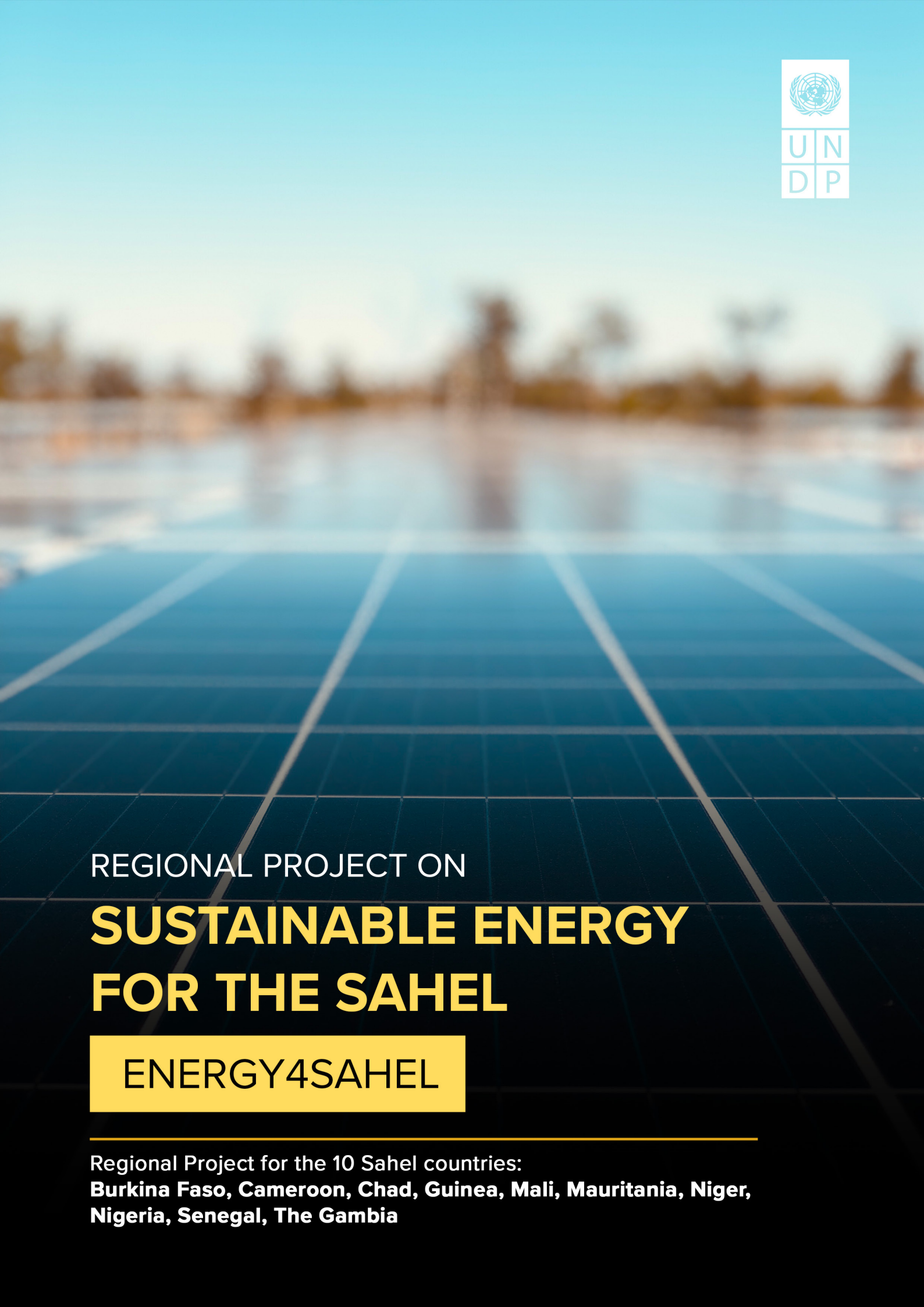

REGIONAL PROJECT ON

SUSTAINABLE ENERGY FOR THE SAHEL

ENERGY4SAHEL

Regional Project for the 10 Sahel countries:
Burkina Faso, Cameroon, Chad, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal, The Gambia

Contents

Energy4Sahel

UNDP is the leading United Nations organization fighting to end the injustice of poverty, inequality, and climate change. Working with our broad network of experts and partners in 170 countries, we help nations to build integrated, lasting solutions for people and planet.

United Nations Development Programme
Sub-Regional Hub for West and Central Africa
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Dakar - Senegal

INTRODUCTION

Currently, **51% of the population in the Sahel (175 million people) lack access to electricity, while 80% of the population do not have access to clean cooking fuels and technologies.** Due to its cross-linkages with areas such as environment, health, education, gender equality and economic development, renewable energy supply offers a unique transformative potential for improving the living conditions in the region - especially in rural areas, where vulnerable communities are most affected by the current humanitarian, security and health crisis. UNDP intends to augment various energy initiatives already being undertaken by governments and their partners in the Sahel. By collaborating with these institutions and leveraging its network of Country Offices and UN partners, UNDP will provide a further impetus for the region's effort to push forward clean energy access for its populations as a driver for socio-economic development in a fragile **post COVID-19** recovery context.

Based on the underlying paradigm that renewable energy should primarily contribute to productive use and income-generating activities, as well as the provision of essential services such as health and education, the UNDP Regional Project on Sustainable Energy for the Sahel (Energy4Sahel) will support governments develop policy and financial derisking instruments to mobilize public and private funding for energy access projects at scale. Tailored innovative technologies and business models for off-grid electrification and clean cooking solutions - especially those being developed by young entrepreneurs from the region - will be demonstrated and deployed through an integrated approach to low carbon development in vulnerable communities. Over the 5-year project period, technical assistance and investment will be channeled through regional and national level interventions to the 10 Sahel countries: Burkina Faso, Cameroon, Chad, The Gambia, Guinea, Mali, Mauritania, Niger, Nigeria and Senegal. As such, this project will constitute a sub-regional operationalization of UNDP's scaled-up offer on energy – the Sustainable Energy Hub – currently being rolled out at global level. **Overall, the Energy4Sahel project is expected to provide clean energy services to:**

5.5 Million
people from the Sahel region

while creating
42,000
permanent green jobs

1,500
public health centers & schools

Partnerships & upstream interventions to create an enabling environment for investments are expected

x10

to accelerate and multiply these impacts by a leverage factor of ten or more.

The Energy4Sahel Project falls in the framework of the UN Integrated Strategy for the Sahel (UNISS) and is aligned with its Conceptual Framework for the UN Renewable Energy Offer for the Sahel. The UNDP Energy4Sahel project addresses the following outcomes:

- **Outcome 1:** Enhanced enabling environment for the deployment of off-grid renewable energy solutions;
- **Outcome 2:** Improved public services through accelerated access to sustainable energy in vulnerable communities;
- **Outcome 3:** Increased socio-economic development in rural areas through access to green productive use of energy and the promotion of the ecovillage model;
- **Outcome 4:** Priority communities in the Sahel have an increased access to clean cooking fuels and technologies.

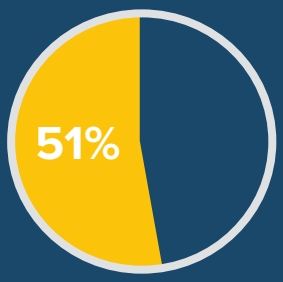
Total resources required: USD 350,000,000 (incl. USD 20,000,000 already mobilized)

Ahunna Eziakonwa
UN Assistant Secretary-General, UNDP Assistant Administrator and Regional Director for Africa

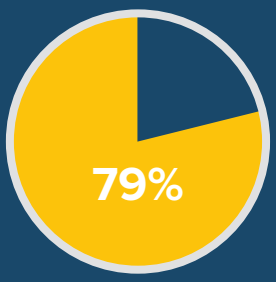
DEVELOPMENT CHALLENGE

The Sahel Energy Crisis and its Linkage to Development

Despite being endowed with a tremendous renewable energy potential, the Sahel is one of the world's regions with the highest energy poverty rates. It is estimated, that among the **342 million** inhabitants of the **10 Sahel countries**



around **175 million** have no access to electricity



while an even higher number, **271 million** lack access to clean cooking technologies and fuels

Country	Population (Million)*	GDP/ capita [USD PPP]**	Electrification access rate [%]*	Clean Cooking access rate [%]*	Population without access to electricity [million]*	Population without access to clean cooking [million]*	RISE indicators 2020***) [Total score (electrification/clean cooking subscore)]
Burkina Faso	20.3	2,273	18	20	16.9	16.2	33 (57/17)
Cameroon	25.8	3,804	63	34	9.4	17.0	52 (70/59
Chad	15.9	1,650	8	15	14.6	13.5	40 (24/15)
Gambia	2.3	2,321	60	8	0.9	2.1	NA
Guinea	12.7	2,676	42	7	7.3	11.8	21 (44/0)
Mali	19.6	2,424	48	5	10.2	18.6	37 (29/56)
Mauritania	4.5	5,427	46	61	2.4	1.7	33 (31/44)
Niger	23.3	1,279	19	10	18.9	20.9	51 (64/63)
Nigeria	200.9	5,363	55	21	89.6	158.7	56 (72/57)
Senegal	16.2	3,545	70	35	4.8	10.5	30 (48/16)
10 Sahel Countries	**342.0**	**4,234**	**49**	**20**	**175.0**	**271.7**	-

Table 1: Main energy-related indicators in the Sahel countries

*) Source: WB ESMAP Tracking SDG7, 2019 data. https://trackingsdg7.esmap.org/
**) Source: WB open data, 2019 data. https://data.worldbank.org/
***) Source: WB ESMAP Regulatory Indicators for Sustainable Energy (RISE). https://rise.esmap.org/ RISE is an index specifically designed to monitor a country's policy and regulatory framework for sustainable energy. The index, which has been collected since 2010, is composed of 4 sub-indices that assess the criteria of electricity access, clean cooking, energy efficiency and renewable energy.

These numbers reveal that the Sahel stands in the middle of a fundamental energy crisis – a crisis that is tightly interlinked with the precarious humanitarian, governance, economic and environmental situation in the region. Particularly vulnerable to and affected by this crisis are the rural populations, as well as the increasing number of refugees and internally displaced people in the region[1]. Lacking access to modern energy services further impairs their already difficult living conditions, as almost all prospects of sustainable development – jobs, health, education and even security, ultimately depend on energy.

Low energy access rates and weak policy frameworks for the energy sector – as demonstrated in the World Bank's RISE index[2] - usually correlate with the underperformance of other socio-economic indicators, like the low GDP per capita in the Sahel countries. These linkages are well-known. **In rural areas in particular, the poor access to electricity prevents entire regions from economic development, job creation, quality health care and education and generally more prosperity.** Without electricity, rural communities cannot easily manufacture and locally process agricultural products, which would otherwise be a chance to create new value chains or enhance existing ones[3], and to offer competitive products on national and international markets particularly in the context of the entry into force of the Africa Continental Free Trade Area (AfCFTA).

1 The Sahel region currently (March 2021) counts approximately 2.2 million internally displaced people (2016: 0.05 million) and 0.88 million refugees (2016: 0.20 million) (https://data2.unhcr.org/en/situations/sahelcrisis).
2 RISE 2020, Regulatory Indicators for Sustainable Energy. Sustaining the Momentum. Report 2020. RISE is an index specifically designed to monitor a country's policy and regulatory framework for sustainable energy. The index, which has been collected since 2010, is composed of 4 sub-indices that assess the criteria of electricity access, clean cooking, energy efficiency and renewable energy (https://rise.esmap.org).
3 González Grandón T. and Peterschmidt N. (2019) "KeyMaker Model Fundamentals: Mini-grids as a tool for inclusion of deep rural communities" Green Mini-grid Se4all Africa, AFDB.

Lacking energy also hampers the use of telecommunication and digital infrastructure – which is today a key driver for economic activities, in urban and rural areas, and which has a further social dimension as it increases social connectivity, encouraging particularly the young people's participation in society and economy. It is precisely for the young generation that the prevailing socio-economic conditions in the Sahel become increasingly unbearable: poverty (including energy poverty), unemployment, social exclusion and a general lack of future prospects contribute to increasing migration, rural exodus, or, even worse, an aggravation of the security situation due to young people's enrolment into terrorist groups[4]. This situation is exacerbated by climate change, considered a "threat multiplier" which increases the communities' vulnerabilities to shocks, their competition for water and other natural resources and, with this, the risk of conflicts. The lack of energy supply is linked to the absence or weak presence of the State in rural areas, often failing to meet its role as provider of basic services. In turn, the quality of public services, especially education (rural schools) and health depends on the availability of electricity, compounding the challenge. For the health sector, the COVID-19 crisis has brought this dependence at the forefront: hospitals and rural health centers need sustainable power to treat severely affected COVID-19 patients but also to store vaccines. According to a WHO report, only 28% of health centers have reliable electricity[5].

Another dismal feature of the Sahel's energy situation is the lack of access to clean cooking. In most rural and urban areas, cooking is still performed with inefficient cookstoves that run on locally collected biomass, mostly firewood, as fuel. The negative consequences – health issues and even premature deaths[6] due to household air pollution, and environmental degradation due to the firewood collection - are widely known, yet little progress has been made to move away from these unsustainable practices. The consequences are shouldered predominantly by the female population, because cooking activities, as well as firewood collection is mainly the responsibility of women. For example, in Central Sahel, women, especially rural women, are usually affected by time shortage as they work 16 to 18 hours a day, dividing their tight time budget to satisfy multiple competing priorities that include processing family food, caring for children, taking care of the household, supplying the household's energy, water, health and other domestic labor needs[7]. The lack of modern energy services, particularly clean cooking, can be seen as a barrier to the development of women and girls in the Sahel, trapping them in a situation of high workloads, health hazards, and a generally reduced quality of life.

For good reasons, renewable energies and energy efficiency are seen as the key instruments to tackle these challenges of the multifaceted Sahel energy crisis. Very often, the global discourse about energy transitions looks at renewable energy as a technical solution to mitigate climate change. But in the Sahel context, it is much more than this. Here, clean energies provide an outstanding opportunity to address a whole set of development challenges that energy-deprived communities face. Thanks to the versatile nature of decentralized solar electricity supply (which is today the least-cost electrification option for many rural areas in the Sahel that are far from the national grid), it is possible to establish links to a variety of Sustainable Development Goals (SDGs) of the UN 2030 Agenda for Sustainable Development (see Programming Context). Affordable and clean energy access (SDG 7), as a matter of course, stands at the center of these deliberations. It brings electricity and clean cooking solutions to the people in the Sahel region, but it also helps achieving other SDGs. Being focused on renewable energy – and energy efficient clean cooking – this project inherently addresses the goal of transitioning to a low carbon development, which contributes to SDG 13, action against climate change. As mentioned above, other relevant SDGs include good health and well-being (SDG 3), and quality education (SDG 4), but also the access to clean water (SDG 6), for example through solar powered water pumping or water treatment facilities. To a wider extent, affordable and clean energy access also links to food security (SDG 2), poverty reduction (SDG 1) and reducing inequalities (SDG 10). One particular aspiration of the present project is to contribute likewise to the SDGs that are related to socio-economic development and well-being of the Sahel communities: In this sense, renewable energy access is intertwined with job creation and economic growth (SDG 8) as well as better infrastructures for innovation and industrial production (SDG 9). Gender Equality (SDG 5) is a further element that improved energy access can significantly enhance.

It must be acknowledged that, until today, the benefits of these positive interlinkages between renewable energy-based access to modern energy services and the SDGs are far from being fully exploited. The reasons lie in the various barriers which are likewise challenging the ambitions of this project. First, the still

4 Mercy Corps (2015): Youth & consequences: Unemployment, injustice and violence https://www.mercycorps.org/research-resources/youth-consequences-unemployment

5 Adair-Rohani H, Zukor K, Bonjour S, Wilburn S, Kuesel A, Hebert R, et al. Limited electricity access in health facilities of sub- Saharan Africa: a systematic review of data on electricity access, sources, and reliability. Global Health Science Practice. 2013;1(2):249-26.

6 Worldwide, approximately 4 million people die prematurely per year from illness attributable to household air pollution from inefficient cooking practices (https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health).

7 USAID, Gender Analysis, Resilience in the Sahel Enhanced (RISE) II, July 2018. Prepared by Dr Batamaka SOME, Independent Research Consultant.

precarious security situation in many regions of the Sahel region has to be mentioned. In high-risk areas, where armed conflict and violent extremism prevail, renewable energy deployment might simply not be possible or can only be carried out under very difficult conditions. Nevertheless, the UNDP proposal seeks to support, to the extent possible, fragile areas, for example the cross-border regions of the Liptako-Gourma or Lake Chad Basin, where a high number of displaced people and refugees live, often in conflictual relationships with the host population. The current COVID-19 crisis certainly places a further strain on the uptake of clean energy access solutions in the Sahel. Renewable energy technologies are capital intensive, and the budgets of the governments, as well as financial institutions/donors are prone to dwindle the longer the COVID-19 crisis lasts - not to speak of the expected economic downturn that may follow the pandemic and may particularly affect rural and other vulnerable populations.

Apart from these crisis-related challenges, other structural obstacles are slowing down the deployment of renewable energies in the Sahel: inflexible structures, cumbersome national electricity utilities in financial distress, restrictive regulations and unfavorable tax policies generally hold sway over the energy access sector. Especially for renewable energy projects, which require high upfront investments, unmitigated political and regulatory obstacles often entail considerable additional financing costs (risk premiums) discouraging private sector investment. Although some progress has been made in the last years to foster the frameworks for renewable energies in the Sahel, including the adoption of renewable energy roadmaps in several countries, in practice, a "fossil fuel bias" can often be observed in the actual energy-related decision-making. Due to high upfront costs for renewable energies, but also due to prevailing fossil fuels subsidies in many African countries[8,9], conventional generation technologies are repeatedly given priority in energy projects. This does not only account for on-grid power plants, but also for the off-grid sector where diesel generators often remain the preferred electrification solutions – despite significant long-term cost advantages offered by solar technologies (PV). These advantages can be seen when hybridizing diesel mini-grids with solar PV technologies[10,11], and even more importantly when using solar PV mini-grids with battery storage to phase out dependency on fossil fuels entirely.

Another major complication in energy planning in the Sahel is the lack of good and reliable information for decision making. Despite several national and regional initiatives to set up energy information systems, reliable data about settlement structures and patterns, population and energy demand, especially in rural areas, is often scarce, outdated or not sufficiently robust. Maps, indicators and databases suffer from low accuracy and very often the sustainability of such monitoring systems over time is not guaranteed. The potential for using geospatial data, advanced data analytics[12] (e.g., machine learning) to cater for the lack of data and support more informed decision-making is not well exploited in the Sahel. These flaws, paired with often weak instutional capacities in terms of data and knowledge management, present a barrier for national and international stakeholders wishing to tailor their energy access projects to the real situation on the ground and to the actual needs of the Sahelian populations. The lack of local technical expertise and planning skills in the energy sector is another obstacle to sustainable energy uptake in the Sahel. The deficits are observed not only in the private sector (lack of experienced engineers, skilled workers and installers - for instance of solar energy systems), but also at the level of the public institutions, such as rural electrification agencies, which often have only weak capacities and resources to fulfil their mandates. Overlapping roles and responsibilities between different governmental institutions is also often observed and contributes to the overall lack of effectiveness and efficiency of the sector. Finally, the multitude of small-scale, scattered energy initiatives supported by the community of international partners and the lack of donors' coordination (partly explained by the abovementioned weak capacity of institutions to play their coordinator and integrator role) is a recurring challenge in the Sahel that limits the effectiveness of the interventions as well as their capacity to scale up.

By collaborating closely with its national and international partners in the scope of this project, UNDP aims at supporting governments remove the key barriers preventing the sound deployment of sustainable energy

8 Whitley, S., & van der Burg, L. (2015). Fossil fuel subsidy reform in sub-Saharan Africa: from rhetoric to reality. New Climate Economy, London and Washington, DC.

9 Bertheau, Paul, et al. "The influence of diesel fuel subsidies and taxes on the potential for solar-powered hybrid systems in Africa." Resources 4.3 (2015): 673-691.

10 Moner-Girona, M., Solano-Peralta, M., Lazopoulou, M., Ackom, E. K., Vallve, X., & Szabó, S. (2018). Electrification of Sub-Saharan Africa through PV/hybrid mini-grids: Reducing the gap between current business models and on-site experience. Renewable and Sustainable Energy Reviews, 91, 1148–1161. doi:10.1016/j.rser.2018.04.018

11 Al-Hammad, Hirak, et al. "Renewable energy in hybrid mini-grids and isolated grids: economic benefits and business cases." Frankfurt School—UNEP Collaborating Centre for Climate and Sustainable Energy Finance (2015). https://www.irena.org/publications/2015/Jul/Renewable-Energy-in-Hybrid-Mini-Grids-and-Isolated-Grids-Economic-Benefits-and-Business-Cases).

