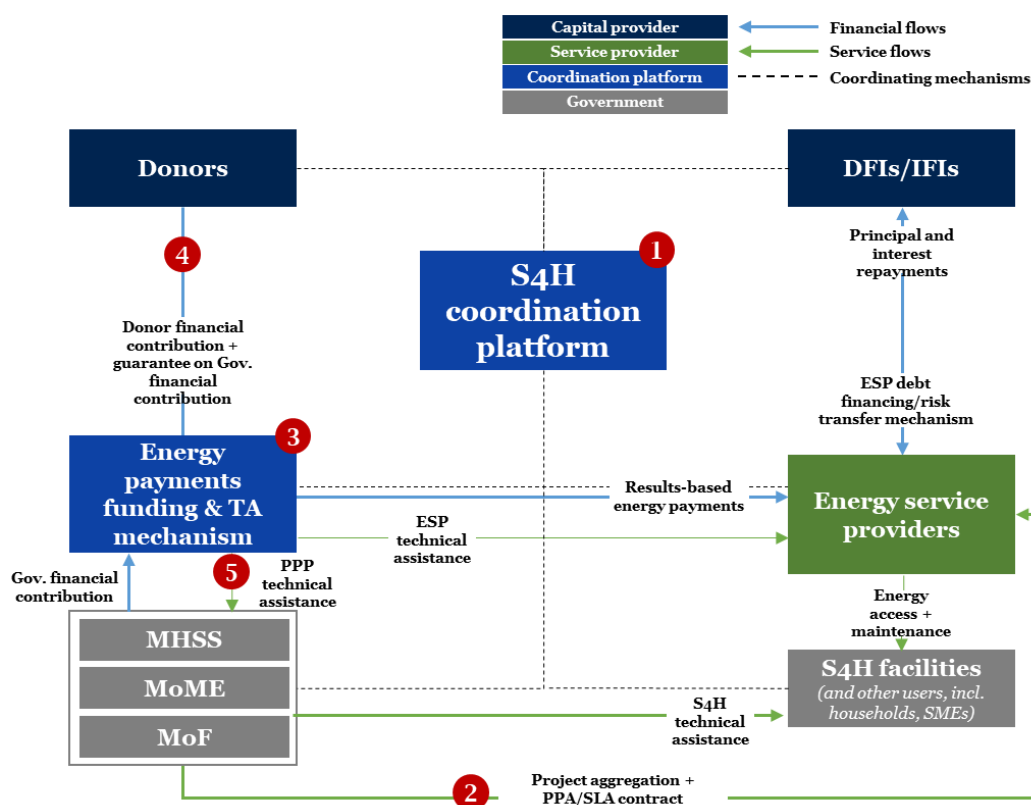
	Clinic off-grid	Health centre off-grid	Hospital off-grid	TOTAL
Initial investment outlay (unit)	US\$18,432	US\$33,468	US\$156,422	
Annual O&M cost (unit)	US\$1,305	US\$1,550	US\$3,750	
Number of facilities	89	8	6	103
Total hardware cost	US\$1.18m	US\$0.2m	US\$0.73m	US\$2.12m
Total turnkey cost	US\$1.64m	US\$0.27m	US\$0.94m	US\$2.85m

Unlocking the quantum of investment capital needed to scale-up the S4H programme will require a coordinated effort to address budgetary and operational challenges in Namibia