12 Szabó, S., Moner-Girona, M., Kougias, I., Bailis, R. and Bódis, K. 2016. Identification of advantageous electricity generation options in sub-Saharan Africa integrating existing resources. Nature Energy, Vol. 1, No. 10, p. 16140.

solutions in the region, and at creating the needed opportunities to enable a wide range of SDGs through clean energy access. This will be achieved through an inclusive, bottom-up approach, by upscaling existing proven models, but also by promoting innovations in the field of energy access that have been developed by entrepreneurs and creative communities in the Sahel countries.

Programming Context

The UNDP Energy4Sahel Project is developed in the context of various global, regional and national institutional frameworks and agendas which require the promotion of clean, sustainable and affordable energy. The programming context includes but is not limited to:

1. Global Frameworks

Sustainable Development Goals (SDGs)

The project will directly contribute to:

SDG 7 - Affordable and Clean Energy, the central SDG related to energy, focuses on the provision of the infrastructure for access to affordable, clean and modern energy services. It forms the "base layer" of all energy-driven development efforts. In the framework of the UNDP Energy4Sahel Project, energy access efforts will concentrate on clean cooking and renewable (off-grid) electricity. The project supports all 5 subgoals of SDG 7, being SDG 7.1: Universal access to modern energy, SDG 7.2: Increase global percentage of renewable energy, SDG 7.3: Double the improvement in energy efficiency, SDG 7.A: Promote access to research, technology and investments in clean energy and SDG 7.B: Expand and upgrade energy services for developing countries.

SDG 13 - Climate Action, aims to strengthen action against climate change. With its focus on renewable energies (and energy efficient clean cooking), the UNDP project inherently addresses the goal of minimizing the carbon footprint of its activities while promoting energy access and socio-economic development in the Sahel region. The project will send an important signal to governments, encouraging them further to pursue a generalized low-carbon development pathway for all parts of their energy sector (including industry, grid connected power plants and off-grid sector) to meet the increasing energy demand (accelerating due to the high population growth and urbanization rates) while aligning to the national mitigation commitments. A further element to be mentioned under SDG 13 is climate adaptation: climate change is exacerbating communities' vulnerabilities, particularly in rural areas, but energy can contribute to increasing their resilience by strengthening their adaptive capacity to climate-related hazards and natural disasters.

SDG 8 - **Decent Work and Economic Growth,** aims at achieving decent employment and economic growth. For the communities in the Sahel region, energy access can enable new businesses and economic activities in rural areas (see SDG 9), eventually leading to green jobs creation and better economic conditions.

SDG 5 - Gender Equality, intends to remove gender inequities and to ensure women's full and effective participation in society. Improved energy access can work towards this goal: clean cooking technologies can improve women's health and free time previously spent on fuel collection for other income-generating activities, while electricity access – if implemented in a gender-responsive way – can provide further opportunities in terms of education and employment for women in the Sahel.

SDG 3 - Good Health and Well Being, calls for healthy lives and improved well-being. Within this project, this goal will be supported by the provision of electricity services to rural health centres, as well as through the reduction of household air pollution by the promotion of clean cooking technologies and fuels.

The project will further enable:

SDG 1 - No Poverty, calls for the reduction of poverty. Clean energy can contribute to this goal by reducing household energy expenditures (fuel savings for lighting and cooking) and more importantly by increasing opportunities for economic/industrial growth and job creation (SDG 8 and SDG 9).

SDG 2 - Zero Hunger, calls for ending hunger and for achieving increased food security. Renewable energy contributes to this goal, as it has a significant potential to improve agricultural productivity and enhance agricultural value chains, for example through solar-power irrigation or electricity used for cooling and food processing in rural areas in the Sahel.

SDG 4 - Quality Education, is concerned with ensuring inclusive and equitable quality education. Sustainable energy can enhance the availability and quality of education in the Sahel, by providing electric light, powering of education equipment (including internet access, enabling remote schooling during a security or COVID-19 crisis) or making water and sanitary services available in rural schools (see SDG 6).

SDG 6 - Clean Water and Sanitation, targets the availability and sustainable management of water and sanitation. In the Sahel context, there are various linkages to clean energy such as electricity-powered water purification or solar water pumping (for irrigation or drinking water) in rural areas.

SDG 9 - Industry, Innovation and Infrastructure, targets sustainable industrialization, infrastructure and fosters innovation. The deployment of decentralized energy is an important driver for innovative concepts, not only on the technology side (e.g., in the area of agri-food processing or clean cooking) but also on the social and financial sides (e.g., innovative business models facilitated by digitalization).

SDG 10 - Reduced Inequalities, Energy is an important factor for **SDG 10** through various socio-economic aspects including in addressing the digital divide as evidenced by COVID 19 pandemic and access to online services.

SDG 11 - Sustainable Cities and Communities, is about achieving balanced social, economic and environmental sustainability at community level. This project seeks to align to this goal by supporting the low carbon socio-economic transformation of rural communities with the help of renewable energies.

Paris Agreement

The Paris Agreement is a legally binding international treaty on climate change. It was adopted by 196 Parties at COP 21 in Paris, on 12 December 2015 and entered into force in November 2016. Its goal is to limit global warming to well below 2, preferably to 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The Paris Agreement is a landmark in the multilateral climate change process because, for the first time, a binding agreement brings all nations into a common cause to undertake ambitious efforts to combat climate change and adapt to its effects. The Paris Agreement works on a 5-year cycle of increasingly ambitious climate action carried out by countries, whereby countries submit their plans for climate action known as Nationally Determined Contributions (NDCs).

UNDP's 2022-2025 Strategic Plan

UNDP's 2022-2025 Strategic Plan (SP) outlines UNDP's commitment to support countries' efforts to eradicate poverty in all its forms with the objective to promote sustainable development and create resilient communities. UNDP is mandated by UN Member States to be the support platform of the UN Development System providing an integrator function in support of countries in their efforts to implement the 2030 Agenda. The SP provides signature solutions to be adapted for various development solutions in line with this mandate. Signature solution 5 focuses on closing the energy gap, with an objective to support 500 million people gain access to clean energy in the next four years. Signature solution 1 addresses keeping people out of poverty and inequality, while Signature solution 3 emphasizes UNDP's commitment to support national and recovery capacities for resilient communities, especially in addressing the impact of disasters and emergency situations on human security. This is timely considering the impact of COVID-19 on different countries in Africa. Signature solution 6 stresses the importance of strengthening equality and the empowerment of women. The SP is the guiding document in efforts by UNDP to support the creation of pathways to peaceful, resilient and inclusive communities. The strategic planning process for this new SP was conducted in parallel to the design of this project, and alignment in terms of strategic objectives and targets was confirmed. In the scope of the previous SP, UNDP also issued the Beyond Recovery: Towards 2030 strategy in June 2020 to guide the next phase of UNDP's COVID-19 crisis response and help decision-makers look beyond recovery, towards 2030, making choices and managing complexity and uncertainty in four main areas: governance, social protection, green economy, and digital disruption.

UNDP Hub on Energy for Sustainable Development (Sustainable Energy Hub)

UNDP recently established UNDP Hub on Energy for Sustainable Development (hereafter, the 'Sustainable Energy Hub') intended to be the arrowhead of UNDP's abovementioned commitment to an 'Energy Promise' that aims to close the gap on delivering SDG7 as a pathway to meeting the 2030 Sustainable Development Goals (SDGs) and Paris Climate Change Agreement. The Sustainable Energy Hub will build on UNDP's existing Energy Portfolio, covering over 100 countries to harness clean energy and support the energy transition as well as on UNDP's Climate Promise, UNDP's Sustainable Finance Hub and UNDP's Digital offer. The Sustainable Energy Hub will develop and operationalize, polices, programmes and partnerships to support UNDP Energy Promise, a commitment to help increasing access to clean and affordable energy for 500 million people; and accelerating and supporting the transition to renewable energy through 'systems changes' that support more inclusive and green economies, particularly in countries with low levels of renewable energy generation or poor energy efficiency improvement rates. Recognizing that change will be disruptive, UNDP will work

to ensure that such transitions are just, and that their impact on vulnerable people is understood and duly mitigated. The Energy4Sahel project will contribute to deliver the Energy Promise in the Sahel region, and as such will serve as a vehicle for the sub-regional operationalization of the Sustainable Energy Hub.

Health and Energy Platform of Action (HEPA)

Launched in 2019 by the World Health Organization (WHO), the UN Department for Economic and Social Affairs (DESA), the UNDP, and the World Bank, HEPA aims to help countries strengthen the political and technical cooperation between the health and energy sectors. Its goal is to improve the health and livelihoods of the poorest populations though the adoption of clean and sustainable energy, with an initial focus on clean cooking and the electrification of health care facilities.

Global Plan of Action for Sustainable Energy solutions in situations of displacement (GPA)

The Global Plan of Action for Sustainable Energy solutions in situations of displacement (GPA)[13], founded in 2018, is hosted by UNITAR and involves several other UN agencies (including FAO, IOM, UNDP, UNEP, UNHCR, WFP) as partners. The GPA is the global initiative to promote actions that enable sustainable energy access and use in displacement settings. In the G5 Sahel region, the GPA is collaborating with humanitarian partners to promote and provide energy access solutions for displaced population and roll out innovative finance models to replace fossil-fuel-powered infrastructure. Under the same goal, UNHCR released in 2019 its Global Strategy for Sustainable Energy 2019-2024[14] and the Clean Energy Challenge[15] with which this project will be aligned.

13 https://www.humanitarianenergy.org/.
14 https://www.unhcr.org/5db16a4a4.pdf.
15 https://www.unhcr.org/clean-energy-challenge.html.

2. Regional Frameworks

Agenda 2063 of the Africa Union

Agenda 2063 is a strategic approach to the socio-economic transformation of the African continent by the year 2063. It was initiated by the African Union in 2013 as a development vision for the continent for the next 50 years. Ensuring sustainable energy access for all African citizens is one goal of the agenda, formulated under Aspiration 7, which calls for “environmentally sustainable and climate resilient economies and communities”.

ECOWAS Renewable Energy Policy (EREP) and ECOWAS Energy Efficiency Policy (EEEP)

The **15 Member States** of the Economic Community of West African States (ECOWAS) have agreed in 2012 on a joint renewable energy policy (EREP) with the overarching goal to provide universal access to electricity by 2030.

48%
renewable share in the electricity mix is targeted by 2030 for grid-connected electricity

25%
share of rural population with access to decentralized renewable electricity services targeted

100%
universal target for access to clean cookstoves through EREP

41%
of the ECOWAS population benefiting from modern cooking fuels, such as LPG.

The implementation of the EREP is monitored and promoted by the ECOWAS Regional Centre for Renewable Energy and Energy Efficiency (ECREEE). The ECOWAS Energy Efficiency Policy (EEEP) complements the renewable energy policy (EREP) with efficiency targets for lighting, electricity distribution, cooking, standards and labelling and efficiency standards for buildings.

Economic Community of Central African States (ECCAS) Renewable Energy Roadmap

Supported by IRENA, the 10 ECCAS members (which include Cameroon and Chad) are in the process of developing a Central Africa Renewable Energy Roadmap, setting an indicative goal of 80% renewable energy in the electricity mix (of which 25% to be non-hydro) by 2030, as well as increased efforts in the area of mini-grids and stand-alone systems for rural energy.

UN Integrated Strategy for the Sahel

The UN Integrated Strategy for the Sahel (UNISS) is a results-focused comprehensive framework to strengthen governance, security and resilience in the Sahel region. It was developed in 2013 on the request of the UN Security council as a response to the Sahel security crisis. Later on, in 2018, the UNISS strategy received a recalibration, leading to the UN Support Plan for the Sahel. This plan is built around six priority areas, one of which (priority area 5) is dedicated to renewable energy.

The UN’s Renewable Offer for the Sahel is a conceptual framework developed in 2020/2021 in the scope of the UNISS to serve as reference

for the operationalization of the priority area 5 of the UN Support Plan for the Sahel on renewable energy. It provides a theory of change describing how renewable energy can be harnessed in the Sahel region in order to promote economic growth and poverty reduction. The offer likewise provides an outlook of key intervention areas and priority actions based on the UN's comparative advantages, with the intention to ensure a certain level of coordination and synergy with existing and planned relevant initiatives from UN agencies & other actors concerned with renewable energy in the Sahel.

UNDP's Africa Promise

The UNDP's Renewed Strategic Offer in Africa 2020, or "Africa Promise", aims to "strengthen UNDP's position as Africa's premier enabler and integrator for the 2030 and the 2063 Agendas". The Africa Promise and its Implementation Plan commits UNDP to support Africa's people, its governments and institutions as they seek to consolidate recent gains and effectively address the challenges that remain, such as weak governance institutions, persistent inequality, rapid population growth, rising violence, stalled industrialization and climate change. Affordable and sustainable energy constitutes one of the six Strategic Impact Areas of UNDP's Africa Promise, focusing on energy interventions to play their role as enablers of development. In particular, two main priorities are particularly relevant to this project: supporting countries to address the challenge of energy access and providing clean energy solutions in situations of displacement, countries in crisis and fragile situations

UNDP Regional Programme for Africa (2018-2021)

Along with the Country Programmes at national level, the Regional Programme for Africa constitutes the vehicle for realizing UNDP's Renewed Strategic Offer in Africa, or "Africa Promise". UNDP's Regional Programme for Africa contributes to regional development by addressing challenges facing the continent and amplifying opportunities related to the priorities and aspirations defined by the African Union and other regional entities. The Regional Programme includes five regional projects, serving to address cross-border risks and opportunities, and seeking to build the capacities of regional institutions and economic communities to manage them. The Energy4Sahel project contributes in particular to Outcome 2 of the Regional Programme: "Regional growth is inclusive, sustainable, with reduced economic inequalities, and characterised by structural transformation". In the design phase of this project, contributions were made to the new Regional Programme for Africa (2022-2025) to ensure alignement, in particular with respects to the results framework and its indicators.

UNDP Sahel Regional Offer

Enshrined in the UNDP Renewed Strategic Offer in Africa 2020, the UNDP Sahel Regional Offer seeks to more than double UNDP's current investment over the decade in the Sahel by using the available resources to leverage additional funding from other partners, including Sahel governments through Community Development Emergency Programme (PUDC)-type interventions. UNDP's development response in the Sahel is framed around four objectives: prevent, stabilize, transform and sustain, and is composed of three strategic pillars: energy (described in this document), governance and youth. Strong linkages exist between these pillars: the interventions in the ResES Project are largely targeted at promoting skills building and green jobs for the youth in the renewable energy sector. Energy is also a precondition for digitalization, which is an important focus of the youth, as well as governance offers. Strengthening institutions in charge of providing access to sustainable energy and supporting the deployment of clean energy services to the most vulnerable communities will further contribute to conflict prevention, peacebuilding and stabilization efforts and the enhancement of the State's presence in crisis settings, in particular borderlands areas in the Sahel region.

3. National Frameworks

The UNDP Energy4Sahel Project is consistent with the national strategies, roadmaps and sector goals for renewable energy and energy access of the governments of the Sahel countries.

Burkina Faso

The National Energy Sector Policy 2014-2025, which intends to increase the electricity access rate to 95%, sets a renewable energy target of 50% by 2025. The updated National renewable energy action plan (NREAP) and national energy efficiency action plan (NEAP), developed in the framework of the ECOWAS renewable energy policy (EREP) targeting 42% rural electrification rate and 79% clean cookstove penetration by 2030

Cameroon

The Cameroon Vision 2035 as well as Electricity Sector Development Plan (PDSE) and the Rural Electrification Master Plan (PDER) targeting a 75% electrification rate by 2030. Within the framework of the National Development Strategy 2020-2030, the Government also set ambitious targets for energy infrastructure and industry development.

Chad

The National Development Plan (2017-2021) as well as the National Energy Urgency Plan (PUE) envisaging an electrification target of 53% by 2030.

The Gambia

The Gambia National Development Plan (2018-2021) as well as the National renewable energy action plan (NREAP) and national energy efficiency action plan (NEAP) targeting full electricity as well as clean cooking access by 2030. Likewise, The Gambia National Electriciy Roadmap designed to provide universal access to electricity by 2025 was validated in 2021.

Guinea

The Policy Letter of the Energy Sector as well as The Sustainable Energy Action Plan (2015) developed by the Government of Guinea in the framework of SE4All, with the goal of reaching full energy access by 2030.

Mali

Mali's Strategic Framework for Economic Recovery and Sustainable Development 2019-2023, as well as the National Energy Policy (NEP), enacted in 2006, and the subsequent National Renewable Energy Plan for Mali (NREAP) 2015-2020 / 2030, targeting an electricity access rate of 67% by 2030, as well as a 100% goal for access to improved cookstoves.

Mauritania

The National Strategy for the Environment and Sustainable Development (SNEDD) 2017-2021 as well as the Government's Strategy for Accelerated Growth and Shared Prosperity (SCAPP) 2016-2030, targeting a 50% renewable energy share as well as a rural electrification rate of 40% by 2030.

Niger

Niger's National Economic and Social Development Plan 2017–2021 (PDES), established in the framework of the Strategy for Sustainable Development and Inclusive Growth – Niger 2035 (SDDCI), the National Electrification Policy Document (DPNE) and the National Energy Access Strategy (SNAE), as well as the National Renewable Energy Plan for Niger (NREAP) 2015-2020 / 2030, targeting an electricity access rate of 65% by 2030 and 100% by 2035, as well as a 60% clean cooking access rate in rural areas by 2030. The National Reference Program for Access to Energy Services (PRASE) was also adopted in 2010 as the national declination of the ECOWAS White Paper on Access to Energy Services.

Nigeria

The Nigeria Economic Sustainability Plan (2020) with its Energy For All/ Solar Power Strategy component, as well as the National Renewable Energy and Energy Efficiency Policy (2015), targeting a 16% renewable share in total energy consumption, as well as the National renewable energy action plan (NREAP) with a 44% renewable off-grid electrification target combined with a 59% improved cookstove goal by 2030.

Senegal

The Plan for an Emerging Senegal (PES), The Energy Sector Development Policy Letter (2019) as well as the Senegalese National Action Plan for Renewable Energy (PANER) formulated in the framework of the ECOWAS renewable energy policy (EREP), targeting universal access to electricity by 2025 and their Nationally Determined Contribution (NDC) under the Paris Agreement.

Importantly, all these governments, as signatories to the Paris Agreement, have recently developed – or are in the process of developing – a Nationally Determined Contribution (NDC) to communicate the actions they intend to take in terms of climate change mitigation and adaptation. A detailed analysis of the energy component in each NDC will be undertaken at the beginning of implementation of this project to further tailor country-level activities in the project. The national project management unit in each country will seek to demonstrate how the Energy4Sahel project can be used as a key instrument to contribute to the ambition raised in the NDC, and as a dialogue tool with government partners in their transition from the revision to the implementation of their NDCs.

4. Cross-Cutting Approaches

1 Working with Young People as Critical Actors and Equal Partners

Young people are critical actors and equal partners in creating solutions for a universal access to sustainable energies. It's young people who will live with the energy infrastructures we're building today – so they should be involved in designing them.

2 Gender-Conscious Perspective

Taking a gender-conscious perspective, by targeting women as agents of change, collaborators and innovators as well as paying particular attention to the ways in which women, in all their diversities, are impacted, thus crafting projects that speak to the needs, challenges and agency of women and girls.

3 Innovation and New Technologies

Focusing on innovation and the harnessing of new technologies (but also social and financial innovations) for development as a way of working not only with existing solutions but coming up with new ideas, even disruptive concepts, to solve complex development challenges and improve outcomes.

4 Leaving No One Behind

Empowering and building the resilience of the most marginalized, including refugees, IDPs and their host communities, and returnees. Reaffirming people's sense of identity, dignity and purpose – working in partnership with, rather than for them, co-creating programmes and interventions understanding that they are best placed to craft solutions to their challenges.

5 Enabling Environment

Promoting an enabling environment, for instance through coordination and consultation platforms for the inclusion of civil society in the decision processes on energy strategies, to enhance social acceptability for the proposed solutions. Paying particular attention to the specific development, governance and security challenges in cross-border areas, recognizing that solving energy challenges as well as providing other basic services there will often require a cross-border approach

6 Partnerships and Collaboration

Strengthening and broadening strategic collaboration, cooperation and partnerships with other UN agencies, multilateral and bilateral partners, regional mechanisms especially the African Union, Regional Economic Communities and Regional Mechanisms and their specialized agencies in renewable energy such as ECOWAS and ECREEE, ECCAS, as well as other regional institutions, notably, Lake Chad Basin Commission, Liptako-Gourma Authority, and G5 Sahel. Strategic partnerships between regional institutions and local actors (civil society and local institutions) are crucial for the regional integration of the project.