- **Constrained MHSS budgetary allocations:** due to a slowdown in economic growth (-1.13% year-on-year GDP growth in 2019) and increasing levels of public debt in recent years (a pre-COVID-19 estimate of 51% of GDP in 2020-21), GoN has focused on fiscal consolidation and maintaining a balanced budget. This has resulted in decreasing allocations for healthcare spending. Against this constrained budgetary backdrop, MHSS often does not have sufficient budgetary allocation and necessarily prioritises payment of staff salaries and medicines over other ancillary expenses, including off-grid energy capital expenditure (CAPEX) coverage across its full healthcare facility portfolio. MHSS is nonetheless generally perceived as a creditworthy counterparty and has few long-term defaults on payment obligations (though payments can be delayed). Paradoxically, given its upper middle-income country status, despite these budgetary shortfalls and implications on the healthcare sector, donor agencies have little appetite to support programmatic initiatives in the country;
- **Lack of project aggregation and investable portfolios in off-grid energy for public healthcare:** Namibia has a relatively mature local financial market and a developed local ESP ecosystem that can access capital at relatively affordable rates (currently, commercial lending rates can be sub-10%). However, small investment ticket sizes, high transaction costs, and limited revenue streams have hampered investment appetite in small-scale off-grid rural energy solutions across the country's large, sparsely-populated rural hinterlands;
- **Poor incentives for long-term operational and environmental sustainability:** existing CAPEX retail purchase models fail to incentivise long-term sustainability. Funding upfront CAPEX without budget allocations for longer-term annual O&M often results in premature failure of solar PV systems within the first few years and reduces potential for impact. Importantly, this CAPEX-only financing represents low value-for-money for MHSS. Although MHSS provides some maintenance and training as part of its ministerial remit, this remains insufficient to provide O&M across its entire healthcare facility portfolio; and
- **Lack of coordination and technical capacity to support project development:** an off-grid energy strategy for public healthcare facilities will fall under the remit of multiple government agencies covering national off-grid energy strategies, public-private partnerships, and healthcare development plans. A lack of formal institutional arrangements and coordination between relevant stakeholders, including MHSS (national and sub-national), the Ministry of Finance (MoF), and MoME, may hinder effective implementation of the S4H programme and increase transaction costs related to project procurement, aggregation, due diligence, and delivery.

2. Solar for Health coordination platform financing model

A holistic approach bringing together stakeholder coordination, long-term de-risked financing, and technical assistance can be instrumental in scaling the S4H programme



1. A S4H coordination platform will support MHSS with procurement and tendering to aggregate projects that can attract development finance institution (DFI) financing

The S4H S4H coordination platform will coordinate a partnership between MHSS, GoN's PPP Unit, MoME, local representatives, commercial (and concessional) investors, and local ESPs. UNDP, through its facilitation role, will supervise and support the entire investment process from procurement through to investment monitoring to ensure proper quality standards and successful implementation of the programme.

- PPP procurement and tendering to support project development:
 - *Coordination with PPP Unit in MoF:* GoN has established a PPP Unit within MoF and developed a standardised PPP framework for large-scale solar and hydro power plants. Although these initiatives have predominantly targeted on-grid generation, there are opportunities for MHSS and other S4H coordination platform stakeholders to leverage MoF's experience with PPPs and adapt relevant best practices for procurement and tendering;
 - *Coordination with MoME:* the S4H coordination platform will coordinate with the Rural Electrification Programme (administered by the Electricity Division of MoME and funded by NamPower and regional distributors) and MHSS to ensure alignment between the national rural electricity distribution master plan, existing and planned power investments, and priority healthcare facilities that may overlap with other ministries' development plans. Additionally, MHSS can leverage MoME's expertise and

technical knowledge, including experience with private power investments, IPP contract negotiations, and energy project management;

- *Coordination with local representatives:* as public healthcare management is decentralised to the regional and district level and budgetary allocations managed locally in Namibia, close coordination will be needed with community leaders, individual healthcare facilities, and MHSS national and district representatives to ensure buy-in, adapt projects to local context and needs, and allocate budgets to the programme. Coordination on budgetary allocations are particularly important within Namibia's decentralised healthcare context: utility bills, for example, may be paid at the regional level for all healthcare facilities within the region, but a separate budget allocation may be decided at the individual healthcare facility level for diesel purchases. Coordination needs additionally include project selection, energy needs assessment, project preparation, and community engagement.
- Project aggregation to create investable portfolios for DFIs and local financial institutions: DFIs can be a high-potential source of financing as they have explicit development mandates (often coupled with an appetite for public sector exposure) and large balance sheets for investment in larger-scale infrastructure and energy projects. The investment needs of an individual healthcare facility, however, cannot meet the minimum investment ticket sizes for DFIs (>US\$5-100m versus typical individual healthcare facility investment needs of <US\$20-170k). By aggregating a portfolio of projects through a S4H coordination platform, the S4H programme can create larger investment ticket sizes of sufficient relevance for DFI capital. Additionally, DFI capital can serve as an anchor investment to further attract capital from large local financial institutions and other institutional actors.

There are promising examples of financing initiatives that have similarly leveraged DFI and domestic capital (in the form of green finance and free technical assistance) for the renewable energy sector in Namibia. First and foremost, the €150m Sustainable Utilization of Natural Resources and Energy Finance (SUNREF) programme launched by the Agence Française de Développement, in partnership with local financial institutions (First National Bank Namibia, Bank Windhoek, and Nedbank Namibia), supports private sector investments in renewable energy and energy efficiency sectors, amongst others. Additionally, the Development Bank of Namibia (DBN) currently has a N\$9b loan book and actively finances renewable energy projects in line with GoN's development strategy to increase domestic generation capacity and energy independence. Finally, a significant pool of capital additionally sits within large domestic pension and life insurance funds (with pension fund assets around N\$290b, more than double the banking sector), of which regulation mandates a minimum 45% must be invested in domestic assets; much of this financing flows into infrastructure investment transactions. The relative maturity of Namibia's financial actors and development-oriented financing windows creates a favourable local financing ecosystem to support the S4H programme – but only if there are investable project portfolios in which to deploy such capital; and

- Mobilisation of private capital to finance local ESPs: the S4H coordination platform will also be responsible for coordinating the financing and investment due diligence processes with different GoN stakeholders, DFIs, local financial institutions, and local ESPs. Specifically, the S4H coordination platform will develop investment due diligence criteria as part of its support to MHSS during the procurement and tendering process to local ESPs, as well as explicitly coordinating with different DFIs and incorporating respective investor considerations. DFIs/commercial banks may still run separate investment due diligence processes as part of their own organisational processes in parallel to the S4H coordination platform. But already incorporating their investment considerations as part of the PPP procurement can (i) help streamline the investment process for both investors and local ESPs and (ii) ensure linkages between the tendering process and investor capital mobilisation. For example, by making S4H tenders contingent on a satisfactory investor due diligence of the project bid and of the local ESP, the S4H coordination platform ensures that winning bidders necessarily also receive access to affordable financing.

2. A power purchase agreement (PPA) and leasing mechanism will align financial incentives and smooth payments over time to ensure long-term financial, operational, and environmental sustainability

A PPP/PPA and leasing mechanism will set out the contractual and financial obligations between DFIs, local financial institutions, MHSS, and the local ESP over the 7-year contract lifetime to ensure long-term sustainability:

- Financial sustainability and local market development:
 - *Investor returns matching respective risk-return appetites:* the financing capital structure is expected to blend senior debt (i.e., DFI, local financial institution capital) with concessional climate finance funds and/or donor grant capital (to the extent these may be made available to Namibia). Although lending rates in Namibia have been provided on relatively favourable terms, a blended finance approach may be still useful to match interest rate returns to the respective risk-return appetites of different capital providers, whilst also lowering the blended cost of capital to local ESPs that specifically target off-grid public healthcare facilities.

The Bank of Namibia recently cut rates from 10.25% to 7.75% in response to the COVID-19 crisis to support local households and businesses; local financial institutions have duly passed on these rate reductions by lowering their own lending rates. Currently, DBN and SUNREF provide green finance at +1-2% of the prime rate. For the S4H programme, the final interest rates will depend on the expectations of committed capital providers identified during financial structuring negotiations, as well as the degree of blending between commercial and concessional financing;
 - *MHSS affordability:* as the contracted off-taker for energy access to public healthcare facilities, MHSS will be liable for payment obligations under the PPP. Currently, high upfront CAPEX can be prohibitively expensive and reduce the number of healthcare facilities that can be targeted. By spreading the total energy access costs across a series of smaller leasing payments, MHSS can reduce its monthly costs and improve affordability. Additionally, financial incentives to local ESPs for long-term operational sustainability will support increased impact and value-for-money.