7 Climate Change

Climate change is expected to have wide ranging implications on the ecosystem as well as on traditional economic, agricultural and pastoral lifestyles in the Sahel. In the context of this project, clean energy is not so much seen a means to reduce carbon emissions – it is rather to be considered a tool to improve the people's resilience against the negative impacts of climate change, challenging particularly the most vulnerable and marginalized segments of the population.

8 Environmental Sustainability and Ecosystems

Solutions must be designed for low environmental impact, small carbon footprint, limited waste, and a long service lifetime in order to keep the impact on the ecosystems low.

9 Fostering Education

The provision or improvement of learning opportunities for old and young, male and female as a contributor to socio-economic development of a community.

Besides these institutional frameworks and agendas, the project will be complementary to a number of existing initiatives implemented by development partners, that will be further described in Section III (Results and Partnerships).

STRATEGY

Strategic Approach

Addressing the complex energy challenge in the Sahel requires a well-defined strategy. UNDP will make full use of its expertise, its network of UN partner organizations, and the operational strength of the ten UNDP Country Offices in the Sahel together with the Dakar Sub-Regional Hub, which will lead the activities of this project. Staff and capacities will be allocated for the project, existing partnerships with national and international stakeholders will be intensified and new partnerships/collaborations established.

The strategy also has a clear scope: activities are limited to:

01 Off-grid renewable electrification

02 Clean cooking

as well as enabling activities related to these interventions

Hence, grid extension or grid-connected renewables are not part of this project, because utility-scale projects are usually supported by development banks and other partners. Moreover, by focusing on off-grid electricity access and clean cooking, UNDP takes a clear stance towards the development of rural areas and un- or under-served communities in the Sahel, in accordance with the principle of Leave No One Behind. Here, the provision of sustainable energy, even at small scale, is believed to trigger the highest socio-economic benefits for the targeted vulnerable groups. Other key target groups of this project include displaced populations and their host communities in conflict areas, in particular cross-border regions. This being said, this project will also have a broader advisory role for the energy projects implemented independently by the ten Country Offices during the timeframe of the Energy4Sahel Project. Some of these projects may have a wider scope than the one selected for this project, which may therefore indirectly support other thematic areas, such as on-grid renewable energy.

With regards to the **strategy for electrification**, UNDP intends to support the establishment – or improvement - of an enabling environment for renewable energy investments in the off-grid energy sector, in particular through a policy de-risking approach. Financial derisking instruments will also be designed and deployed through strategic partners such as UNCDF, SEforALL and development banks. This will be guided by the application of the UNDP Derisking Renewable Energy Investment (DREI)[16] methodology in the 10 Sahel countries at the beginning of the project, which will allow to identify the most relevant policy and financial derisking measures to apply in order to address the main risks faced by public and private investors in renewable energy. As a further enabling measure to support the roll-out of electrification projects, UNDP will foster the setup of databases and energy modelling tools for integrated electrification planning in Sahel countries. UNDP has considerable expertise in this area, as it contributed to the Global Electrification Platform (GEP)[17], an open access geospatial planning platform for rural electrification strategies. Another element of UNDP's strategic agenda for electrification is the promotion of skills building, entrepreneurship and innovations for electricity access, particularly those being developed by entrepreneurs in the Sahel region. The Regional Accelerator Lab on Energy (embedded in the Sahel Development Solution Lab – SAHELAB - in Dakar) will reach out to entrepreneur networks, start-up communities, incubators and support them in developing "prototypes" of smart solutions for rural electrification. These prototypes could be technical solutions, but also policy, regulatory, financial or social innovations. To the extent possible, the most promising innovation shall be considered for actual implementation in electrification projects. In terms of project deployment/investment, UNDP will follow an impact-oriented approach, focusing primarily on economic and social development in the communities/villages. Priority is given to mini-grid solutions or standalone PV systems that provide power to social services, education, health or productive use activities (for example in agriculture or food-processing). This project will place electrification as the central component of a holistic ecovillage approach, i.e., an integrated approach to low-carbon development at village level respectful of local practices and livelihoods and aiming at enhancing local value chains through access to clean energy and other services. In complement and to boost jobs creation, green economic hubs will be developed in selected rural areas to demonstrate a business-oriented approach attractive to impact investments from the private sector, that is promoting sustainable economic development in a respectful way for the communities and their environment. It is emphasized that energy efficiency will likewise be addressed in the activities of the Energy4Sahel project. This means that the planning of electrification

16 https://www.undp.org/drei.

17 The Global Electrification Platform (GEP) is an open access platform that allows to explore least-cost electrification strategies around the world, interacting with country contextual data and different investment scenarios (https://electrifynow.energydata.info/).

projects will take into account technical and social solutions to reduce/optimize energy demand: the use of energy-efficient appliances and machinery, the introduction of demand-side management technologies, or trainings/education of the users to encourage responsible energy consumption. These measures will minimize the size of the electricity generation and distribution infrastructure and thus keep investment costs low.

With regards to the **strategy for clean cooking**, UNDP will likewise pursue a barrier removal approach – in combination with implementing interventions. Due to the particularities of the clean cooking sector, enabling activities will consist of providing support in terms of regulation (remove policy barriers), in terms of standardization and certification (remove market barriers) and in terms of communication and education (remove consumer acceptance barriers). UNDP will work closely with industry as well as governmental partners to develop best-suited solutions for the particular context in the ten Sahel countries. UNDP also intends to fill the data/information gap - which is even more pronounced for clean cooking than for rural electrification. Together with national and international stakeholders, UNDP will work towards the set-up of GIS-based integrated clean cooking planning platforms displaying biofuel resource availability, demographic data as well as location-specific clean cooking practices in the Sahel countries. Similarly to the electrification strategy, the promotion of innovations will be at the forefront. UNDP will support the dissemination and scale-up of the most promising innovations, for example through public private partnerships (PPP) arrangements. UNDP will work with governments and partners to promote clean cooking fuels and technologies that represent viable alternatives to traditional cooking methods in the Sahel in urban, peri-urban and rural areas. Linkages between the clean cooking and the electrification strategies will also be made, as cooking with electricity may become a viable option in certain contexts where affordable renewable energy – and energy efficient cooking appliances - have been deployed. The strategy for clean cooking requires a particular focus on addressing gender inequalities and promoting women's empowerment to catalyze inclusive development. Women, individually and through their networks, are uniquely positioned to disseminate as well as enhance the acceptance of energy technologies. The Energy4Sahel project will support in a general manner gender mainstreaming as a policy and investment de-risking measure. "Social de-risking" or enhancing the community's or household's acceptance of energy access interventions is critical to the success and sustainability of energy investments.

In order to achieve the objective to increase access to clean and affordable energy in the Sahel, the project will seek to intervene, through its four outcomes, at three complementary levels of intervention, aligned with the conceptual framework for the UN renewable energy offer for the Sahel developed in the scope of the UN Integrated Strategy for the Sahel (UNISS) **(see Figure 1):**

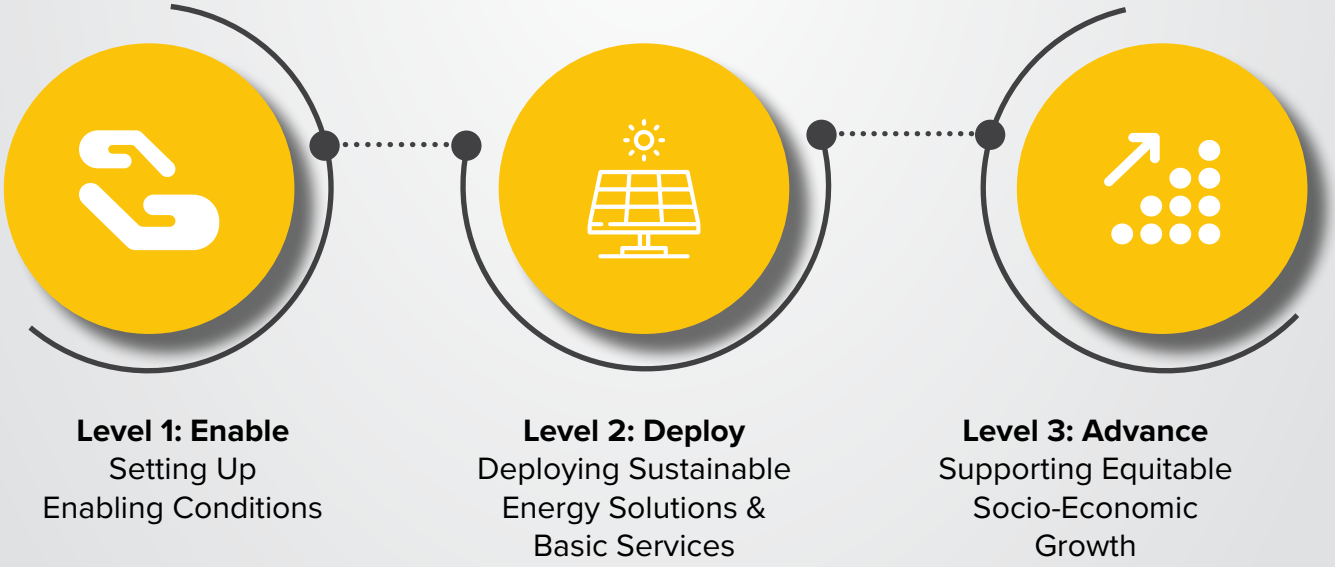


Figure 1: Three levels of intervention in the conceptual framework for the UN's renewable energy offer for the Sahel, to which this project is aligned

Level 1: Enable

Work towards supporting enabling conditions for clean energy access

Creating enabling conditions for sustainable energy access in the Sahel is essentially a matter of removing barriers. It is well known that typically financial, regulatory and political barriers prevent the private sector from investing in rural energy projects, all the more if they are taking place in countries in crisis context. UNDP will work on approaches to address these barriers, mitigate the associated risks, and thus facilitate private sector engagement. A second type of barrier concerns the reduced capacity of key stakeholders to carry out informed decision-making and planning of energy access programs. UNDP recognizes that very often missing information and data are at the root of the problem; therefore, it is intended to help partners in setting up state-of-the-art data platforms, integrated energy plans and energy information systems, building on existing solutions available in the region. A third enabling approach is oriented towards closing the digital divide in the region and unleashing the innovative potential of the youth, creative communities and entrepreneurs in the Sahel. They are the most neglected resource in the region and UNDP will work to mobilize them to contribute their own, innovative solutions to the energy challenge in the Sahel. Finally, there is also the weak donor/stakeholder coordination in the sector. UNDP intends to tackle this barrier by strengthening existing (or if needed creating new) regional and national coordination platforms in the Sahel. Most of the activities related to this level of intervention are included in Outcome 1 of this project.

Level 2: Deploy

Roll out interventions for accelerated access to sustainable energy services:

UNDP will address the lack of energy access through direct actions, aiming at providing clean energy services to a critical mass of beneficiaries and also demonstrating replicable approaches that can be further scaled up in a subsequent stage. The deployment of clean energy solutions will be geared towards increasing electricity access to improve public services (Outcome 2) and enabling socio-economic development through green productive use (Outcome 3). While rural villages will be the main targets of this project, interventions will also support refugee communities, and settlements of internally displaced persons (IDP) and their host communities. For clean cooking solutions, urban areas will be targeted as well (Outcome 4).

Level 3: Advance

Advance energy access to improve the livelihoods in rural communities

UNDP will capitalize on the many additional opportunities and co-benefits that renewable energy can provide for the development of rural communities, thus enabling a wide range of SDGs. In this logic, energy access is regarded as an intermediate goal, having the potential, if properly advanced, to stimulate further beneficial developments notably those related to improved environmental conditions, better working, living and health conditions, and generally more welfare at village level in the Sahel. This level of intervention, mostly achieved through Outcome 3 (Green productive use and development of ecovillages), will also cut across Outcome 2 (Enhancement of public services) and Outcome 4 (Clean cooking). Importantly, it will involve building strategic partnerships to complement energy related activities with other key interventions to support sustainable socio-economic development of vulnerable communities.

Theory of Change

Aligned with the UN's Renewable Offer for the Sahel developed in the scope of the UNISS framework, the **overall objective** of this project is: Sustainable socioeconomic growth and poverty reduction through increased access to clean energy in the Sahel.

The underlying Theory of Change (ToC) of this project goes as follows (see Figure 2):

- If barriers are removed and an **enabling environment** is created for the deployment of sustainable energy access solutions in the 10 countries of the Sahel region, (Outcome 1);
- If, additionally to this, energy access in public facilities is increased and accelerated, providing **enhanced public services** – in particular healthcare and education - in vulnerable communities in the Sahel (Outcome 2);
- If, furthermore, energy access is advanced in a way that it triggers **economic development** and livelihood improvement in rural communities, (Outcome 3);
- And if, negative health, social, economic, environmental and climate impacts resulting from inefficient cooking methods are mitigated through **increased access to clean cooking** (Outcome 4);
- Then **sustainable socio-economic growth and poverty reduction through increased access to clean energy** can be achieved in the Sahel (Overall objective).

From an overarching perspective, the successful implementation of the project also contributes to other goals, such as the reversal of the rural exodus and emigration, the mitigation of radicalism and violence, the contribution to gender equality and youth empowerment, and the overall achievement of the SDGs.

Figure 2
Theory of Change for the Energy4Sahel Project

Situation

Sahel energy crisis.
Lack of access to clean energy impedes economic and social development, particularly in rural areas and affects vulnerable groups.

Barriers

- Security situation and political instability
- Weak policy and regulatory frameworks
- Financial barriers, access to finance.
- Fossil fuel subsidies
- Lack of data for informed decision making
- Lack of technical expertise and plannig skills
- Lack of donor coordination

Outputs by Components

Component 1 Enabling Environment

1. Partnership & stakeholder coordination increased and strengthened
2. Policy and financial derisking instruments enforced
3. Innovation, entrepreneurship and skills building fostered
4. Increased access to reliable data and information platforms

Component 2 Improved Public Services

1. Improved health services through increased access to sustainable electricity in rural health facilities
2. Improved education services through increased access to sustainable electricity in rural public schools

Component 3 Green productive use and Ecovillages

1. Improved access to green productive use of energy through renewable energy mini-grids
2. Rural value chains are enhanced through targeted interventions to support green productive use
3. Integrated approach to energy access fostered through the creation of ecovillages

Component 4 Clean cooking

1. Sahel-based clean cooking entrepreneurs supported
2. Clean cooking solutions disseminated at scale in priority areas in the Sahel

Project Outcomes

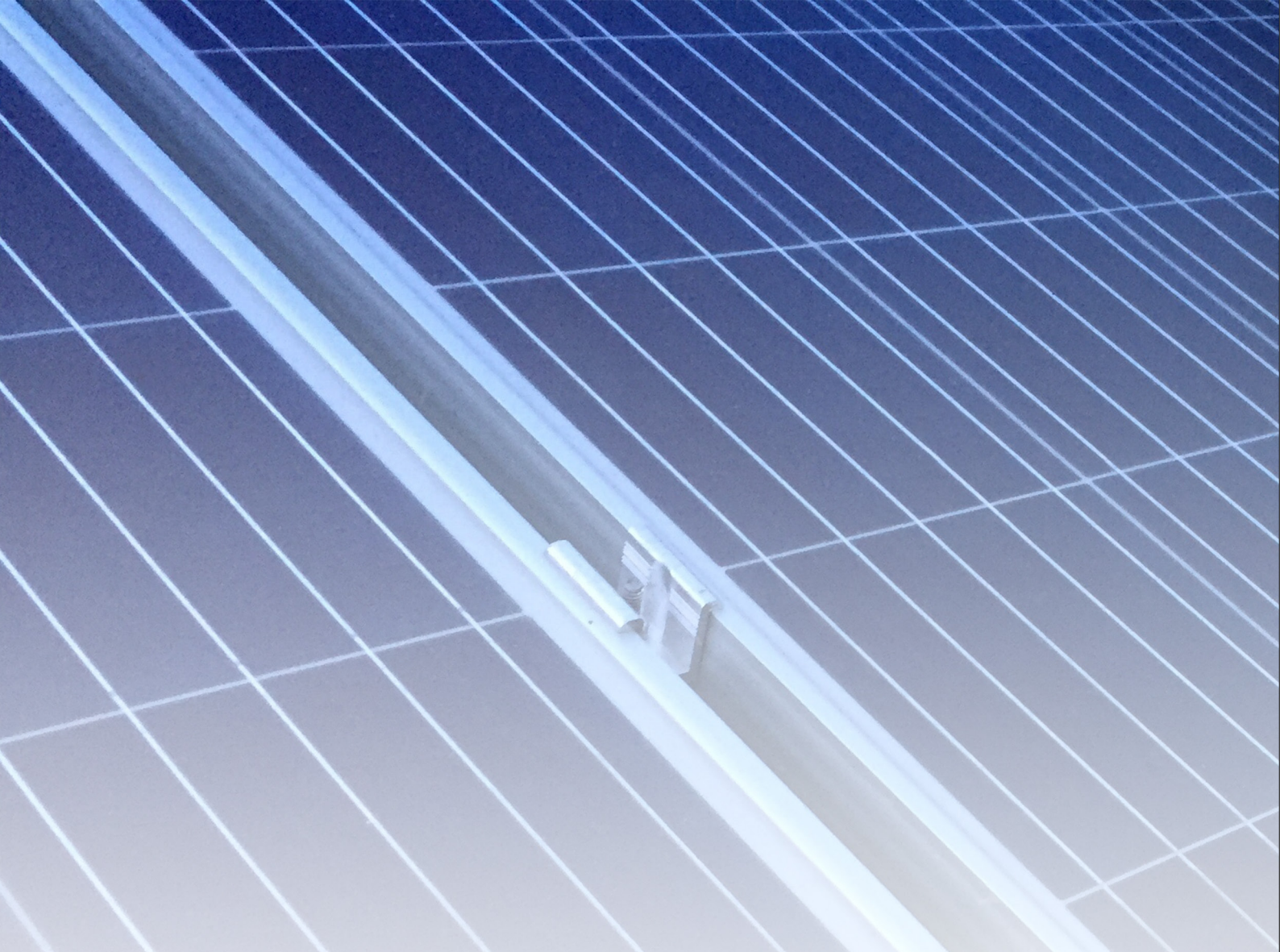
1. Enhanced enabling environmentt for the deployment of off-grip renewable energy solutions
2. Improved public service through accelerated access to sustainable energy in vulnerable communities
3. Increased socio-economic development in rural areas through access to green productive use of energy and the promotion of the ecovillage model
4. Priority communities in the Sahel have an increased access to clean cooking fuels and technologies

Overall Objective

Sustainable socioeconomic growth and poverty reduction through increased access to clean energy in the Sahel

Interlinkages

SDG achievement (SDG7 and others)	Revert rural exodus, immigration, radicalization	Gender equality, youth empowerment	Resilience	Climate change mitigation



Delivery Strategy

In order to stimulate the transformations specified in the Theory of Change, **a regional project management unit and advisory team will be created in the framework of this project.** Based in Dakar and therefore anchored in the region, it will become UNDP's vehicle to undertake practical, results-oriented activities aligned with the three strategic pillars (enable, roll out, advance) described in the previous section. This team will also provide an entry point for other UN agencies and partners to join forces and work collectively towards the achievement of SDG 7 in the Sahel. Details on the management arrangements for this project are provided in Section VIII (Governance and Management Arrangement).

UNDP's regional project management unit and advisory team will be designed in this respect. With close ties to relevant regional institutions and the ten UNDP country offices, it will become a contact point and coordination platform for the various stakeholders in the region. It will have conceptual responsibilities (planning of projects), as well as the operational capacities to coordinate interventions. Due to its "Sahelian" expertise, it will be able to understand current trends/challenges in energy access, scout and evaluate solutions developed in the region, and ensure that interventions are appropriate for the context of the Sahel region.

Alignment to Global, Regional and Country Programming

The Energy4Sahel Project will be aligned with relevant global, regional and country programming. As highlighted below, some of the global, regional or subregional UNDP initiatives on energy will directly contribute to the achievement of this project's objective. The Energy4Sahel Project, through the UNDP Country Offices, will seek to capitalize on lessons learnt from these projects as well as the national initiatives related to energy, and expand and/or replicate successful approaches in the same countries or other countries in the region, when aligned with the priorities of this project. In addition, the Energy4Sahel project will seek strong synergies with the other UNDP offers on the Sahel, in particular the Governance and Youth offers, as well as the regional projects on Disaster Risk Reduction and Climate Security.