Furthermore, MHSS, with implementation support from local ESPs, TA providers, and UNDP can explore additional revenue streams to help off-set payment obligations, including selling excess energy generation to local communities, feeding into the grid (where applicable and dependent on renewing feed-in-tariff regulations), and/or carbon credits in global carbon markets. For example, the S4H programme can reduce carbon emissions by an estimated 1.2k tCO_{2e} per annum (assuming solar energy access for all off-grid facilities versus equivalent diesel usage). Under Article 6 of the Paris Agreement, there may be potential for these internationally transferred mitigation outcomes (ITMO) carbon credits to be sold in global carbon markets: at benchmark prices of \$10-\$15 per tCO_{2e}, MHSS can potentially reduce its payment obligations by up to \$12-18k per annum. Although these additional revenue streams will likely remain small and unable to cover full payment obligations, they are nonetheless welcome upsides to help off-set a portion of MHSS liabilities;
 - *Local ESP market development:* monthly leasing payments will be paid to the local ESP by a coordinated energy payments funding mechanism comprised of donors and MHSS over the 7-year contract duration. These leasing payments will be priced to include capital expenditure, long-term O&M, cost of capital, and local ESP commercial margins to support local market development. Additionally, access to affordable blended financing through the S4H coordination platform will enable solar PV asset ownership to remain with the local ESP throughout the PPP contract duration (before ownership transfer to MHSS). By bearing this financing risk, the local ESP will also benefit from earnings on leasing financing margins.
- Operational and environmental sustainability:
 - *Long-term local ESP operational performance obligations:* under the current model, MHSS typically only finances the upfront purchase of solar PV panels and initial installation. Long-term O&M is often not priced into contracts with local ESPs. The Ministry of Works is responsible for maintenance of all public facilities however the MHSS regional offices have their own maintenance unit to support healthcare facilities within their scope. Those units face a lack of people, necessary tools and training to provide the maintenance currently required, adding additional workload to manage a portfolio of solar installation will be a challenge and put at risk their sustainability.

Under the S4H coordination platform model, the local ESP (in collaboration with MHSS) will conduct an energy load needs assessment across its project portfolio and provide appropriately-sized solar PV systems and installation services. The local ESP will then be responsible for long-term O&M and will need to ensure solar PV system availability and achievement of minimum-service level operational performance criteria, as defined under an SLA. Additionally, given the potential geographic spread of project portfolios, local ESPs may need to train healthcare staff or community-based technicians for more frequent and basic maintenance (e.g., cleaning panels).

The PPP/PPA will specifically aim to incentivise long-term operational sustainability by pricing in O&M into the contract over its 7-year term. Monthly leasing payments will be conditional on achieving the SLA operational performance standards to provide financial incentives for high-quality service over the full life of the PPP/PPA contract. In the event solar PV systems fail to meet minimum service-level performance standards required by the healthcare facility, for example, payments to the local ESP may be reduced and/or withheld. As the S4H coordination platform envisions an initial 7-year investment timeline, the PPP/PPA contract will need to be extended with a new long-term O&M contract (including coverage of any replacement parts) after this investment horizon to maintain on-going sustainability after eight years; and

- *Local ESP environmental sustainability and disposal obligations:* the PPP contract might additionally price in disposal costs as part of the local ESP's long-term sustainability obligations. From a technical perspective of disposal, however, there are no standardised best-in-practice guidelines and little practical experience with disposal and recycling of components from medium- to large-scale solar energy systems. There are no hazardous materials in silicon PV panels and lithium batteries (as opposed to lead acid batteries) that should present an environmental concern. The details of where and how it should be disposed (as well as the existence and/or capabilities of relevant ecosystem players), however, need to be further developed. Encouragingly, recycling PV panels and battery components can have economic value and is of relatively low complexity. The market for local recycling value chain actors is expected to grow as these technologies further develop.