Africa Minigrids Program (AMP)

This flagship program funded by the Global Environment Facility (GEF) and implemented by UNDP in partnership with the African Development Bank and the Rocky Mountain Institute has an overall objective of increasing access to energy by improving the financial viability and promoting scaled-up commercial investment in renewable energy minigrids. The AMP is focused on reducing costs across hardware costs, soft costs and financing costs - and innovative business models for mini-grids. The program is comprised of a regional project and a cohort of national projects, each with a set of tailored activities in line with the program's four thematic areas of:

1. Policy and regulations
2. Business model innovation and private sector
3. Innovative finance for mini-grids scale-up
4. Digitalization, knowledge management and monitoring and evaluation

The AMP was approved in December 2019

Along with a first round of

11

national projects, including Burkina Faso and Nigeria.

A second round of

7

projects, including Chad, Mali, Mauritania and Niger, was submitted to the GEF in March 2021

Leading to

6

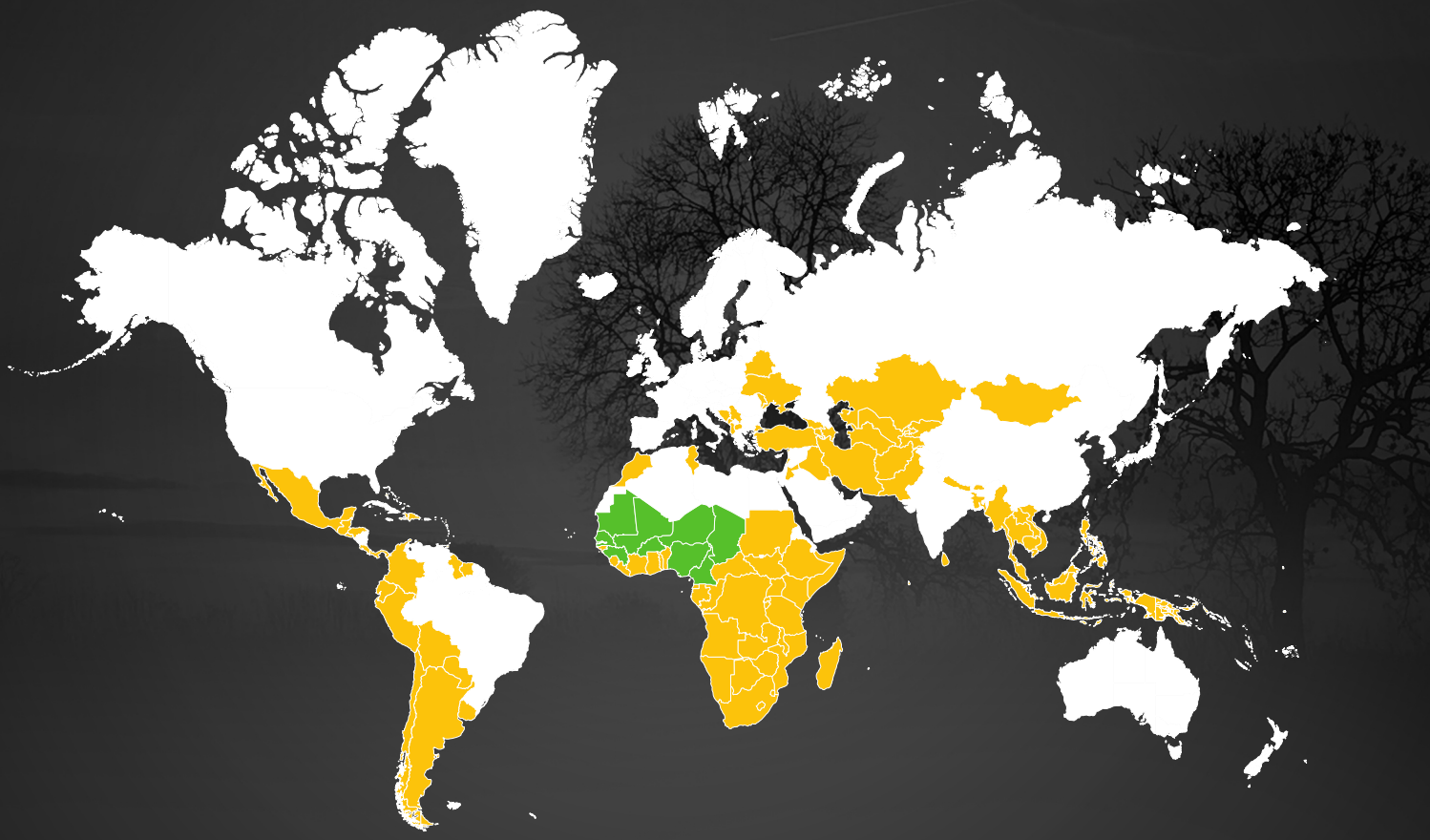
Sahel countries potentially participating in AMP – including all the G5 Sahel countries

As explained in Section III (Results and Partnerships), the AMP will be leveraged in the scope of the Energy4Sahel Project, in particular by scaling up successful approaches piloted in the scope of AMP national projects.

Climate Promise

UNDP's Climate Promise, launched in 2019, is the largest global offer on the enhancement of Nationally Determined Contributions (NDCs)

Currently Supporting



120 Countries across the world and **44** in Africa, including the Sahel countries

The Climate Promise involves over 35 partners and contributes to the NDC Partnership, a global initiative to help countries achieve their national climate commitments and ensure financial and technical assistance is delivered as efficiently as possible. Most NDCs of the Sahel countries include the energy sector as a key area of focus. The NDC revision and implementation process can be used as a launchpad for green economy in the Sahel as it outlines measures that not only address climate change mitigation and adaptation but also contribute to economic development and job creation. As such, many of the activities planned in this project will directly contribute to the implementation of the NDCs in the target countries.

Solar for Health Program

The Solar for Health Program aims at providing clean, reliable and affordable electricity access to health centers in rural areas. The Program is a new initiative in advanced design phase expanding an existing UNDP Solar for Health initiative that provided solar electrification of over:

900
health centers and storage facilities in Africa, including in

150
health centers in Chad.

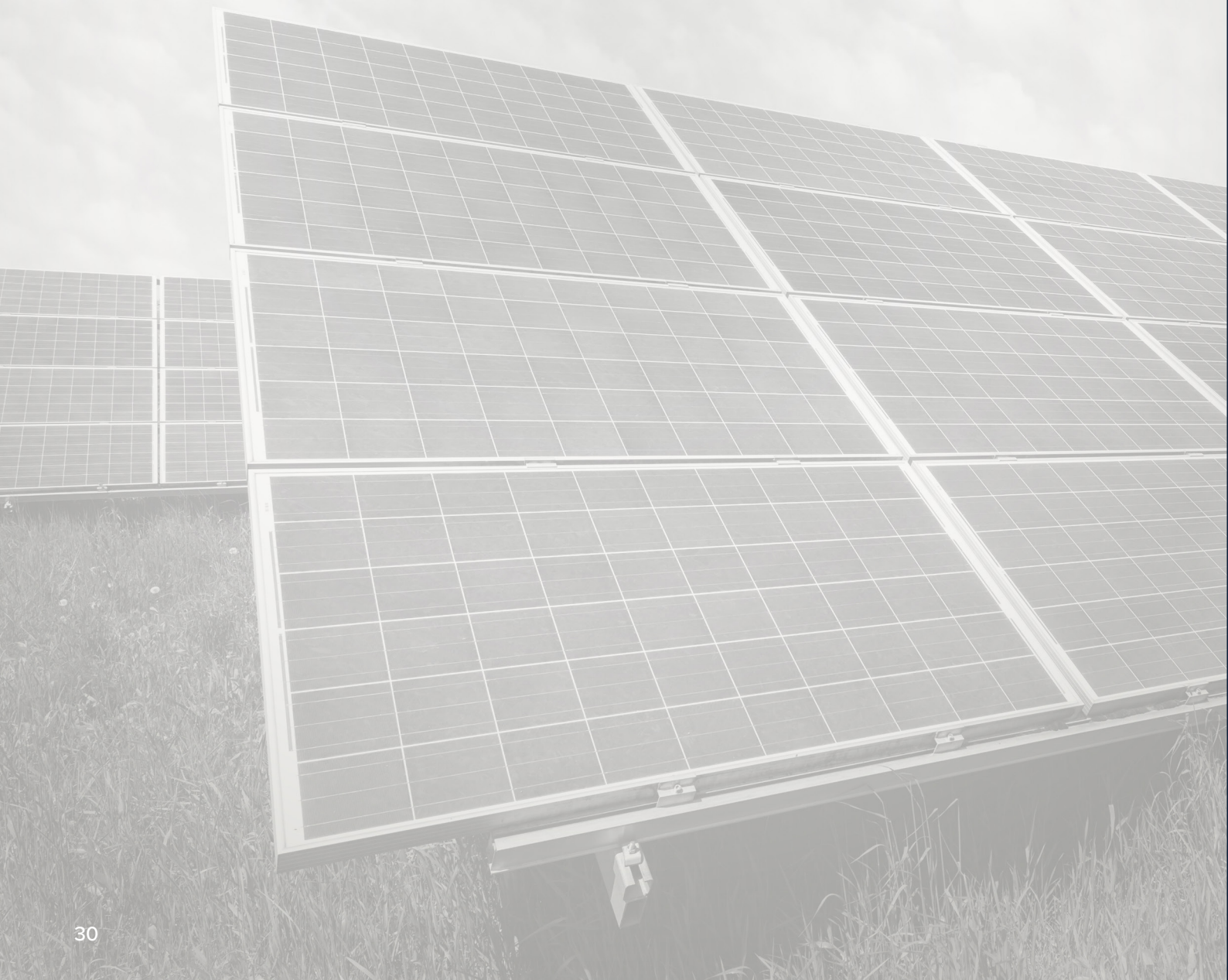
The Solar for Health Program will increase access to renewable energy in over

3,000
rural and urban public health facilities in five target countries comprising Liberia, Namibia, Malawi, Zambia and Zimbabwe.

The Program will deliver an innovative and replicable financing scheme for clean electricity supply for health facilities. To ensure the sustainable operation of the solar energy systems, innovative business and financing models, led by the private sector, will be implemented. The Program 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 through an energy-as-a-service approach. Although the target countries do not include Sahel countries at this stage, the Energy4Sahel Project will explore similar approaches – with the necessary contextual adjustments - for its activity on the electrification of health facilities (Activity 2.1.4), in order to ensure service quality, reliability and sustainability over time.

Support for Rural Electrification by Renewable Energy Systems in the Liptako-Gourma Region - (Pilot Phase)

Early 2021, UNOPS and UNDP, in partnership with ECREEE and under the leadership of the Liptako-Gourma Authority (ALG), started the implementation of a 3-year SIDA-funded rural electrification project in the Liptako-Gourma region, the cross-border area between Burkina Faso, Mali and Niger. Besides installing six solar PV mini-grids, this project also has a clean cooking component and aims at supporting the private sector in the renewable energy sector. This project is particularly contributing to Outcome 2 of this project, including Output 2.2. which aims at providing increased access to clean energy to displaced populations and their host communities.



Geographic and Project Lifetime

The project will focus on the Sahel region. It will align with the geographic coverage of UNISS that targets ten West and Central African countries: Burkina Faso, Cameroon, Chad, The Gambia, Guinea, Mali, Mauritania, Niger, Nigeria, Senegal (see Figure 3 below).

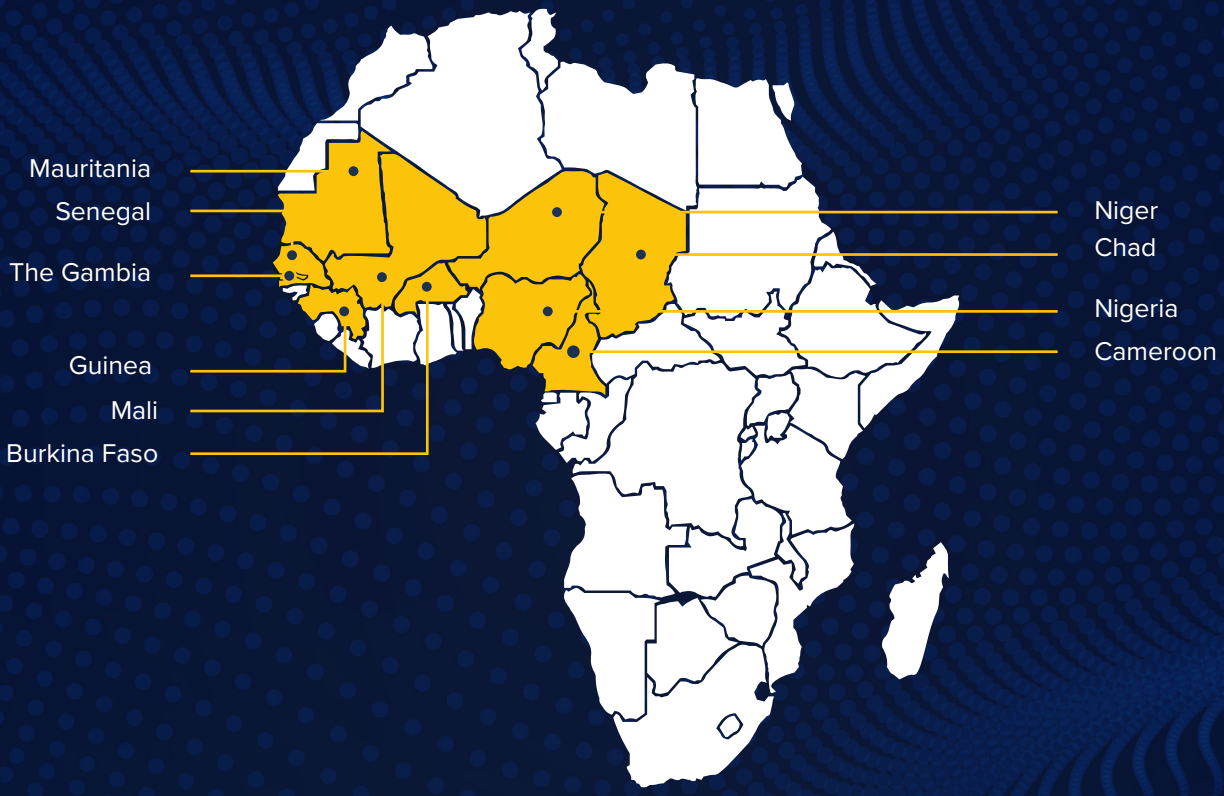


Figure 3:
Geographic coverage of UNISS and this project

The lifespan of the Energy4Sahel Project is **5 years**

with a project period covering

01 January 2022 - 31 December 2026

RESULTS AND PARTNERSHIPS

Expected Results

A sustainable future with better living conditions for all people in the Sahel can certainly not be realized by clean and affordable energy alone - but it is an essential instrument to pave the way towards this goal. To support the project objective Sustainable socioeconomic growth and poverty reduction through increased access to clean energy in the Sahel, UNDP has identified four outcome areas/project components:

01 ⇨ Enhanced enabling environment for the deployment of clean energy access solutions

02 ⇨ Improved public services through accelerated access to sustainable energy in vulnerable communities

03 ⇨ Increased socio-economic development in rural areas through access to green productive use and the promotion of the ecovillage model

04 ⇨ Priority communities in the Sahel have an increased access to clean cooking fuels and technologies

Attached to each outcome are specific outputs and activities which UNDP intends to deliver with its partners in the next five years.

Outcome 1: Enhanced enabling environment for the deployment of clean energy access solutions

The success of any implementation effort of energy access projects depends on the right enabling environment. Through this component UNDP will contribute to the improvement of the enabling conditions for investments in sustainable energy in the Sahel, specifically by delivering four main outputs. First, inclusive platforms will be created or strengthened to increase partnerships and stakeholders' coordination on off-grid electrification and clean cooking in the Sahel, thus promoting co-created and more impactful interventions (Output 1.1). A number of in-depth diagnosis and market analysis will also be conducted on both off-grid electrification and clean cooking to identify the optimal basket of policy and financial derisking instruments to be recommended to the governments, and support will be provided – leveraging on the above-mentioned stakeholders' platforms – to the governments to enforce and implement these measures (Output 1.2). The third output will tackle innovation, entrepreneurship and skills building in the clean energy access sector (Output 1.3). Finally, governmental institutions will be enabled to access and manage reliable and up-to-date data on rural electrification to support their planning and policy design (Output 1.4).

Output 1.1: Partnerships and stakeholders coordination in the off-grid clean energy sector are increased and strengthened.

Stakeholder involvement is a precondition for achieving a consensus on interventions targeting the energy access sector in the Sahel. Therefore, also with the perspective to facilitate the implementation of the activities planned within the Energy4Sahel Project, UNDP will support from the outset inclusive stakeholder dialogues. UNDP envisions three different activities with this respect. Activity 1.1.1. focuses on the creation of a high-level transnational stakeholder platform (equivalent to a Community of Practice) addressing general issues on off-grid energy pertaining to all ten countries covered by the Energy4Sahel Project. In a similar way, Activity 1.1.2. foresees the creation (or strengthening) of ten national stakeholder platforms focusing on national issues and involving primarily national stakeholders. Finally, Activity 1.1.3. will establish a collaboration forum dedicated to promoting partnerships with research, academia, private sector and other knowledge providers in the Sahel, in order to promote evidence-based solutions to sustainable development challenges in the energy sector with the involvement of women and the youth.

Activity 1.1.1: Create and operationalize a regional multi-stakeholder coordination platform/ Community of Practice on off-grid clean energy (incl. chapters on electrification, clean cooking and data for energy planning).

Governments, regional organizations (in particular the ECOWAS Center for Renewable Energy and Energy Efficiency - ECREEE), international development partners, finance institutions, international NGOs and industry associations, will be invited to form a Community of Practice (CoP) on off-grid clean energy in the Sahel. UNDP intends to fill a gap here, as currently no comparable inclusive regional platform (specifically focusing on rural electrification and clean cooking) exists at 10-country level[18]. This platform will build on the existing UNISS task team composed of the 17 UN agencies who developed the UN's renewable energy offer for the Sahel and will also create linkages with the regional Community of Practice to be set up in the scope of the UNDP/GEF Africa Minigrids Program. The new platform should convene on a regular basis, and thematical working groups will be created to discuss specific challenges related to off-grid electrification, clean cooking, data for energy planning and possibly others. In the mid-run it is expected that the stakeholders institutionalize the platform, whose Secretariat could eventually be hosted by a relevant regional institution. The long-term vision is an autonomously operating, financially self-sustained platform that has a permanent Secretariat in charge of its activities.

Activity 1.1.2: Create or strengthen national multi-stakeholder coordination and consultation platforms on off-grid clean energy in the 10 countries

These national inclusive multi-stakeholder platforms will have a coordination and consultation role, and allow national stakeholders (government agencies, private sector, finance institutions, CSOs, development partners, academia, etc.) to network and engage in a dialogue on reforming/improving policy, regulatory and market frameworks for rural electrification and clean cooking in their respective countries. The practical realization of the platforms will depend on each country's specificities, but the recommended approach will be to create a national committee that meets periodically, agrees on an action plan and organizes awareness raising/ resource mobilization activities such as "energy access roundtables", while publishing periodically reports on the progress on the commitments made. For instance, Senegal already has a vibrant stakeholders' platform in place, and similar platforms are currently being established in Burkina Faso, Mali and Niger in the scope of the Liptako-Gourma rural electrification project implemented by UNOPS and UNDP in partnership with ECREEE, under the leadership of the Liptako-Gourma Authority. Particular emphasis will be put on a balanced gender representation within these platforms. UNDP will work with governmental partners to seek to institutionalize these platforms (e.g., through a decree or formal government decision) and ensure their sustainability beyond this project. When such a platform already exists, the project will seek to strengthen it. The national platforms are expected to take an active role in the regional stakeholders' platform (Activity 1.1.1) by having representatives attend regional meetings and by sharing experience with other countries, in an effort to increase South-South cooperation between the ten Sahel countries.

Activity 1.1.3: Build and/or intensify partnerships with academia, think-tanks and research centers to promote evidence-based solutions to sustainable development challenges in the clean energy sector.

Applying new technologies and innovations to a region with fundamental development challenges is an endeavour with many uncertainties. In order to achieve a deeper, science-based understanding of the complex interlinkages between energy and sustainable development in the Sahel, UNDP will reach out to various knowledge partners in the region and beyond: universities, academic institutions, think tanks, research centers or individual scholars. The underlying idea is to receive - throughout the entire Energy4Sahel Project – an unbiased critical and scientifically robust feedback to improve the planning and the effectiveness of the project activities. UNDP will support the scientific community in various ways, by organizing seminars, promoting publications (research/policy papers), encouraging the monitoring of ongoing activities of the Energy4Sahel Project, and by connecting researchers from the Sahel with their international counterparts. It is a particular aim of the Energy4Sahel Project to encourage the participation of young researchers and to promote an equal gender representation among the scientific contributors. Moreover, it is planned to promote research projects where young people from the target groups (rural villages, displaced populations) become actively involved in the process of knowledge generation.