3. An energy payment funding mechanism will coordinate healthcare energy contributions from donors and MHSS to support ability-to-pay on payment obligations under the PPP

The energy payments funding mechanism will coordinate financial contributions from international donor agencies and local public institutions (i.e., MHSS), including incorporating existing budgetary allocations for healthcare energy spending. Those monthly energy payments will remunerate the local ESPs as part of the PPP/PPA contractual frameworks:

- Support for MHSS ability-to-pay through coordinated donor funding: donor contributions within the energy payments funding mechanism will cover a pre-defined proportion of the monthly leasing payments to local ESPs. MHSS will be contractually obligated to finance the remaining balance, with covenants in place in the event of default. These can include removing defaulting healthcare facilities from the S4H programme and/or reduced future donor funding to MHSS as penalties.

Currently, healthcare expenditures are funded by the MHSS and a budget is foreseen for energy access and solar energy specifically for off-grid healthcare facilities. MHSS may need to seek additional support or reallocate some of those existing sources of healthcare financing to cover its financial obligations under the PPP/PPA contracts given that health budgets remain constrained. The proportion of donor funding versus MHSS contributions to the leasing payments will need to be negotiated amongst relevant stakeholders during structuring of the PPP. This coordinated funding mechanism, however, shall take into account donor programmatic mandates that are typically short-term (i.e., 3-5 years), many donor agencies are unable to commit to the full 7-year investment horizon and can only conditionally commit to funding in later years if programmatic mandates are renewed. This risk can be partially addressed by putting MHSS contributions into escrow during the first years of a secured donor mandate and using a larger proportion of donor capital during this period for PPP payments (if applicable), with MHSS funding from escrow released in later years. Alternatively, certain

donor funding windows, such as the Green Climate Fund, may be able to provide funding commitments up to 7 years;

- Potential additional revenue streams to minimise MHSS liabilities: MHSS, with implementation support from local ESPs, TA providers, and UNDP can explore additional revenue streams to help off-set payment obligations, including selling excess energy generation to local communities, feeding into the grid, and/or carbon credits in global carbon markets. For example, the S4H programme can reduce carbon emissions by an estimated 1.2k tCO_{2e} per annum (assuming full off-grid solar energy access for target facilities versus equivalent diesel usage). Under Article 6 of the Paris Agreement, there may be potential for these internationally transferred mitigation outcomes (ITMO) carbon credits to be sold in global carbon markets: at benchmark prices of \$10-\$15 per tCO_{2e}, MHSS can potentially reduce its payment obligations by up to \$12-16k per annum. Although these additional revenue streams will likely remain small, they are nonetheless welcome upsides to support MHSS liabilities;
- Partial foreign exchange risk mitigation: as international donor contributions are typically denominated in hard currencies (e.g., USD, EUR), such funding will partially mitigate foreign exchange risk (up until the proportion of its share of the energy payments) on financing liabilities (i.e., repayments to investors) that might also be denominated in hard currencies;
- Reduced budgetary leakage: donor contributions through UNDP will minimise risk of leakage into GoN's general budgetary allocations and spending outside of the S4H programme. Ensuring a direct link between financial contributions and repayment to investors will additionally reduce investor perception of public counterparty risk; and
- MHSS buy-in and long-term asset ownership: MHSS financial obligations as part of the PPP financing will incentivise MHSS's commitment to the long-term sustainability of the solar PV systems (versus often-limited buy-in under a grant-based funding model).

4. Guarantees may be useful to backstop MHSS payment obligations and mitigate GoN budgetary risk for DFI capital

Despite MHSS creditworthiness and a more developed local financial market, a guarantee mechanism may still be desired (though not indispensable) to partially de-risk investor capital against MHSS public counterparty exposure. Specifically, a GoN sovereign guarantee can be used to backstop MHSS energy payment obligations and provide credit enhancements to investors. As GoN creditworthiness is typically acceptable by local financial institutions and/or DFN, only partial guarantee coverage (and/or some combination with first-loss capital) may be needed to effectively attract other DFI and institutional capital. These guarantees can be structured to either backstop payments to the ESP or directly on payment obligations to investors. The specific terms and payment coverage will depend on the cost and availability of guarantee mechanisms.