18 A somehow similar regional platform is the Desert to Power initiative/taskforce, initiated by AfDB. However this platform focuses on the G5 Sahel countries at the moment and has thematically a different focus as it deals primarily with large-scale (on-grid) power system expansion through utility-scale PV projects (https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/desert-power-initiative).

Output 1.2: Policy and financial derisking instruments are designed and enforced to unlock investments in the off-grid clean energy sector

To deliver this output, the project will support in-depth analysis on the risks faced by investors in off-grid electrification (Activity 1.2.1) and clean cooking (Activity 1.2.2). This will be followed by the design and implementation of policy measures (Activity 1.2.3) and financial instruments (Activity 1.2.4) able to derisk the sector and stimulate investments in sustainable energy access projects in the Sahel. Besides the ten governments, the projects will also seek to strengthen relevant regional and cross-border institutions (such as ECREEE, G5 Sahel Secretariat, ALG) to update and enforce regional frameworks supporting clean energy in the region. The activities in this output will be considerate of the particular crisis situation faced by many Sahelian countries, where private sector financing often requires a greater level of derisking measures (e.g. special guarantees) due to higher perceived risks. This accounts particularly for sustainable energy financing in the context of migration and displacement settings, for which UNDP will establish and implement tailor-made derisking solutions. Governments and relevant stakeholders will be supported to include displaced populations in their electrification and clean cooking planning agendas. UNDP will work with national authorities on solutions for equitable energy frameworks addressing the needs of displaced communities while being considerate as well of those of the hosting communities.

The multi-stakeholder platforms set up or strengthened as part of Output 1.1 will facilitate the consultation and discussion around these policy and financial derisking instruments and support the selection of an appropriate and acceptable set of measures recommended to the governments.

Activity 1.2.1: Conduct or update DREI analysis on mini-grids and Solar Home Systems (SHSs) in the 10 countries.

In order to assess the impact of potential derisking measures, it is first necessary to have sufficient information on financing costs (and the related risks) of renewable energy projects in the Sahel countries. The objective of this activity is to close this information gap by carrying Derisking Renewable Energy Investment (DREI)[19] studies for the individual Sahel countries. Being conducted by UNDP DREI experts, these studies follow a standardized methodology, which has already been applied successfully in several countries in the world including Nigeria. The DREI methodology systematically identifies barriers and associated risks which may hamper private sector investments in renewable energy. It then helps identify a selection of public instruments to mitigate these risks. The analysis will cover mini-grids and solar home systems (SHSs), both being technologies for which a consistent DREI analysis method has already been developed by UNDP. Towards the end of the project, updates of the DREI studies will be conducted to assess progress made, reflected in particular in a reduced cost of financing for investments in renewable energy.

Activity 1.2.2: Conduct a market analysis and diagnosis on enabling conditions for access to clean cooking in the 10 countries

An analysis on facilitating conditions for clean cooking access will be established, in order to recommend an optimal basket of policy and financial derisking instruments to the Sahel governments. Although no systematic methodology similar to DREI has been developed by UNDP on assessing risks related to investments in clean cooking technologies and fuels, this activity will aim to achieve the same goal and conduct in-depth market analysis and diagnosis on enabling conditions for access to clean cooking in the 10 countries. This analysis will include exploring the current public and private sector models for coosktoves and alternative solutions with their pros and cons, and assessing the impacts of existing policies and regulations as applicable. Institutions with strong expertise in the field of clean cooking, such as the Clean Cooking Alliance[20] may be engaged to partner on this activity in order to capitalize on existing assessments and methodologies. Through this activity, UNDP will also seek to assess whether such an analysis could be systematized in a new DREI chapter on clean cooking.

19 https://www.undp.org/drei.
20 The Clean Cooking Alliance, a program initiated by the United Nations Foundation, is supporting the creation of enabling environments for clean cooking access worldwide. (https://www.cleancookingalliance.org/what-we-do/).

Activity 1.2.3: Develop priority policy derisking instruments on access to off-grid electricity and clean cooking and promote their endorsement in the region

In this activity, the DREI analysis of the off-grid electricity access segments (see Activity 1.2.1), as well as the clean cooking market assessment (Activity 1.2.2) will be carried forward to a proposal of concrete policy actions for stakeholders in the Sahel countries. UNDP will partner primarily with the public sector (governments, energy ministries, electrification agencies), who will design, together with UNDP's experts, country-specific policy derisking interventions. UNDP will assist its partners in identifying and enforcing appropriate and acceptable policy and regulatory improvements and will also support policy/regulatory innovations – developed for instance through the Sahel Regional Accelerator Lab on Sustainable Energy and/or with the input from UNDP's knowledge and research partners (see Activity 1.1.3). Relevant policy interventions could also include a more adequate focus on / incorporation of clean cooking in existing priority policies of the government. Besides these national initiatives, UNDP will also strengthen relevant regional and cross-border institutions (such as ECREEE, G5 Sahel Secretariat, ALG) to update and enforce regional frameworks supporting clean energy in the region.

Activity 1.2.4: Develop priority financial derisking instruments (including aggregation schemes) on access to electricity and clean cooking and promote their endorsement in the region.

As explained in the DREI methodology, derisking interventions can be classified in (1) risk reducing, (2) risk transferring, and (3) risk compensating measures. Policy derisking measures (Activity 1.2.3) are considered as risk reducing instruments, while financial derisking measures aim at transferring the remaining risks to a third party, typically a financial institution. In this activity, UNDP will work with partners such as UNCDF, SEforALL and financial institutions to design and implement effective financial derisking measures tailored to the needs of each country and supporting both investments in off-grid electrification and clean cooking. An approach that will be specifically looked at is financial aggregation, a process in which multiple assets are bundled together, and which then receive financing, or refinancing, from investors on the basis of their future cash flows. By aggregating small projects into larger portfolios, financing costs can be reduced. UNDP has prior experience with financial aggregation, being currently engaged in the Climate Aggregation Platform (CAP)[21], a global GEF-funded project which aims at promoting the scale-up of financial aggregation, with pilots in Rwanda and Uganda. UNDP will likewise explore other derisking approaches that are currently discussed in the energy access finance community - for instance alternative ownership models, for instance proposed by Crossboundary Energy Access (CEAB)[22] where mini-grids are aggregated and integrated into long-term infrastructure asset portfolios. In this activity, UNDP intends to promote financial aggregation on assets such as mini-grids in a few selected Sahel countries, either through individual pilots at national level, or through a portfolio of assets encompassing a cluster of Sahel countries or the entire region. This activity also foresees a close collaboration with the local financial sector, which shall be enabled, for instance through capacity building and trainings, to better assess renewable energy projects and develop dedicated financial derisking instruments in the future.

21 https://climateaggregation.org/
22 https://www.crossboundary.com/energy-access/open-source/.

Output 1.3: Innovation, entrepreneurship and skills building in the clean energy sector are fostered especially for women and the youth

The activities that will deliver this output involve tackling the problem of the lack of skilled labor in the renewable energy sector in the region through trainings and mentorship (Activity 1.3.1) and creation of new business opportunities for young innovators and entrepreneurs on clean energy in the region (Activity 1.3.2). Building on the experience of the Accelerator Labs, this activity will enable increased the employability of the youth and improve the entrepreneurial ecosystem on off-grid electrification and clean cooking in the Sahel.

Activity 1.3.1: Conduct training/mentorship programs to build skills and increase employability of the youth in the clean energy sector.

The limited skilled labor in the renewable energy sector is a key challenge in most of the Sahel countries, while studies show that the workforce needed in the decentralized renewable energy (DRE) sector will keep growing significantly in the coming years.[23]

In Nigeria alone, the DRE sector was accounting for

4,000 formal and › **9,000** informal jobs in 2017-2018 › and expected to grow to over **52,000** formal and › **24,000** informal jobs by 2022-2023.

UNDP is already engaged in several small-scale interventions to build skills of women and youth in this sector and in clean cooking technologies, for instance in Senegal where UNDP has been training women's groups on generating income through the manufacturing of solar cookers. Activity 1.3.1 of the Energy4Sahel Project aims at bringing these interventions to the next level by partnering with regional institutions, academia and industry associations to increase the accessibility of quality trainings on renewable energy to vulnerable and isolated communities, starting with the youth and women in ecovillages targeted by this project (Output 3.1). Building the technical and business skills of the youth in this field will increase their employability, in particular in rural areas, thus contributing to reduce rural exodus or enrollment in armed groups. These trainings will be paired with mentorship and matchmaking with employment opportunities, one of them being the entrepreneurship programme included in this project (Activity 1.3.2). The trained cohorts of youth will also be supported to network and maintain contact with their alumni fellows in order to exchange information and opportunities and possibly enter into business partnerships together. Links will also be established to UNDP's academic and research partners within this project (see Activity 1.1.3).

Activity 1.3.2: Foster innovations and entrepreneurship to promote local marketable solutions to solve the energy gap.

While Activity 1.3.1 is focused on skills building including for youth with little or no background on renewable energy, this activity focuses on supporting young innovators and entrepreneurs to bring their idea to a marketable product or service and/or expand and scale up their business including in digital transformation of the clean energy sector as an entrepreneurial activity. Through innovation challenges, energy hackathons, investors pitching events and other approaches, this activity will promote encounters between young entrepreneurs and business experts and the investors community to create new business opportunities with potential for high impacts on SDG 7. This activity will build on the experience of the Accelerator Labs in the region and will be carried on by the Sahel Regional Lab for Sustainable Energy embedded in the Sahel Development Solution Lab (SAHELAB) in Dakar. Cooperation with UNDP's Africa Borderlands Center will also be strengthened to support innovations that are more specifically adapted to cross-border areas. For project regions where the migration and displacement context needs to be considered, this activity will support the creation of micro-businesses or associations of micro-entrepreneurs in the displaced communities. In collaboration with the governmental agencies, as well as its international development partners, UNDP will organize the access to seed funding (e.g., small grants, micro-loans) to support the roll-out of promising business models related to clean cooking and electricity services. The activities could range from consumptive usages (e.g., housing electrification, pico-solar systems), productive use applications (powering economic/industrial activities in refugee/IDP settlements), to community services (powering schools, health stations, drinking water systems). Innovative solutions supported through this activity (which may include e.g. technological, social or financial innovations) may be further deployed through activities included in Outcome 2 and 3 of this project (roll out of clean energy solutions for public services and green productive use).

23 Powering Jobs Census 2019: The Energy Access Workforce, Power for All, 2019 (https://www.powerforall.org/resources/reports/powering-jobs-census-2019-energy-access-workforce).

Output 1.4: Improved Government planning and policy design in off-grid electrification and clean cooking through increased access to reliable data and information platforms

Data is an essential raw material for the planning of energy access projects, but many Sahel countries show significant gaps in this regard. Data pertaining to rural areas (population, settlement structures, energy demand, value chains) is often scarce, not properly collected, outdated, or scattered among different government agencies and therefore difficult to retrieve. The persistent data gaps are often compounded by another issue: the lacking capacities of national stakeholders to structure, analyse and exploit data in a target-oriented manner useful for decision-making – for example through monitoring platforms or modelling tools. UNDP and its partners will support the Sahel governments in closing these gaps, by conducting a baseline assessment at the national and regional levels to determine priority needs (Activity 1.4.1), setting up or strengthening efficient energy information, modelling and monitoring tools in the ten countries (Activity 1.4.2), and supporting the national relevant stakeholders develop integrated energy plans encompassing both electrification and clean cooking while bolstering the stakeholders' expertise in exploiting the data at hand (Activity 1.4.3). Moreover, the activities that will deliver this output are guided by the principles of "open access", i.e. the resulting datasets, monitoring platforms or modelling tools should – to the extent possible – be made freely available to the public.

Activity 1.4.1: Conduct a baseline assessment in each country and at regional level to identify data needs for the planning of energy access activities.

UNDP will carry out a needs assessment to identify where the energy data situation in each country could be improved. The analysis will start by taking stock of the existing databases, data collection practices, monitoring systems and data platforms in each country. On the basis of these findings, a concept for a coherent national data-collection system - for rural electrification and clean cooking - will be established. Relevant information to contribute to this assessment may also come from the DREI analysis and market assessment on clean cooking conducted respectively in Activity 1.2.1 and 1.2.2. It is important to underscore here, that the proposed approach will not only look at "top-down" data, retrieved from remote sensing and satellite imagery (e.g. GIS settlement identification, energy resource maps, etc.), but also consider "bottom-up" data to be gathered by field surveys in rural communities: socio-economic data, data on household and intra-household structure, production and consumption patterns, poverty level, gender roles (including women's and men's time use and domestic care responsibilities in provision of household energy) and health data, etc. It is particularly this data that will be needed in the future to identify such areas/communities where the implementation of energy access projects will bring about the highest impact in terms of welfare creation and SDG achievement. UNDP will promote advanced digital tools facilitating household surveys, that will then easily link with the information systems developed in Activity 1.3.2. At regional level, UNDP will build on its existing partnership with ECREEE in the scope of the SIDA-funded UNOPS/UNDP rural electrification project in the Liptako-Gourma region to further assess the needs and in particular how the ECOWAS Observatory for Renewable Energy and Energy Efficiency (ECOWREX)[24] platform maintained by ECREEE could be further enhanced to increase its usefulness for the countries in the region.

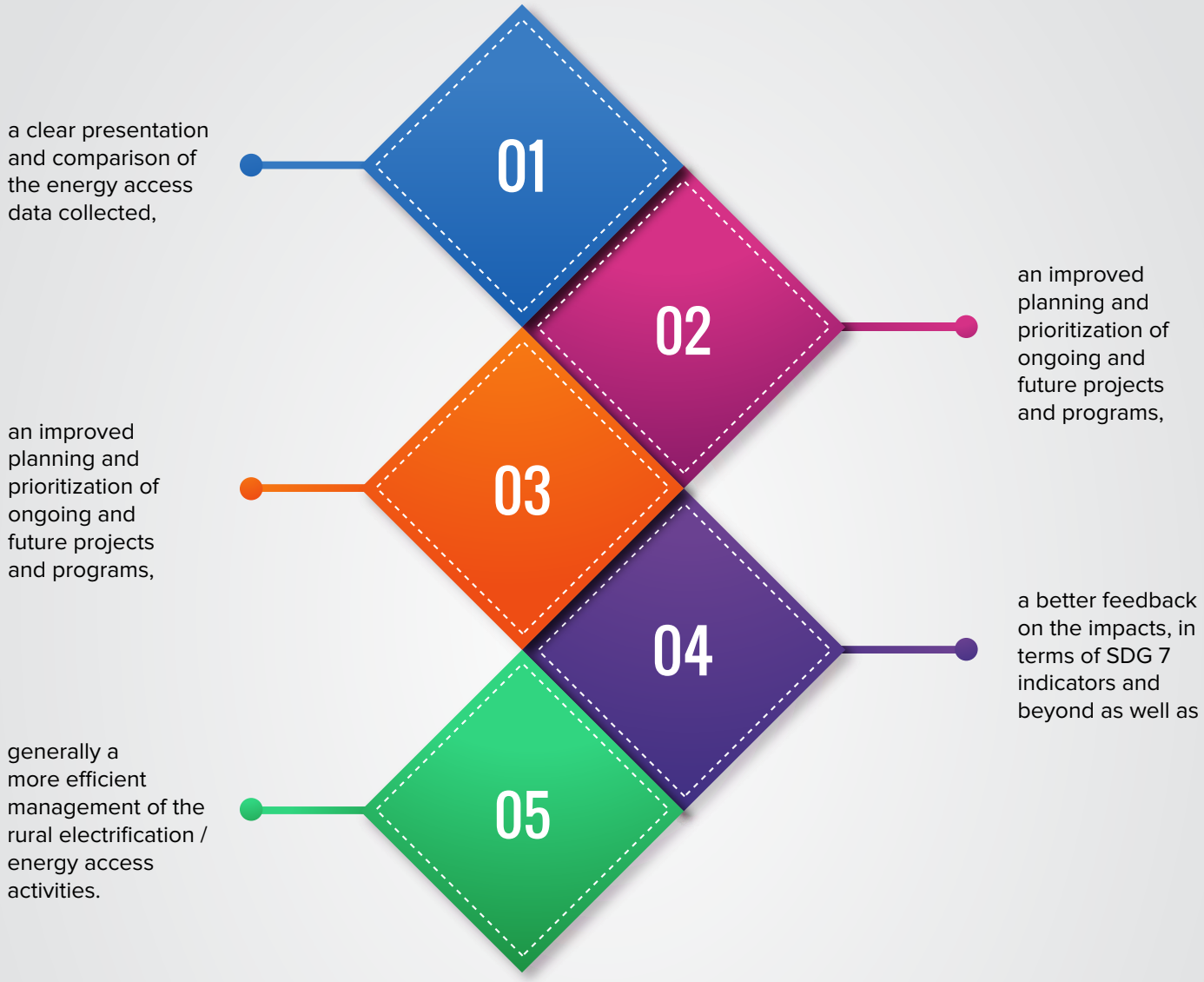
Activity 1.4.2: Design, establish and operationalize an energy information, modelling and monitoring system in the 10 countries, covering both electrification and clean cooking.

Design, establish and operationalize an energy information, modelling and monitoring system in the 10 countries, covering both electrification and clean cooking. Based on the priority needs identified through the baseline assessment and building on existing activities such as the abovementioned work with ECREEE on ECOWREX (Activity 1.3.1), UNDP will support countries establish or strengthen fully functional GIS-based national sustainable energy information systems in the ten Sahel countries. These systems would capture relevant datasets (existing and planned energy infrastructure and demand, value chains, capacity to pay, performance of existing projects, etc.) and also provide functionalities to facilitate energy planning at national and regional levels (e.g., identification of priority sites for mini-grids).

24 http://www.ecowrex.org/.

UNDP has extensive experience in the development of online platforms presenting robust datasets and performing advanced analytics to support decision-making, that will be leveraged in this activity. Examples of such platforms include the Global Electrification Platform[25], the UNDP COVID-19 Data Futures Platform[26] or the UN Biodiversity Lab[27].

Setting up energy information, modelling and monitoring systems promises multiple benefits for the stakeholders:



UNDP will mobilize its resources and international partner's network to support national stakeholders (government agencies) in setting up these tools and enabling them to operate, maintain and update them in the long run. This activity will also be informed by the working group on data for energy planning set up at the regional level (Activity 1.1.1).

25 The Global Electrification Platform (GEP) is an open access platform that allows to explore least-cost electrification strategies around the world, interacting with country contextual data and different investment scenarios (https://electrifynow.energydata.info/).
26 https://data.undp.org/
27 https://www.unbiodiversitylab.org/.

Activity 1.4.3: Develop or strengthen National Integrated Energy Plans on electrification and clean cooking in the 10 countries.

The energy information systems operationalized in the scope of Activity 1.4.2 and further baseline assessments in each country on existing plans to be conducted at the beginning of implementation will inform the development of national integrated energy plans encompassing the least-cost priority electrification and clean cooking options, and prioritization schemes based on a number of criteria, including considerations for poverty levels, health situation, insecurity, agricultural value chains, and other factors. These plans will overcome some challenges regularly experienced in countries with limited institutional and technical capacity, such as the lack of adequate consideration for decentralized electricity or clean cooking, and the lack of inclusion of vulnerable groups such as displaced population. These plans will therefore effectively support decision-making in the energy sector, including the evaluation of trade-offs and their consequences. Importantly, these plans, based on digital technologies and embedded within the energy information systems developed through Activity 1.4.2, will aim to remain dynamic, up-to-date and responsive to the evolving situation in the ten countries, and to the progress of the ongoing clean energy programmes. For this to succeed, capacity strengthening activities of the institutions in charge of energy planning – including statistical offices in charge of collecting relevant data - will need to be conducted, in particular through embedding young digital experts (e.g., UNVs) within these institutions for a few months during project implementation. UNDP will seek to partner with expert institutions in the domain, such as SEforALL[28], for this activity.

Outcome 2: Improved public services through accelerated access to sustainable energy in vulnerable communities

Through this component, the Energy4Sahel Project will provide direct and sustainable access to clean energy services to a critical mass of target vulnerable communities, with an objective to trigger a ripple-effect and demonstrate a scaled-up approach that can be further replicated to benefit other communities in the Sahel. As the enabling environment improves (through Outcome 1), the provision of clean energy services to these unserved communities in the Sahel will progressively become more attractive to public and private investors, who will provide the needed resources to accelerate the pace of access to clean energy in the region. With an objective to complement existing interventions by other actors and implement the principle of Leave No One Behind, the UNDP Energy4Sahel Project will target in this outcome the improvement of public services related to health (Output 2.1) and education (Output 2.2) primarily in the most vulnerable communities in the Sahel, such as rural villages. cross-border areas. Public institutions (central and local authorities) with the mandate to provide these services will be closely involved and strengthened through the project, both through activities included in Outcome 1 and Outcome 2. To the extent possible, the private sector will also be associated to these activities, for instance through innovative PPP schemes, building on existing models developed by UNDP (e.g. Solar4Health). It is however expected that the private sector will play a more prominent role in Outcome 3 devoted to green productive use.