5. Technical assistance and capacity-building will support GoN's regulatory and PPP framework development and strengthen procurement, project development, investment due diligence, and project delivery and monitoring capabilities

MHSS, given its limited expertise with PPP and energy procurement tenders, will require technical assistance (TA) and capacity-building from procurement through project management. Additionally, the local off-grid ecosystem can benefit from S4H coordination platform support to strengthen local training and other PPP project delivery capabilities. Specifically, a TA provider financed by donor grant capital through the coordinated TA funding mechanism (managed by the same executing entity for the energy payments funding mechanism) can support MHSS and local ESPs with the following:

- Project preparation support: healthcare facility selection and prioritisation, specific energy needs assessment, scope of work definition, and investment sizing across potential facilities will need to be completed in an initial phase of S4H implementation;
- Procurement and tendering process: although MHSS can leverage heavily on expertise learned from MoF and the PPP procurement process for solar and hydro power plants (including, standardised procurement processes, tender/contractual terms and templates, and bid evaluations), additional TA may be relevant to adapt best practices to the MHSS and S4H context;

- **Contract and project management:** TA can additionally be provided to support PPP contractual and term sheet negotiations with local financial institutions, DFIs, and local ESPs; PPP governance; and portfolio management; and
- **Local ESP project delivery capabilities:** the local market ecosystem is relatively well-developed in Namibia versus other Sub-Saharan African countries (currently c.50 locally licenced solar companies). While larger local players (e.g., Solsquare, O&L) primarily focus on large commercial clients (e.g., mines, large enterprises) and urban markets for solar home systems, international players (e.g., Innosun, Alten Energy) participate in large power plant projects. Furthermore, local companies typically have the relevant technical capabilities and regional presence across the country to deliver on larger contracts. TA financing can nonetheless encourage development of the local market by strengthening training initiatives and supporting more localised technical project delivery capabilities that may be required for large off-grid/rural contracts (including the upskilling of local and community-based O&M technicians and/or healthcare staff). MoME, NamPower and regional distributors, and Namibia Energy Institute can also support capacity-building given existing support in other rural energy initiatives.

3. S4H social, economic, and environmental impact

Scaling up the S4H programme in Namibia is expected to deliver better healthcare quality, strengthen local economic green growth, and support climate action

1. Improved energy access and healthcare quality for patients in off-grid areas

- **Improved healthcare quality for 900k patients across 103 facilities:** S4H is estimated to provide access to reliable energy to 103 healthcare facilities currently off-grid with catchment populations of 900k individuals. This improved availability and strengthened resilience of healthcare facilities are expected to significantly improve health outcomes across the board, from quantitative indicators (e.g., reduced HIV/AIDS infection rate and neonatal mortality rates, improved access to medicines) to softer qualitative indicators (e.g., improved patient comfort); and
- **Reduced inequalities in health services:** lack of access to reliable energy disproportionately affects rural healthcare facilities located in areas where the poorest populations live. Bringing reliable energy access to rural areas can reduce the healthcare quality gap between rural and urban communities in terms of healthcare quality.

2. Economic green growth and job creation

- **Local economic development through green growth:** S4H can catalyse foreign direct investment inflows (an estimated US\$3.5m for this programme alone), develop the local energy ecosystem, and create green jobs (particularly in rural communities);
- **Renewable energy sector capacity-building:** technical assistance and capacity-building of government ministries and local ESPs will contribute to further market transformation and national implementation of off-grid solar technologies; and
- **Creation of new value chains:** the recycling and disposal of solar PV systems can create demand for new value chains and develop new local green enterprises.

3. Cleaner energy and environmental benefit

Moving from providing full energy access to public healthcare facilities through off-grid solar (versus equivalent diesel usage) will reduce carbon emissions by approximately 1.2k tCO₂e per annum:

	Total	Rural health centre	Urban health centre	Hospitals
Diesel efficiency	21%	15%	25.00%	30.00%
tCO ₂ /year	1,205	650	117	438

4. UNDP role and implementation roadmap

UNDP can play three key roles to support implementation of the S4H innovative financing S4H coordination platform in Namibia

- Create a convening platform for stakeholder coordination and buy-in: given its networks and track record in Sub-Saharan Africa, UNDP is uniquely-positioned to play a convening role through the S4H coordination platform with all relevant public (i.e., MoF, MoME, MHSS, district health offices, community leaders, donors) and private (i.e., DFIs, local financial institutions, local ESPs) stakeholders; ensure stakeholder buy-in and alignment of respective mandates and incentives with S4H objectives; and provide oversight of roles and responsibilities for successful collaboration;
- Support capacity-building and strengthening of regulatory frameworks:
 - o *Off-grid/renewable energy regulatory frameworks*: Namibia's national energy development plans have predominantly targeted on-grid generation and reducing reliance on imports from regional neighbours. UNDP can support MoME in strengthening its off-grid development strategies and incorporating clearer targets and timelines into MoME's national electrification master plan. As part of these development strategies, UNDP can further strengthen incentives and favourable policies for the renewable energy sector based on global best practices (including, for example, re-implementing policies for feed-in tariffs and relaxing the 30% cap on IPP distribution). And through off-grid initiatives like S4H, UNDP can support GoN in developing new off-grid/distributed energy models that could be scaled up under the relevant national master plans;
 - o *PPP regulatory framework and management*: UNDP can support MHSS to leverage expertise from MoF's PPP Unit or NamPower and incorporate global best practices to existing PPP regulatory frameworks. By supporting capacity-building of GoN's PPP Unit to include healthcare off-grid energy infrastructure, UNDP can strengthen MHSS' PPP and contractual frameworks, increase private sector investor appetite through creation of investable project portfolios, and reduce transaction costs on PPP procurement and management;
 - o *Local ESP capabilities*: although the local ESP ecosystem is well-developed in Namibia, UNDP-supported TA providers can support PPP project procurement and delivery capabilities (including the upskilling of local and community-based O&M technicians outside major urban areas); and
- Align and mobilise donor and investor capital to S4H objectives: UNDP can leverage its partnerships development and fundraising platforms to mobilise global development capital providers (i.e., donors, DFIs, climate funds) and local financial institutions to provide TA grant and investor capital for the S4H innovative financing facility.

Additionally, UNDP can support global alignment around the development of ITMO carbon markets under Article 6 of the Paris Agreement, to mobilise climate finance as a potential additional revenue stream for S4H healthcare facilities.

Initial feedback from a consultative workshop with GoN stakeholders indicate interest in further developing the S4H programme

The MHSS and MME representatives have confirmed their interest in pursuing discussion to investigate how the S4H proposed solution could be pursued in Namibia. As next steps, the stakeholders are seeking a more detailed analysis of the path to implementation and definition of the roles of the different stakeholders within that process.

The MHSS representative highlighted the current strategy of the MHSS, in collaboration with Minister of Environment, Forestry & Tourism, to equip all new off-grid healthcare facilities with solar power. For those facilities and the facilities already equipped with solar energy, the MHSS pointed out the need for a model ensuring the sustainability, maintenance, and disposal for their solar PV systems. The model shall be adapted and accommodate O&M only contracts in a similar manner as for full-fledged PPPs covering CAPEX.