Output 2.1: Improved health services through increased access to sustainable electricity in rural health facilities

This ouput aims at delivering 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 Sahel. Donor funding has traditionally been used for the purchase and installation of solar assets in health facilities with, in some cases, the technology provider committing to provide operations and maintenance for a few years after installation. However, this model has shown limitations in terms of sustainability due to the lack of expertise and resources to properly maintain the systems overtime. This model 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. In this project, a pre-feasibility study will be conducted to assess the energy needs of health centers in the 10 countries and to design innovative business and financing models, led by the private sector, to deliver “Energy as a Service” (EaaS) to the health facilities (Activity 2.1.1). Based on this study, governments, private sector and other relevant stakeholders will be mobilized and appropriate EaaS models deployed (Activity 2.1.2). To the extent possible, these activities will also consider the provision of digital health services enabled by sustainable energy, so as to further improve the provision of quality health services in the targeted vulnerable communities.

28 https://www.seforall.org/universal-integrated-energy-plans

Activity 2.1.1: Conduct an energy needs assessment and feasibility study to design appropriate "Energy as a Service" (EaaS) models for healthcare facilities.

Building on the study that was recently conducted by UNDP for five non-Sahel countries in the scope of the Solar4Health project, and led to the submission of a concept note to the Green Climate Fund, this activity will aim to assess the energy needs of public healthcare facilities in the Sahel (in particular the ones that cannot be connected to the national grid or a mini-grid), and to design appropriate EaaS models relying on the private sector to overcome sustainability limitations faced by the traditional grant-based approach of pure CAPEX financing for the installation of energy generating assets. The project will seek to shift to an impact driven model which rewards the delivery of clean, reliable and affordable energy services by energy service providers. Several partners such as AfDB, IRENA, SEforALL, UNHCR, UNICEF, UNITAR/GPA and WHO are already involved in the electrification of healthcare facilities or related enabling activities, and this activity will start by a review of ongoing initiative and mobilization of partners to ensure coherence and complementarity of the different interventions, and to identify possible co-financing for this output. This coordination will also be facilitated by the Health and Energy Platform of Action (HEPA), which has the electrification of health centers as one of its two main priorities, besides clean cooking. It will also be critical to involve governments from an early stage, as the EaaS models developed will seek to include a co-financing contribution from the governments, whose nature and amount will be determined in this study and will depend on each country situation. The study will also lead to the identification of priority healthcare facilties to be electrified as part of Activity 2.1.2.

Activity 2.1.2: Mobilize partners and resources and deploy standalone renewable energy solutions in priority health centers through innovative EaaS models.

The study conducted in Activity 2.1.1 will provide a clear roadmap on the actions required to mobilize partners and resources and deploy appropriate financing schemes to electrify health centers in the Sahel. In particular, the solutions will seek to address a number of barriers such as the limited ability of the health sector to pay for energy services, the lack of energy sector policies and plans for the health sector, the high off-taker counterparty risk for the private sector through a combination of technical assistance, policy dialogue, bulk procurement, and a financial mechanism that will strengthen the health sector´s ability to pay for energy services. Some of these elements will closely link to and benefit from enabling activities implemented as part of Outcome 1. It is also important to note that the proposed mechanism will be 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.

Output 2.2: Improved education services through increased access to sustainable electricity in rural public schools

Clean energy can significantly improve the quality and performance of education in rural schools, not only through providing electricity to teaching-related activities (electric light for classrooms, IT-equipment, etc.) but also by powering equipment that indirectly contributes to better learning conditions: space cooling (air conditioning or fans) or water and food provision (such as water treatment, school kitchen equipment, refrigerators). Similarly to the previous section (Output 2.1.), which targeted solar energy for health services, this output (Output 2.2) aims at designing energy access concepts for schools based on a strong participation of the private sector. Activity 2.2.1 is devoted to conducting a study on the energy needs of rural schools in the Sahel, and will, based on this, explore the feasibility of "Energy as a Service" (EaaS) models in the different country contexts. The second activity (Activity 2.2.2) is about mobilizing partners and stakeholders for the implementation of actual electrification projects in priority areas. To the extent possible, the projects shall go hand in hand with other school improvement activities, that will notably take advantage of the various other educational opportunities that electricity can offer to children and young people in rural schools: learning with digital and communication technologies, computers and internet access.

Activity 2.2.1: Conduct an energy needs assessment and feasibility study to design appropriate "Energy as a Service" (EaaS) models for rural schools.

School energy requirements are strongly context-depending, and therefore a thorough assessment has to be carried out placing particular emphasis on the different features of rural schools in the 10 Sahel countries. The Energy4Sahel project intends to provide a holistic view on the energy needs in rural schools, going beyond setting up simple inventories of electric consumers (e.g. light, teaching equipment, electric appliances), but also looking at their value for the overall goal of education: It should not be forgotten that school electrification makes no sense without other, non-energy related prerequisites to educational quality: appropriate classrooms, sanitary equipment, furniture, textbooks, availability of staff and last but not least, trained teachers. The needs assessment will also take account these aspects, mainly by building partnerships with other partners involved in this sector such as UNICEF, UNESCO and others. The second element of Activity 2.2.1 is to develop models to increase the willingness of the private sector to participate as energy service providers in school electrification projects. Similar to the sister activity on healthcare facilities (Activity 2.1.1) with whom this activity could potentially be combined, appropriate EaaS models will be designed by experts together with national governents and international stakeholders. One possible approach to ensure the buy-in of the private sector is to set up collaborative PPP models, where, besides public stakeholders, multiple private partners are involved: rural energy service companies, but also partners from the ICT sector, telecommunication providers or suppliers of digital education solutions and other private sector players that have an intrinsic interest in developing modern, digital and interconnected education on basis of renewable energies.

Activity 2.2.2: Mobilize partners and resources and deploy standalone renewable energy solutions in priority rural schools through innovative EaaS models.

Similar to Activity 2.1.2 on health facilities, a roadmap of actions will be established to mobilize partners and resources and deploy appropriate financing schemes to electrify rural schools in the Sahel. Prioritized communities will be selected on basis of the needs assessment of Activity 2.2.1, by likewise considering the motivation and uptake potential of the public stakeholders (governments, education ministries, village and municipial adminstration), as well as the level of interest of private sector players to actively participate in financing and implementation as partners of the EaaS model. It is important to underscore here, that any deployment activity will likewise be accompanied by a bottom-up consultation/mobilization process at village and school level to assess the needs and preferences of the key beneficiaries, the teachers as well as the pupils/students enrolled in the schools.

Outcome 3: Increased socio-economic development in rural areas through access to green productive use and the promotion of the ecovillage model

While Outcome 2 had the central objective of improving public services (mainly health and education) in rural areas of the Sahel, Outcome 3 aims at looking particularly at "green productive use" opportunities offered by clean energy, i.e. solutions enabled by renewable energy that have the potential to increase economic productivity and generate income and jobs in rural areas. Output 3.1. is centered around the benefits provided by renewable energy mini-grids in Sahelian villages, whereas Output 3.2. will look at the deployment of stand-alone renewable energy solutions to improve rural value chains in particular for agricultural activities in rural villages. Finally, Output 3.3. will transcend the idea of productive use into a broader development vision: renewable-energy powered Ecovillages, as well as the creation of prototypes of agro-industrial production clusters, so-called Green Economic Hubs.

Output 3.1: Improved access to green productive use of energy through the deployment of renewable energy mini-grids

The activities that will be carried out under this output start with a screening exercise to identify priority villages for electrification through renewable energy mini-grids (Activity 3.1.1). The screening also includes a subsequent community consultation process to ensure the participation and endorsement of the villages' target groups. On basis of the results of this exercise, UNDP will conduct the actual deployment activities of mini-grid implementation in the priority villages (Activity 3.1.2). These projects will align to the Africa Minigrids Program (AMP) implemented by UNDP and funded mainly by the GEF, and will have pilot character, with a

main objective to increasing the financial viability, and promoting scaled up commercial investment, in low-carbon minigrids in Africa, with a focus on cost-reduction levers and innovative business models. The roll-out at larger scale is foreseen in Activity 3.1.3., in particular by means of collaborations with Development Finance Institutions (DFIs), international funds and other large-scale intitiatives in the area of energy access finance.

Activity 3.1.1: Conduct a mapping and pre-feasibility study to identify priority villages eligible for electrification through mini-grids.

The identification of priority villages will be carried out by UNDP in collaboration with the relevant national institutions in charge of rural electrification. Data from the national rural energy databases (see Activity 1.4.1), the energy information, modelling and monitoring system (see Activity 1.4.2) and the national integrated energy plans (see Activity 1.4.3) and "bottom-up" data to be gathered by field surveys (see Activity 1.4.1) when available will be utilized for this exercise. Given the high number of villages and the large geographical area covered by the project, an itemization or 'shortlisting' of suitable villages will have to be established based on a set of criteria to be defined jointly with the national authorities, including for example poverty levels, existing community infrastructure, national priorities, etc. In light of the ongoing displacement/refugee crisis in the Sahel, it is important to note that the above-described identification and priorisation exercise will cover not only Sahelian villages where "standard" development operations apply, but also settlements of displaced populations and refugees, as well as their host communities. Following this initial screening and shortlisting of Sahel village candidates, on-site assessments will complement the mapping process. For each shortlisted village, demand, anchor loads (health centers, schools, businesses, etc.) and the potential for setting up productive use equipment will be scrutinized in detail. This will lead to a preliminary electrification proposal for each village, combining engineering aspects (basic design/mini-grid layout) with an integrated development plan describing how the electrification concept will contribute to the improvement of health, education, economic opportunities and, generally, the living conditions in the respective village. To facilitate sustainability and social acceptance, it is important to subject the initial proposal to a participatory discussion process at the community level. The local population shall be enabled to voice their preferences and to align the proposal - within the limits of technical and financial feasibility - to their specific needs, for example by deciding how the benefits of electrification can be equitably distributed among the members of the community. UNDP will encourage the creation of rural village committees to oversee the operation and maintenance of the systems. Whenever possible, a delivery model involving the private sector will be preferred, due to their higher potential to sustain over time (when commercially profitable). However, community models may also be supported, for instance in very small villages where operations by the private sector may not be viable in the present context.

Activity 3.1.2: Deploy mini-grid pilots in priority communities, leveraging the Africa Minigrids Program.

For the villages that are deemed suitable (usually villages with dense settlement patterns and favorable demand profiles), the implementation of mini-grid projects will be carried out according to the concepts developed in Activity 3.1.1. The implementation model will align to and integrate with the Africa Minigrids Program (AMP), a flagship regional initiative funded by the GEF and implemented by UNDP in partnership with the African Development Bank and Rocky Mountain Institute. AMP consists of a regional "child" project and national "child" projects in a number of participating countries.

AMP is a country-led technical assistance program for mini-grids, active in an initial

18 African countries, including **6** Sahelian countries (Burkina Faso, Chad, Mali, Mauritania, Niger, Nigeria)

In total, 4 out of the 10 Sahel countries

(Cameroon, The Gambia, Guinea, Senegal) will therefore not be formally part of AMP and will be subject to a different approach, most likely the implementation of a replica of an AMP national child project with the same set of key outcomes promoting the development of the mini-grid market and the reduction of the costs of solar PV mini-grids. . In particular, the preparatory work conducted in AMP to establish the institutional arrangements and modalities for implementation will be capitalized in countries where it has already been done, and replicated in the other countries to agree with the national stakeholders on the implementation arrangements. While the AMP national child projects are demonstrative in nature and not intended as large rural electrification projects, they constitute an important step to strengthen the enabling environment for mini-grids, support innovative pilot projects with potential for replication and establish innovative financing mechanisms to facilitate scaling up. The Energy4Sahel Project will therefore seek to support the AMP national child projects (and their replica in non-AMP countries) in a first phase and build on their ongoing results and lessons learnt (capitalized through the AMP regional child project) to roll out larger mini-grids initiatives in a second phase.

For the pilot mini-grids in this activity, it is expected that the project budget will contribute to about

of the investment costs in average, while the rest will come from the private sector.

The level of subsidy from the project wil be determined based on the level of risks for the private sector in each context. The de-risking measures implemented as part of Outcome 1 will play an important role in identifying these risks and mobilizing private sector investments. Similarly, the chosen delivery model and involvement of the private sector in the financing, building, operation, maintenance and ownership of the mini-grids will depend on each country situation, but private sector-driven models will be encouraged, in particular through the multi-stakeholder platforms established as part of Output 1.1.

Activity 3.1.3: Scale-up mini-grids deployment based on the learnings from the pilots.

This activity will start with the development of a scale-up strategy for each of the 10 Sahel countries on basis of the experiences gathered during the pilot project roll-out phase (Activity 3.1.2) but also experience from other mini-grid projects in the country, as well as learnings from enabling activities in Outcome 1 (e.g., on aggregation schemes). Depending on the level of maturity of the mini-grid market in each country, the scale-up phase will be initiated after a 2-3 year piloting phase (early-stage markets) or simultaneously (mature market). In Nigeria for instance, where the mini-grid market is advanced, UNDP will, through the GEF-funded Africa Minigrids Program national project starting in 2022, support the Rural Electrification Agency in piloting innovative business models for solar PV mini-grids in the scope of the “Energizing Agriculture” national program, which will inform the ongoing scale-up phase supported by DFIs and improve the viability of mini-grids implemented in the country. UNDP will mobilize its already existing partnerships, share its learnings and jointly work on supporting the rolling out of large-scale mini-grid programs in the region. As a partner, UNDP can provide added value to such large-scale roll-out projects in several ways, including:

01

Providing technical assistance to national partners through its network of Country Offices and technical experts

02

Being entrusted as an implementation partner for the roll-out of large-scale mini-grid programs on behalf of DFIs or other development partners.

Output 3.2: Rural value chains are enhanced through targeted interventions to support green productive use

For villages/settlements in the Sahel that are not suitable for mini-grids, an assessment wil be conducted to determine other solutions to support green productive use (Activity 3.2.1). These could for instance be stand-alone renewable systems to power small commerces, village markets or agricultural equipment. On basis of this assessment, which also incorporates the findings of the mapping and feasibility studies of Activity 3.1.1., a deployment plan will be developed and rolled out as described in Activity 3.2.2.

Activity 3.2.1: Assess priority vulnerable communities ineligible for mini-grids to determine alternative options to support green productive use.

For villages showing rather unfavorable conditions for the deployment of mini-grids (i.e. low density, scattered settlements), standalone renewable power systems can be a more appropriate solution to initiate electrification. This activity focuses on assessing which standalone renewable power solutions could be specifically tailored to boost the local economic development, in particular in the agricultural sector. As described earlier, powering productive use appliances is not only beneficial for a village community in terms of income generation and job creation, it is also assumed that the economic entities using this equipment (farmers cooperatives, village markets, rural entrepreneurs) have an intrinsic motivation to contribute financially to the installation and operation of the respective power generation systems, even if their capacity to co-finance such systems may be limited in the present context. Therefore, and similarly to the approach used for the deployment of mini-grids (Activity 3.1.2), it is expected that under this activity, a limited financial involvement of private investors (and private developers) will be leveraged. This has been set at 20% contribution to the CAPEX from the private sector in average, taking into consideration that individual businesses targeted by this activity will be micro or small enterprises will limited capacity to co-finance. Examples of technological solutions to be implemented under this activity are solar-powered irrigation systems and clean water services, agricultural machinery (e.g. milling/hulling devices for rural cooperatives) or food-processing and cooling equipment. The deliverable of Activity 3.2.1 will be a detailed deployment plan of sustainable energy sytems for productive use to be implemented in a selected set of priority communities across all 10 Sahel countries.

Activity 3.2.2: Deploy standalone renewable energy solutions for green productive use in priority communities

Under this activity, the deployment of standalone renewable energy solutions is organized according to the priorisation and deployment plant outline in Activtiy 3.2.1. UNDP will work together with finance partners to secure the funding for these deployment activities. It is important to note that small businesses targeted by this activity may also benefit from trainings on technical and business skills provided as part of Output 1.3, in order to increase the vaiblity of the systems and capacity of local stakeholders to build, operate and maintain them over time.

Output 3.3: An integrated approach to energy access and the energy-water-food nexus are enhanced through the promotion of the ecovillage model

While the two previous Outputs were concerned with concrete electrification activities - setting up mini-grids (Output 3.1) and standalone systems (3.2) to foster green productive use of energy in rural areas of the Sahel - Output 3.3 intends to go one step further and demonstrate how energy access can be at the core of a holistic, integrated development model to empower the communities in the Sahel, linking to existing initiatives such as the Great Green Wall and supporting a resilient post-COVID-19 green recovery. In first place here stands the "Ecovillage Concept", an integrated approach, aiming at rendering settlements in a general way more inclusive, safe, resilient and sustainable by harnessing energy-induced benefits for water access and agricultural production (water-food nexus)[29]. Activity 3.3.1. intends to promote this concept in selected ecovillages in the Sahel and support a "whole of energy" approach, with the provision of a combination of energy access solutions adapted to the context for both electrification and clean cooking. Activity 3.3.2 goes beyond "village" limitations, by promoting a model of sustainable-energy-based "Eco-production". This concept, labeled "Green Economic Hub", is intended to overcome the prevailing subsistence economies in the Sahel and to demonstrate an example on how agricultural goods could be produced and processed in a larger, more industrial fashion. Activity 3.3.3. will develop a replication and scale-up plan for these two concepts (Ecovillages and Green Economic Hubs).

Activity 3.3.1: Transform selected villages into ecovillages and mobilize partners for long-term development, creating linkages with ongoing initiatives such as the Great Green Wall.

This activity encompasses the technical implementation of the Ecovillage concepts, but also the development, consolidation and deepening of the related social practices needed for it. A particular emphasis will be placed on raising awareness on the desertification issue and the potentially useful contribution of rural ecovillages in building resilience against it. In this sense, ecovillages could play a role in conserving forests or contributing to reforestation, e.g., supporting the Great Green Wall initiative[30] led by the African Union and already supported by a wide range of partners, including the UN. UNDP will support the Ecovillage process as a long-term activity by providing trainings, capacity building and continuous monitoring. Being real-world laboratories for sustainable development in the region, UNDP will also support research activities on the Ecovillages (see Activity 1.1.3). One hundred priority villages will be selected, based on consultations with the governments and municipalities in particular considerations for the existing ecovillages programmes that are being rolled out in several Sahel countries such as Burkina Faso and Senegal. Lessons learnt from other ecovillages programmes (e.g., in Togo and Madagascar) will also be collected and capitalized. For each selected village, a holistic ecovillage concept will be designed by UNDP, its partners and - most essentially - with collaboration of the targeted population. It is planned that the UNDP's Accelerator Labs provide significant input to this exercise, as well as the regional Sahel Development Solution Lab (SAHELAB) (Activity 1.3.2). The ecovillage design will address all aspects where sustainable energy can play its part in making settlement more inclusive, safe, resilient and sustainable. In particular the feasibility of innovative sustainable energy use concepts that contribute to improving agricultural value chains (such as Agrovoltaics, Key Maker Model), will be examined and piloted in this activity. To the extent possible, partnerships will be built – especially with other UN agencies– to target areas where communities are already being supported to increase their climate resilience, so as to maximise impacts for the most vulnerable communities. This strategy has for instance been used for a recent project in Mali (SanDi Project) where UNDP, UNICEF, WFP, WHO and the University of Sherbrooke are partnering to provide solar PV and digital health systems to community health centers in rural areas already targeted by UNICEF and WFP for resilience enhancement activities.

29 According to the Global Ecovillages Network (https://ecovillage.org/), an ecovillage is an "intentional, traditional or urban community that is consciously designed through locally owned participatory processes in all four dimensions of sustainability (social, culture, ecology and economy) to regenerate social and natural environments". UNDP has already been supporting several ecovillages initiatives, some led by the Government, for instance in Senegal (with funding from the GEF), Burkina Faso, Madagascar and Togo, with successful outcomes. This project aims at building on these initiatives, focusing on the central role of clean energy to support low-carbon community development, with an aim to build partnerships and synergies to complement energy-related activities.
30 https://au.int/fr/node/14000.

Activity 3.3.2: Develop Green Economic Hubs pilots as a scale-out option for selected ecovillages.

With the Green Economic Hubs, UNDP intends to introduce a new way of economic activity in rural areas of the Sahel. In contrast to the prevailing subsistence economy, Green Economic Hubs are designed as large-scale industrialized production clusters that use modern agro-ecological techniques to manufacture goods for regional use and even for export, with the capacity to boost green jobs creation in rural areas in the Sahel. The recent enacting of the African Continental Free Trade Area (AfCFTA)[31] promises various economic opportunities for Sahelian countries, but these can only be seized if rural production becomes professionalized and can be scaled up. For this, various resources are needed, capital, land, human resources – but also energy. UNDP will explore, together with rural development experts, researchers and, most importantly with the private sector and other partners (in particular other UN agencies) how these hubs could be implemented in the different Sahel countries and which resources are needed for it. Ecological and social sustainability criteria are paramount for this exercise in order to clearly distinguish the planned Green Economic Hubs from other large-scale commercial agricultural operations, which often lead to social crisis, unmanaged displacement and environmental degradation. The Green Economic Hubs shall demonstrate how "green investments", through thoughtful and responsible usage of soil, water, and particularly renewable energy, can lead to a sustainable, yet competitive industry (agriculture, forestry, food processing, manufacturing) in rural areas in the Sahel. While Ecovillages will demonstrate a bottom-up, community-driven approach to local development, Green Economic Hubs will follow a different model, being essentially top-down and private sector-led, but with inclusivity and compliance with the highest standards of social and environmental safeguards at its core. This being said, the project will seek to create strong linkages between the two models. For instance, a Green Economic Hub could be designed as an industrial extension of a successful ecovillage in a strategic location ("scale-out" approach). Alternatively, the ecovillage model could be promoted in new human settlements resulting from the development of a Green Economic Hub. Similarly to the approach proposed for ecovillages, the contribution of the project to Green Economic Hub will be focused on clean energy supply, and on the mobilization of the governments, the private sector and other partners to support complementary developments (roads, water supply, etc.) that will need to take place to ensure the success of this intervention.

Activity 3.3.3: Develop a replication and scale-up/scale-out plan for Ecovillages and Green Economic Hubs.

Based on the lessons learnt from Activity 3.3.1 and Activity 3.3.2 UNDP will promote the Ecovillages and Green Economic Hub concepts at the policy level as models for rural planning in the Sahel, highlighting the possible positive interlinkages between the two. Together with its national partners, UNDP will develop a scale-up plan with the intention to achieve a formal endorsement of the two concepts by the national governments as part of the long-term national development strategies of their countries.

Outcome 4: Priority communities in the Sahel have an increased access to clean cooking fuels and technologies

The fourth component of the Energy4Sahel project is dedicated to improving access to clean cooking for the population in the Sahel. It builds on Output 1, where reinforced partnerships, stakeholder coordination and raised political attention will help to remove institutional and legal barriers, ultimately providing better enabling conditions for clean cooking investments. Based on these achievements, UNDP follows a private sector-based approach, where particularly local entrepreneurs shall be encouraged to develop and disseminate clean cooking technologies. Due to the very context-specific and diverse nature of the clean cooking sector and its related business structures, the technologies as well as business models and dissemination strategies must be adapted to the local features of consumer behavior and fuel availabily. It is assumed that private sector actors, especially those anchored in the rural service sector, have a profound understanding of the market situation and will therefore develop solutions that are best suited to the local situation and the needs of their customers in the region. Output 4.1. will assess the clean cooking market situation and look at the various lessons learned with previous clean cooking projects carried out in the Sahel thus also fostering South-South exchanges. On basis of this analysis, public private partnership (PPP) programs, specifically tailored to the support of local clean cooking companies/manufacturers, will be developed. In a subsequent step (Output 4.2) clean cooking solutions will disseminated at scale in priority areas in the Sahel.

31 https://au.int/en/cfta.

Output 4.1: Sahel-based clean cooking entrepreneurs supported to develop advanced solutions meeting both health and energy standards

The activities under this output cover three thematic areas. The first (Activity 4.1.1) is a stocktaking exercise, where "lessons learned" from other, previous projects on clean cooking in the Sahel will be gathered. The second activitiy (Activity 4.1.2) further expands this knowledge by analyzing in detail the actual market situation for clean cooking in the 10 Sahel countries. Finally, based on the findings of the two previous activities, UNDP will set up PPP programs with selected clean cooking entrepreneurs to develop advanced technical solutions suitable to be implemented and disseminated in rural areas in the Sahel (Activitiy 4.1.3).

Activity 4.1.1: Gather lessons learnt from previous projects on clean cooking in the Sahel.

Setting up clean cooking programs is a challenging undertaking (not only in the Sahel) as it requires a deep understanding of the often complex socio-cultural issues, such as consumer behavior, cooking practices and/or gender issues. Learning from previous experiences is therefore paramount for the Energy4Sahel project. Activity 4.1.1 aims at providing a meta-analysis of the results of previous projects carried out so far in the field of clean cooking in the Sahel. This study will be carried out with the support of academics or external advisors/experts. The study shall cover all 10 countries and provide a comprehensive picture through a systematic compilation of findings in the available literature (project reports of development agencies, NGOs, academic research) on clean cooking in the Sahel. Special attention will be given to the drivers and barriers encountered during the implementation of the different projects.

Activity 4.1.2: Conduct a market analysis on clean cooking solutions and companies in the Sahel with highest potential to scale.

This activity will set up a market study that complements the lessons-learned analysis of the previous activity (Activity 4.1.2), as well as Activity 1.2.2, which analyzed policy derisking instruments to improve access to clean cooking in the 10 Sahel countries. The aim of the analysis is to gather more details of the individual clean cooking market structure in each Sahel country: stakeholders and companies active in the sector, market size, financing mechanisms and subsidies. The study will likewise look at the type of products available on the market (cookstoves and cooking fuels), including a description of their technical features, advantages and inconveniences, price structure, customer satisfaction and experience in the field. Likewise, health, safety and environmental standards of the clean cooking solutions under scrutiny will be considered. If possible, the market analysis shall also provide an outlook on new trends and innovations, by looking, for instance, also into advanced business and dissemination models. The overall goal of the analysis is to provide sufficient information for UNDP to take informed decisions about the best ways to scale-up clean cooking dissemination (Output 4.2) as well as for conducting a PPP program (Activity 4.1.3) with clean cooking entrepreneurs.

Activity 4.1.3: Develop a Public Private Partnership (PPP) program with relevant regional and national stakeholders to support selected clean cooking entrepreneurs.

Under this activity, the project will set up together with its partners (national governments, Clean Cooking Alliance, etc.) a PPP program for the development of innovative cookstove concepts that are suited for the Sahel. The goal is to promote concepts that go beyond standard efficiency-improved cookstoves (which typically still use firewood) and explore advanced technical designs, potentially with alternative fuels or even electricity, with lower emissions and less harming effects due to health-damaging pollutants, complying to WHO health standards for indoor air quality. Cookstove manufacturing companies based in the Sahel which have an interest in developing new, improved products, potentially also incorporating innovative business models will be supported. Such concepts could, for instance, originate from the "innovation challenges" organized by the Regional Accelerator Lab in Activity 1.3.2. Besides improved cookstoves, this activity may also support solutions linked to alternative clean fuels such as biogas, LPG and bioLPG, when relevant to a particular context. UNDP will seek to support at least 60 companies across the Sahel region in the process of developing prototypes, testing and certification of clean cooking solutions, as well as by establishing business plans for manufacturing and dissemination.

Output 4.2: Clean cooking solutions disseminated at scale in priority areas in the Sahel.

In this output, the Energy4Sahel project intends to prepare the way for scaling up the deployment of clean cooking solutions in communities or regions that feature the highest benefit of uptake potential. In order to identify such "priority areas", a baseline assessment is carried out in Activity 4.2.1. In the next step, described in Activity 4.2.2, the project will mobilize funding partners and public and private sector stakeholders to support the deployment of clean cooking solutions at scale.

Activity 4.2.1: Conduct a baseline assessment to identify priority communities to benefit from clean cooking interventions.

UNDP will use previously-developed tools, such as the energy information, modelling and monitoring system of Activity 1.4.2. to detect and prioritize suitable areas for clean cooking projects. This geographical top-down analysis will be combined with a bottom-up assessement of individual villages or communities where highest benefits and impacts can be expected. This involves a socio-economic analysis of the cooking practices on the ground. Prioritized communities could be either (1) vulnerable communities (including in displacement settings), where clean cooking programs could significantly contribute to the populations' welfare and/or even lead to ecological co-benefits, such as a reduction of firewood cutting; or (2) in communities, where the introduction of clean cooking solutions will likely fall on fertile ground due a generally high uptake potential, the presence of early adopters, and a generally positive stance of the population towards new technologies. Ecovillages supported by the project for instance (Activity 3.3.1), will be considered as priority communities to introduce clean cooking solutions through the project.

Activity 4.2.2: Mobilize partners and financing to disseminate advanced clean cooking solutions at scale.

UNDP will support dissemination strategies with technical assistance to facilitate private sector players (e.g., cookstove manufacturers, retailers, and so on, identified in Activity 4.1.2) in the scaled-up roll-out of clean cooking products to the market. This includes the provision of advisory services for the access to finance, for instance by matchmaking with potential funding partners. Support will also be mobilized through partnership platforms such as HEPA, the Health and Energy Platform of Action, of which UNDP is a co-founder. Activity 4.2.2. will thereby also address the affordability challenge of innovative – and healthier – cooking solutions through dedicated financial mechanisms and more generally the enabling conditions decribed as part of Outcome 1.

Resources Required to Achieve the Expected Results

Increasing the access to clean energy in a region that encompasses ten countries is an endeavor that requires significant financial and human resources. The proposed overall project budget for the 5-year timeframe of the project is USD 350 million (see detailed budget in Section VII). Of this budget, it is expected that approximatively 10% will be used for the regional-level activities delivered by the Dakar Sub-Regional Hub, while the rest will be delivered at national level by the ten Sahel Country Offices. For the capital-intensive part - the actual implementation of electricity infrastructure in Sahelian villages or clean cooking solutions - UNDP will depend on external funding to be leveraged from its various partners (vertical and non-vertical funds, national governments, bi- and multi-lateral donors, development banks, etc.). At the time of submission of this project document, about USD 20 million have already been mobilized. A detailed partnerships and resource mobilization strategy is currenty being prepared for this project by the Dakar Sub-Regional Hub. For instance, the Joint Thriving Sahel Fund[32] recently created by the United Nations Office of the Special Coordinator for Development in the Sahel (OSCS), the Arab Gulf Programme for Development (AGFUND), the Arab Bank for Economic Development in Africa (BADEA), and other development partners with a historical pledge of USD 1.6 billion over five years (2022-2027) in support of development and resilience of the Sahelian countries could constitute a potential source of funding for this project.

32 https://www.unicef.org/genunlimited/stories/joint-thriving-sahel-fund-partners-announce-us-16-billion-sahel-region.

In terms of human resources for the management and technical support of these activities, the budget of this project includes the costs for a Regional Project Management Unit (PMU) based in the Dakar Sub-Regional Hub, National PMUs based in the Country Offices, and a Sahel Energy Technical Advisory Team (pool of experts) coordinated from the Dakar Sub-Regional Hub. UNDP will also be able to draw on expertise (and experts) from ongoing projects in the region, such as the Africa Minigrids Program or the Liptako-Gourma rural electrification project to complement this team. Importantly, this project will also benefit from the new resources being mobilized by UNDP at global level to set up the scaled-up energy offer (Sustainable Energy Hub) which will also trickle down as enhanced technical and operational support at regional and country levels.

Partnerships

Nurturing strategic partnerships is one of the key principles of the Energy4Sahel Project's strategy. UNDP strongly believes in partnerships as a key pathway to achieving the SDGs. The project will adopt a strategy that allows mobilization of partners from the start of project implementation, building on partnerships currently existing in the scope of ongoing energy projects. Regional institutions and governments, UN agencies, financial institutions, foundations, private sector, CSOs, academia, multi- and bilateral donors and others will be mobilized to contribute to the achievement of SDG 7 and other enabled SDGs in the Sahel.

Partnerships will be built at the beginning of project implementation with financial institutions (FIs) including World Bank, AfDB and Islamic Development Bank, especially with relation to the financial derisking mechanisms (Output 1.2) and the roll-out of off-grid electrification and clean cooking solutions (Outcomes 2, 3 and 4). Local FIs will also be targeted at country level to facilitate access to finance to clean energy providers and consumers in the region. Among sister UN agencies, existing partnerships (such as the one with UNCDF in Burkina Faso and The Gambia, the one with UNOPS in Burkina Faso, Mali and Niger, and the one with UNICEF, WFP and WHO in Mali) will be leveraged and new partnerships sought with other agencies such as UNHCR and/or IOM for interventions related to displaced populations. The existing UNISS task team on renewable energy will be instrumental in building or strengthening these partnerships. UNV will be an integral part of the project and at the core of the volunteerism component of the planned interventions. The private sector will

be particularly important in the project's partnerships strategy, and a key entry point will be leading industry associations such as AMDA, ARE and GOGLA. The project will work closely with UNDP COs and other UNDP Units and Hubs (such as the Finance Hub and the Resilience Hub) which will contribute monetary and/or in-kind resources and serve as entry points to reach out to bilateral and multilateral partners. Governments are the main owners of the project activities at country level, and government partners will play a central role in planning, implementation, coordination, evaluation and sustaining the results of the project. Partnerships will also be sought with regional bodies including AU, ECOWAS/ECREEE and G5 Sahel. Recently, a renewed partnership has already been engaged between ECREEE and the Dakar Sub-Regional Hub for renewable energy activities targeting the cross-border region of the Liptako-Gourma. In September 2021, UNDP also signed a Memorandum of Understanding (MoU) with Sustainable Energy for All (SEforALL) to work jointly on addressing the energy gap in the Sahel[33]. The African Development Bank (AfDB) is also already engaged with UNDP in the scope of the Africa Minigrids Program (AMP), which targets 18 countries including 6 in the Sahel. These are concrete initial partnerships that will support the implementation of this project and could be further leveraged.

Lastly, the project will build partnerships with multi- and bi-lateral development institutions such as the European Union and Member States that are active in the region like Germany (GIZ), France, Netherlands, Spain, Sweden, and others. Partners will be engaged at the country and regional levels to co-design specific initiatives, rather than approached post-facto for funding.

A few key relevant partners and regional projects are listed in the following to illustrate areas of convergence with the Energy4Sahel Project. This list is in no way exhaustive, and will be further elaborated in the scope of the partnerships and resource mobilization strategy currently being prepared by the Dakar Sub-Regional Hub for this project. Even though the list does not mention governments, they will be of course the primary partners for this project, in particular the Ministries of Energy and agencies in charge of rural electrification and/or renewable energy, as well as other relevant governmental entities such as the Ministries in charge of Environment, Planning, Finance, and national agencies in charge of statistics.

33 www.africa.undp.org/content/rba/en/home/presscenter/pressreleases/2021/undp-and-seforall-team-up-towards-affordable-energy-for-all-in-t.html.

International Financial Institutions

African Development Bank (AfDB)'s Desert-to-Power (DtP) initiative aims at speeding up economic development through the deployment of solar technology across the Sahel region. The program's objective is to make the Sahel the world's largest solar production zone with up to:

10GW
solar generation capacity by **2025**

250 Million
people supplied with green electricity, including some of the world's poorest countries.

160 Million
people shall get energy access through national grids

While **90 million people** shall get access through off-grid solutions, namely stand-alone photovoltaic systems, photovoltaic mini-grids, captive power production units for commercial and industrial use, productive use of power in synergy with agricultural and water programs. While eleven countries[34] are planned to be beneficiaries of this initiative, as of early 2021, AfDB is focusing its efforts on the G5 Sahel countries. DtP roadmaps have been endorsed at the regional and at the national level in the five countries and a Green Climate Fund (GCF) project is in preparation[35]. The DtP initiative – in particular its off-grid component - can have significant linkages with the Energy4Sahel Project, more specifically its Output 2.1 (rolling out of off-grid electrification solutions).

Sustainable Energy Fund for Africa (SEFA) is a multi-donor fund administered by the African Development Bank, with a financial commitment from the governments of Denmark, the United States, UK, Italy, Norway, Spain and Sweden. The fund targets small and medium-sized projects: mini-grids for rural electrification are thematically included via the Green Mini-Grids Program (GMG), which supports the scale-up of investments in commercially viable GMG projects through a broad range of interventions. SEFA can provide financial support for three different components:

1. Project preparation
2. Equity participation
3. Support for the creation of an enabling environment for renewable energy

The World Bank Clean Cooking Fund has been established under the World Bank's Energy Sector Management Assistance Program (ESMAP) in 2019 with contributions from the Netherlands, Norway and the United Kingdom. It aims at scaling up public and private investments in the clean cooking sector by catalyzing technology and business innovations.

34 Burkina Faso, Ethiopia, Eritrea, Djibouti, Mali, Mauritania, Niger, Nigeria, Senegal, Sudan and Chad.
35 https://www.greenclimate.fund/document/desert-power-g5-sahel-facility#:~:text=The%20proposal%20for%20a%20%E2%80%9CDesert,the%20deployment%20of%20grid%20for.

Volume
$500 Million

It provides financial and technical support, primarily through results-based grants, to help countries incentivize the private sector to deliver modern energy cooking services. As one of its largest operations in Africa, the Clean Cooking fund recently provided **USD 20 million** (with **additional USD 30 million** leveraged from public and private sector investors) to develop a sustainable market for affordable clean cooking solutions in Rwanda, targeting the access to clean cooking for 2.15 million people[36].

The World Bank's Regional Off-Grid Electrification Project (ROGEP) project is dedicated to expanding off-grid access to electricity across the across the 15 countries in the ECOWAS region of West Africa, as well as the following non-ECOWAS countries: Cameroon, Central African Republic, Chad, and Mauritania.

The project, implemented in partnership with ECREEE, has 2 main components:

1. Accelerate development of a regional off-grid solar market through knowledge transfer on technological innovations and new business models across the region
2. Facilitate access to financing for off-grid solar businesses: Line of Credit and Grant Facility.

The project, which will be implemented from 2019 to 2030, is expected to benefit about 1.7 million people. This project has potential to contribute mainly to Output 1.2 (financial derisking) and Outcomes 2 and 3 of the Energy4Sahel Project.

Global or Regional Energy Institutions

ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) was founded by the Economic Community of West African States (ECOWAS) in 2010 with the mission to promote regional renewable energy and energy efficiency markets in the ECOWAS Member States by improving access to modern, reliable and affordable energy services, energy security and reducing energy-related greenhouse gas emissions and the impact of climate change on the energy system. ECREEE is implementing a large set of activities on off-grid electrification and clean cooking that have significant convergences with the Energy4Sahel Project. ECREEE has also been developing since 2012 the ECOWAS Observatory for Renewable Energy and Energy Efficiency (ECOWREX), an online repository and GIS platform on renewable energy and energy efficiency in the region[37]. UNDP started a collaboration with ECREEE in 2021 in the scope of the UNOPS/UNDP rural electrification project in the Liptako-Gourma region funded by SIDA, in which, among other activities, the ECOWREX platform will be upgraded to have more analytical capacity, thus being more useful to the ECOWAS Member States to support decision-making in their energy planning.

IRENA
International Renewable Energy Agency

Since its creation in 2009, **International Renewable Energy Agency (IRENA)** is strongly engaged in supporting the African continent in its move to develop and scale-up renewable energies[38]. IRENA supports national governments and transnational organizations in capacity building, technical assistance, project development

36 https://www.worldbank.org/en/news/press-release/2020/09/17/world-bank-project-to-boost-household-access-to-affordable-energy
37 http://www.ecowrex.org/.
38 https://www.irena.org/-/media/Files/IRENA/Agency/Regional-Group/Africa/IRENA_Africa_impact_2019.pdf?la=en&hash=EECD-0F6E8195698842965E63841284997097D9AA.

and facilitation, as well as through policy and regulation support. In 2018, IRENA published an electricity system study on renewable energy integration scenarios for West Africa[39]; it is likewise supporting AfDB's Desert-to-Power initiative (see above) with its knowledge and expertise. Concerning the Central African Region, IRENA actively contributed to the development of the ECCAS renewable energy roadmap[40]. IRENA also conducted, between 2013 and 2019 several country studies - Renewables Readiness Assessments (RRA) - in the Sahel: Mauritania, Niger, Senegal, The Gambia, and Mali. In collaboration with the Abu Dhabi Fund for Development (ADFD), IRENA also operates a joint project facility to support replicable, scalable and potentially transformative renewable energy projects in developing countries. The roll-out is performed through annual funding cycles, of which seven have currently (2020) been completed.

$350 Million
has been committed to date.

In the Sahel the IRENA / ADFD Project Facility has so far co-financed projects in Mauritania (a UNDP project funded by the GEF), Mali, Niger, Senegal and Chad.