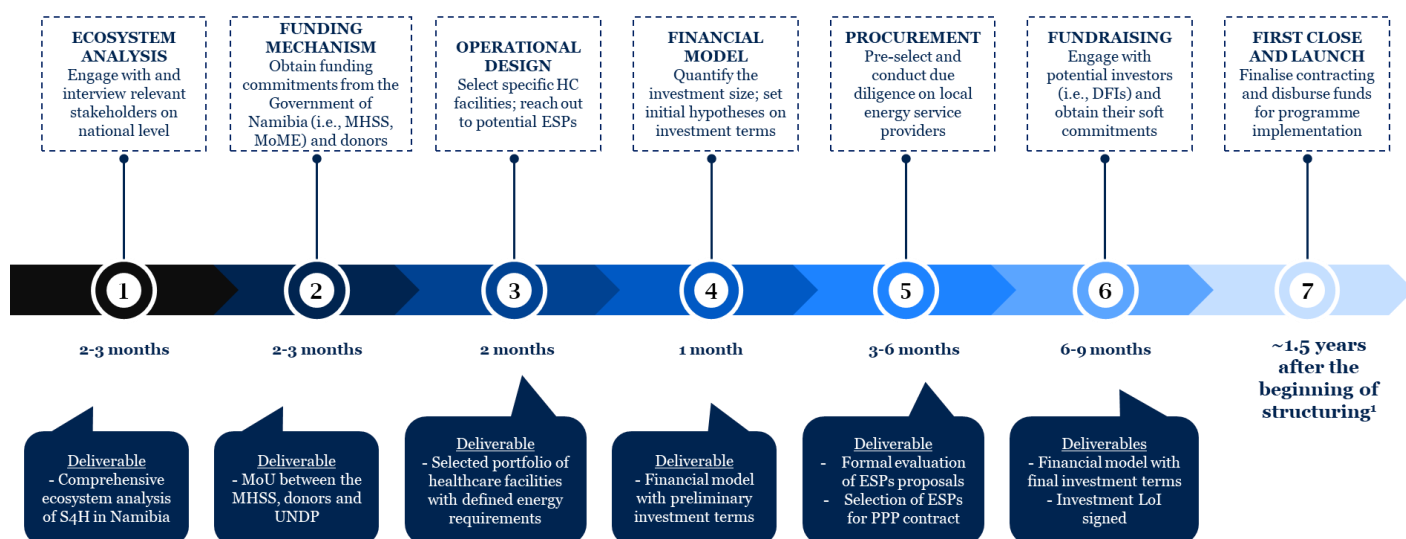
A working group composed of government representatives (including relevant bodies under MHSS, MoME and MoF), UNDP and other key stakeholders (including the private sector, donors, FIs and development partners) will be established and will continue the discussions on the way forward. This working groups shall further be part of an ecosystem landscaping to identify the key stakeholders and their potential roles within this initiative. The MoME representative have indicated their interest in being part of the discussion given their involvement in rural electrification projects.

UNDP has identified the Green Climate Fund (GCF) as a potential donor to support this programme in Namibia and has been working on a concept note for the GCF that shall be endorsed by the GoN to launch the programme implementation.

UNDP will be organising a set of follow-up calls with relevant ministries to continue engagement and align on next steps.

Based on these learnings, the following are recommended next steps and an implementation roadmap

- Draft and execute a Letter of Interest for the Green Climate Fund: as a concrete outcome of the country consultative workshop, UNDP is to coordinate with relevant government ministries to execute a Letter of Interest supporting a proposal request for funding from the Green Climate Fund and its Project Preparation Facility (PPF);
- Develop memorandums of understanding between GoN and UNDP: UNDP will formalise partnership with relevant GoN stakeholders (including MHSS, MoME, MoF) setting out guiding principles for engagement on S4H innovative financing programme;
- Define S4H programme scope: UNDP and MHSS will conduct a comprehensive ecosystem analysis/action plan, energy needs assessment, project selection and prioritisation, and budget sizing across its portfolio of healthcare facilities, in collaboration with UNDP and MoME;
- Engage with donors, DFIs, and other capital providers: UNDP, relevant GoN stakeholders, and its financial transaction advisor will engage with donors and investors to mobilise early interest and/or commitments for the S4H programme; and
- Design and structure the S4H S4H coordination platform financing model: based on the initial design of the PPP model in this feasibility study and MHSS’ operational design requirements, UNDP and its financial transaction advisor will develop a financial model and investment term sheet to fundraise with donors, DFIs, and other investors. The full design and launch of an S4H innovative financing facility in Namibia is expected to take approximately 1 year.



¹ Timeline assuming sequencing of activities, activities 3 and 4 or 4-5 could partially run in parallel reducing the implementation timeline.