Sustainable Energy for All (SEforALL) was launched in 2011 as a global UN initiative, which became an international organization in 2016. Its overarching mission is the achievement of SDG 7 by 2030, for which it works in partnership with the United Nations, national governments, the private sector, and NGOs worldwide. SEforALL has experience leveraging best-in-class geospatial data and analysis and proposes result offers that can be deployed quickly in the region to drive accelerated progress on high-impact opportunities. SEforALL also hosts the Minigrid Partnership and is thereby involved in tackling barriers and associated risks for mini-grids. Early 2021, SEforALL and UNDP agreed on a joint workplan to advance SDG 7 in the Sahel and signed an MoU to solidify this partnership in September 2021. Implementing this workplan will contribute to the objectives of the Energy4Sahel Project, in particular its Outputs 1.2 (policy and financial derisking) and 1.4 (data for energy planning).

Multilateral Development Partners

Electrification Financing Initiative (ElectriFI) is a EUR 215 million impact investment facility funded by the European Commission and managed by the Association of European Development Finance Institutions (EDFI). ElectriFI supports investments that improve access to modern, affordable and sustainable energy services. ElectriFI's approach is project-based financial support, and it has supported several mini-grid projects (mostly pilot) in Sahel countries, for instance minigrids and standalone PV systems in Mali and Niger.

GET.invest is a European programme which supports investments in decentralized renewable energy. The programme targets private sector businesses and project developers, financiers and regulators to build sustainable energy markets in partner countries. It was launched in early 2019, building on its predecessor, the Africa-European Union Renewable Energy Cooperation Programme (RECP). GET.invest supports investment in decentralized renewable energy with a focus on Sub-Saharan Africa, but can also be deployed in other regions, including developing and emerging markets. The programme works across different market segments

39 https://www.irena.org/publications/2018/Nov/Planning-and-prospects-for-renewable-power.
40 https://www.irena.org/events/2021/Apr/Ministerial-Validation-of-the-Central-Africa-Renewable-Energy-Roadmap.

of decentralized renewables, such as small on-grid independent power producers (IPPs), commercial and industrial power, mini-grids, small stand-alone solar systems including solar home systems, and clean cooking solutions. GET.invest is implemented by GIZ, and supported by the European Union, Germany, Sweden, the Netherlands, and Austria.

The German development agency GIZ maintains the program EnDev (Energizing Development) dedicated exclusively to the access to energy services in developing countries. The program follows a bottom-up approach via country projects supporting renewable mini-grid projects, SHS and improved cookstoves. The program receives financing by several European donors: the German Ministry of Cooperation, the Dutch International Cooperation, the Norwegian Ministry of Foreign Affairs, the Swiss Cooperation, the British Department for International Development and the Swedish International Cooperation Agency. EnDev was, for instance, involved in clean cooking and mini-grid projects in Senegal and Mali. In Senegal, EnDev has also recently started to develop a unified GIS platform for the energy sector.

Established in 2017 by France, Germany and the European Union, **the Sahel Alliance** targets to provide support to the G5 Sahel countries – Burkina Faso, Mali, Niger, Chad and Mauritania – in the areas of security, youth employment, governance, decentralization, food security and agriculture, as well as climate and energy. With regards to energy, the Sahel Alliance has set itself the priority to contribute to the electrification objectives of G5 Sahel countries, by mobilizing private and public investment as well as by providing capacity building in the areas of planification and project execution.

Breakdown of energy projects listed on the Sahel Alliance website (As of April 2021)

$2.5 Billion
Total financial commitments

World Bank	African Development Bank	Agence Française de Développement	European Union	Netherlands
$1.3B	**$560M**	**$548M**	**$116M**	**$28M**

These projects are mainly focused on improvements of the national grid and on the increase of utility-scale power generation.

Power Africa is a U.S. Government-led partnership coordinated by the U.S. Agency for International Development (USAID). Launched in June 2013, Power Africa's goal is to add more than 30,000 megawatts (MW) of clean and energy efficient electricity generation capacity, as well as increase electricity access by adding 60 million new home and business connections throughout Sub-Saharan Africa. Power Africa covers grid-connection and off-grid electricity. For the off-grid part, the sub-programme "Beyond the Grid (BTG)" targets 17-20 million SHS connection and 8-10 million mini-grid connection across Africa by 2030.

Private Sector

A variety of initiatives supporting the private sector are relevant for the Energy4Sahel Project. The African Minigrid Developers Association (AMDA)[41], headquartered in Nairobi, is an industry association representing private utilities developing mini-grids in Africa. It currently has 34 members across 15 African countries. Aligning to the SDGs, AMDA works towards improving policies, regulations and investment conditions for mini-grids in Africa. The Global Off-Grid Solar Industry Association (GOGLA)[42] represents manufacturers and providers of off-grid electrification solutions worldwide, many on them operating in Africa. Initiatives to support the clean cooking sector include the Clean Cooking Alliance (CCA)[43] and the Global LPG Partnership (GLPGP)[44]. Hosted by the United Nations Foundation, the Clean Cooking Alliance (CCA) works with a global network of partners to build an industry that makes clean cooking accessible worldwide. It works to increase consumer demand for clean cookstoves and clean fuels, mobilize investment, and create an enabling environment for industry growth. The GLPGP, a likewise UN-backed public-private partnership, has similar objectives, but promotes particularly renewable liquefied petroleum gas (bio-LPG) as well as conventionally produced LPG for clean, modern cooking.

Local Authorities

Decentralized authorities, such as municipalities or cross-border authorities (e.g., Liptako-Gourma Authority, Lake Chad Basin Commission) are also important partners for this project, which will target remote, vulnerable communities in regions where the central governments have often limited access. UNDP, in particular the Dakar Sub-Regional Hub, is already engaged at various levels with many of these partners (for instance through the SIDA-funded rural electrification project in the Liptako-Gourma or the Sahel Governance Offer). Stronger partnerships will be sought for this project, not only to increase ownership at local level, but also to strengthen the capacity of these institutions to coordinate and support energy-related activities in their geographical areas of coverage.

NGOs, CSOs and Advocacy Organizations

The Energy4Sahel Project will also develop partnerships with relevant international advocacy organizations, as for instance the Alliance for Rural Electrification (ARE)[45], which is an international association dedicated to the promotion and development of renewable energy for rural electrification in developing countries, and which maintains links to the relevant stakeholders in the Sahel region. The framework of the Energy4Sahel Project also offers various opportunities where regional, national and local NGOs, CSOs and other organizations can participate - for instance in the Community of Practice (CoP) or at the level of the national stakeholder platforms (see Output 1.1). Under the activities dedicated to the deployment of renewable energies in rural communities (Outcomes 2, 3 and 4), the contribution of local, small-scale initiatives will be of key importance and thus strongly promoted. Here, the GEF Small Grants Programme (SGP)[46] could potentially provide additional support to develop small energy-related activities, some of them with potential to scale up.

41 https://africamda.org/.
42 https://www.gogla.org/about-us.
43 https://www.cleancookingalliance.org/.
44 http://glpgp.org/.
45 https://www.ruralelec.org.
46 https://sgp.undp.org.

Risks and Assumptions

Risks

The success of the Energy4Sahel Project is challenged by a number of risks.

The most salient one is the precarious security situation in the Sahel, in particular in the countries neighboring the Niger Basin as well as the Lake Chad region. For the Energy4Sahel Project this risk is particularly relevant, as it affects not only the security of UNDP's personnel and its partners - but it also jeopardizes in a general manner the roll-out of implementation activities and their sustainability in rural areas. In the past years, especially the rural areas of the Sahel have become the target of numerous armed attacks, but also the shelter of terrorists and criminal groups. Due to the volatility of the security situation, it is important for UNDP to seek thorough security advice, for instance when selecting villages for electrification projects. Closely associated with the security risk is the political instability in the region. Unpredictable changes in government, citizen protests, and civil unrest can threaten the continuity of the activities of UNDP and its cooperation with government agencies. Fragile political frameworks could also be at the root of governance and regulatory risks for energy access: changes of regulations, non-transparent decisions and unclear roles and responsibilities of national/government institutions can slow down or hamper the implementation of the project. The same goes for the risk of low engagement/motivation of the stakeholders and beneficiaries to participate in the activities of the project, and limited social acceptance of new technologies by rural communities. Lack of engagement of the communities may for instance increase the risk of theft of solar panels and other equipment installed by the project. There is likewise a management risk related to the proper coordination of this 10-country project which involves a multitude of different partners and stakeholders. Limited funding for such a large project is another risk, especially in light of the COVID-19 crisis which is likely to punch holes in public budgets of national and international development partners. It doesn't need to be underscored that the direct impacts of the COVID-19 pandemic (and its related lockdown policies) on health, society, and economy will continue to pose a significant risk for energy projects in the Sahel[47].

These risks need to be clearly identified, and to the extent possible mitigated and managed in order to avoid negative impacts on the project. A full risk log is provided as Annex 3 to this document. UNDP will address these risks through its management capacities and notably the experience of its Country Offices.

Assumptions

The volatile context of the project and the associated risks must be countered with a proactive, adaptive programming approach, involving regular consultations with the development partners and stakeholders.

It is assumed that a certain risk mitigation can be achieved just by carrying out the essential activities of the project. For instance, the risk of lacking stakeholder engagement can be reduced by community consultation processes, which are foreseen as part of the project's implementation tasks. The security risk can be mitigated through village electrification itself, as it contributes to liberate rural areas from their isolation, create employment and reduce poverty; hence allowing formerly "ungoverned spaces" to become better connected to the national infrastructures and benefit from improved basic public services. This, in turn, reduces the communities' vulnerability to terrorism and violence. Working with displaced communities, pushing community-focused ecovillage projects – all activities foreseen within the Energy4Sahel Project - are additional measures that contribute to peacebuilding in the region. A further assumption is that the majority of regional stakeholders and beneficiaries have a positive stance towards renewable energies and are truly committed to participate and contribute to the success of the project. It is also assumed that the downward trend of technology costs and the upward trend of technology innovations – including penetration of digitalization - in the energy access sector continues. This will help to increase UNDP funding partners' confidence in the project and their willingness to provide financial support - which mitigates the funding risk. The COVID-19 pandemic, while certainly a significant threat on the project in the short-run, can also be a catalyst for accelerating energy access in the Sahel in the long-term - by triggering new developments, digital innovations, and potentially a post-crisis green recovery promoting technological leapfrogging of energy supply in the region.

47 The major energy sector impacts of COVID-19 in the ECOWAS region were highlighted in a brief published by ECREEE in July 2020 (http://www.ecreee.org/news/impact-covid-19-ecowas-energy-sector).

Stakeholder Engagement

Ensuring stakeholder participation is an important element of the Energy4Sahel Project roll-out strategy. At all implementation levels, stakeholders will be informed, consulted, involved and invited to contribute with their ideas and activities to the project. A project grievance mechanism will be established and expressed concerns will be taken into account, as described in the Social and Environmental Safeguards Screening (see Annex 2). UNDP will ensure that particularly weakly organized, underrepresented groups (rural populations, refugees) receive adequate consideration in the stakeholder processes.

Due to the fact that the project activities will be performed on multiple levels – community, national, transnational/ regional - a wide range of stakeholders will potentially need to be involved:

Stakeholders involved at community level will include:

1. Beneficiaries: rural populations, displaced populations, refugees, households, women, children, youth, who will be represented through civil society associations, village committees, women/youth organizations;
2. Local authorities, municipalities, representatives of local health and education providers;
3. Local NGOs, farmers' or agricultural cooperatives, rural entrepreneur's associations/cooperatives;
4. Faith-based organizations.

Stakeholders involved at national level will include:

1. Governments through ministries and national authorities;
2. National professional associations of the renewable energy sector, manufacturers;
3. Education sector, universities, research institutes;
4. National electrification agencies, electricity utilities;
5. Worker's unions;
6. National NGOs and advocacy groups (e.g. for environment, rural development, climate).

Stakeholders involved at transnational/regional level will include:

1. Regional institutions (e.g., ECOWAS/ ECREEE, ECCAS/CEMAC, G5 Sahel, Liptako-Gourma Authority)
2. International industry associations, such as AMDA, Clean Cooking Alliance and GOGLA
3. Transnational NGOs
4. Development banks, donor community, bilateral development agencies.

The project foresees various ways to involve these stakeholders, primarily, stakeholders will be engaged through stakeholders meetings or workshops, in order to create a constructive environment for dialogue, mutual understanding, learning, and shared decision making on activities of the Energy4Sahel Project. Being an integral part of the project activities, the organization of these workshops will be carried out under the responsibility of the UNDP Country Offices, with support from the regional level. Besides these workshops, UNDP also intends to create platforms of dialogue and engagement with stakeholders with the aim that they will be sustainable, institutionalized and live beyond the project. The stakeholder processes will be considerate of the specific circumstances (local languages, literacy), gender-sensitive, and promote the inclusivity of minorities and marginalized groups. UNDP will likewise ensure a transparent project communication in the media.

South-South & Triangular Cooperation (SSC/TrC)

The successful Second High-level United Nations Conference on South-South Cooperation which took place in March 2019 in Buenos Aires confirmed the great contribution that South-South and Triangular Cooperation (SSTC) is making to strengthen country capacities for the achievement of the Sustainable Development Goals (SDGs)[48]. The Framework of operational guidelines on United Nations support to South-South and triangular cooperation defines South-South cooperation (SSC) to be "a process whereby two or more developing countries pursue their individual and/or shared national capacity development objectives through exchanges of knowledge, skills, resources and technical know-how, and through regional and interregional collective actions, including partnerships involving Governments, regional organizations, civil society, academia and the private sector, for their individual and/or mutual benefit within and across regions. South-South cooperation is not a substitute for, but rather a complement to, North-South cooperation"[49].

In line with UNDP's strategy on SSC/TrC, the Energy4Sahel Project will help accelerate the achievement of the 2030 Agenda including UNDP's Sahel Regional Offer. The spirit of transnational partnership is intrinsically anchored in a project mandated to work for a shared vision of an entire region composed of ten African countries. The project is expected to provide a space where stakeholders of different nationalities and backgrounds will meet, exchange and mutually learn from each other. Such opportunities for transnational collaboration will be opened at different stages of the project. For instance, Output 1.1, is dedicated to the creation of an international "Community of Practice" and furthermore intends to promote international academic exchange on energy access in the Sahel. Existing successful national stakeholders' coordination platforms on energy, such as the one in Senegal, will serve as benchmarks for the other countries and lessons learnt will be exchanged. Similarly, in Output 1.2., the development of derisking tools (namely UNDP's DREI methodology) will benefit from the experience of projects in various countries in the world; and conversely, the Energy4Sahel Project will feed its own experience back to other partners in the future. In the same line of South-South collaboration and knowledge sharing stands the development of the energy information, modelling and monitoring systems planned in Output 1.4. These systems will likewise be developed in a collaborative environment of different Sahel countries and in partnership with international stakeholders. All in all, the Energy4Sahel Project is strongly committed to the goals of UNDP's South-South and Triangular Cooperation (SSTC)[50] and will mainstream the support to these goals throughout the project.

Knowledge

At various stages throughout the course of the project, UNDP will support the production and management of knowledge. The project will be responsible of setting up partnerships with the research community (Activity 1.1.3), encourage the generation of scientific results in the field of energy access, and ensure that the knowledge products are made available to the public. The emphasis here is on "open access" as guiding principle, meaning that the knowledge results of this project (project reports, research papers, studies) shall be available for the public and free of charge. It is UNDP's belief that only by doing so, can the best practices and experiences be identified and efficiently shared to the benefit of everyone. The same accounts for the data produced within the project. Activity 1.3.3. foresees the creation of an energy information, modelling and monitoring system on electrification and clean cooking. These data should be likewise – to the extent possible - made publicly available, so that not only government organizations, but also donor organizations, the private sector, and other interested parties could use them. This will further encourage digitalization, and the project will be mindful not to increase the digital divide in this process, in particular through the gender-sensitive trainings and skills building activities planned in the scope of Output 1.3. The project will also be considerate of

48 Country Experiences in South-South and Triangular Cooperation enabled by the United Nations Rome-based agencies, 2019.
49 UNDP, South-South and triangular cooperation framework.
50 https://www.undp.org/content/undp/en/home/2030-agenda-for-sustainable-development/partnerships/sdg-finance--private-sector/south-south-cooperation.html.

data privacy and data security, for instance when collecting data in the field, and observe the relevant national and international frameworks in this regard, including UNDP's Digital Strategy[51].

Sustainability and Scaling Up

It is a distinctive feature of the Energy4Sahel Project that it operates in an area where highly promising development opportunities are faced with a particularly challenging – including volatile - security, socioeconomic and political situation. The recent challenges added by the COVID-19 crisis make it even clearer that the project must be built on solid foundations in order to achieve long-term viability, and support governments engage in a green recovery agenda to support a low-carbon development pathway. This is all the more important when comparing the short project timeframe (5 years) with the usual energy infrastructure transformation cycles spanning over several decades. Sustainability and the potential for scaling-up are therefore at the core of this project.

First and foremost, the project is aligned with the national development goals of the Sahel countries. This will guarantee the buy-in and constructive participation of government agencies, encouraging them to extend and replicate the activities in a sustainable manner over a long-time horizon. Further elements enhancing the project's sustainability are the Community of Practice and the national stakeholder platforms (delivered in Output 1.1) that will ensure that the project's objectives will be endorsed by a broad range of stakeholders, including the private sector. Having the latter on board is a precondition for scaling-up the project: the approach to financial derisking and removing policy and regulatory barriers (see Output 1.2.) is expected to attract companies and private capital to an extent that in the future a self-sustained, growing market for off-grid electricity and clean cooking access can be created in the Sahel. An additional stimulus in this respect will come from the planned Ecovillages (Output 3.1) and Green Economic Hubs (Output 3.3), which will create conducive ecosystems for private investments targeted to develop sustainable local socio-economic development for the primary benefits of local communities. Innovations – in particular in terms of business models or financing mechanisms, knowledge management, and data platforms (Output 1.3 and 1.4) will further catalyze the scaling-up process. On the project implementation level, sustainability is supported via the participative approaches involving village communities and/or displaced populations, when relevant. Sustainability will likewise be considered at the technical level: UNDP will ensure that technical designs, component specifications and project frameworks stipulate the use of certified, energy-efficient high-quality equipment, state-of-the-art monitoring systems, and high maintenance standards to ensure a long lifetime of the installations, subsequently increasing the overall acceptance of and appetite for sustainable energy technologies in the Sahel.

51 https://digitalstrategy.undp.org/

Energy4Sahel

PROJECT MANAGEMENT

Cost Efficiency and Effectivenes

The Energy4Sahel Project's regional scope, its significant budget, and the variety of its constituent activities require a particularly careful handling of project management, including human and financial resources. For this reason, efficiency considerations are incorporated already from the outset into the project's planning structure. Each intervention (at the Output level) foresees, before engaging into implementation actions, a prior analysis step: feasibility / baseline studies, mapping exercises or needs assessments. These analytical upstream activities will ensure that the subsequent, budget-intensive implementation processes (e.g., village electrification with mini-grids or standalone systems, creation of monitoring platforms, roll-out of clean cooking solutions) remain goal-oriented, cost-efficient and within the time schedule. The paradigm of lean and smart management is also followed through the organizational structure of the project: the regional and national Project Management Units (PMUs) and the Sahel Energy Technical Advisory Team (described in detail in Section VIII on Governance and Management Arrangements) will consist of small, agile and highly skilled teams, collaborating closely and efficiently on the management and implementation of the project's activities. The four thematic units of the Sahel Energy Technical Advisory Team (Electrification Implementation Unit, Clean Cooking Implementation Unit, Sustainable Energy Derisking Facility, Regional Accelerator Lab on Sustainable Energy) will provide dedicated technical support on-demand (on a short-term or long-term basis, depending on the activity), and could also include experts detached temporarily from other organizations. This approach shields the project from inefficient human resource allocation and improves its overall effectiveness and cost efficiency. UNDP's Country Offices, with their specific experience and direct interactions with the national stakeholders, will ensure that activities at the country level will be conducted in a smooth and efficient manner, and will be capacitated to do so for this project through the national PMUs. The responsible use of resources, in particular those of UNDP's funding partners, has highest priority in the Energy4Sahel Project, and will be subject to a continuous cost analysis and budget tracking – linked with sound risk management - throughout the lifetime of the project.

Project Management

At **regional level**, a Regional Project Management Unit (RPMU) will be coordinating and guiding the implementation of the Energy4Sahel Project. The RPMU will be physically based in Dakar, in the offices of the UNDP Sub-Regional Hub for West and Central Africa. The RPMU will oversee the Sahel Energy Technical Advisory Team composed of external experts/consultants working on-site or remotely with long- or short-term assignments to support technically the project and distributed in 4 thematic units (Electrification Implementation Unit, Clean Cooking Implementation Unit, Sustainable Energy Derisking Facility, Regional Accelerator Lab on Sustainable Energy). The Sahel Energy Technical Advisory Team will therefore be a "breathing" entity with flexible staff arrangements, depending on the current priorities during the course of the project. Other UN agencies and partners will also be invited to join the Sahel Energy Technical Advisory Team (or RPMU) to foster joint initiatives on energy in the region.

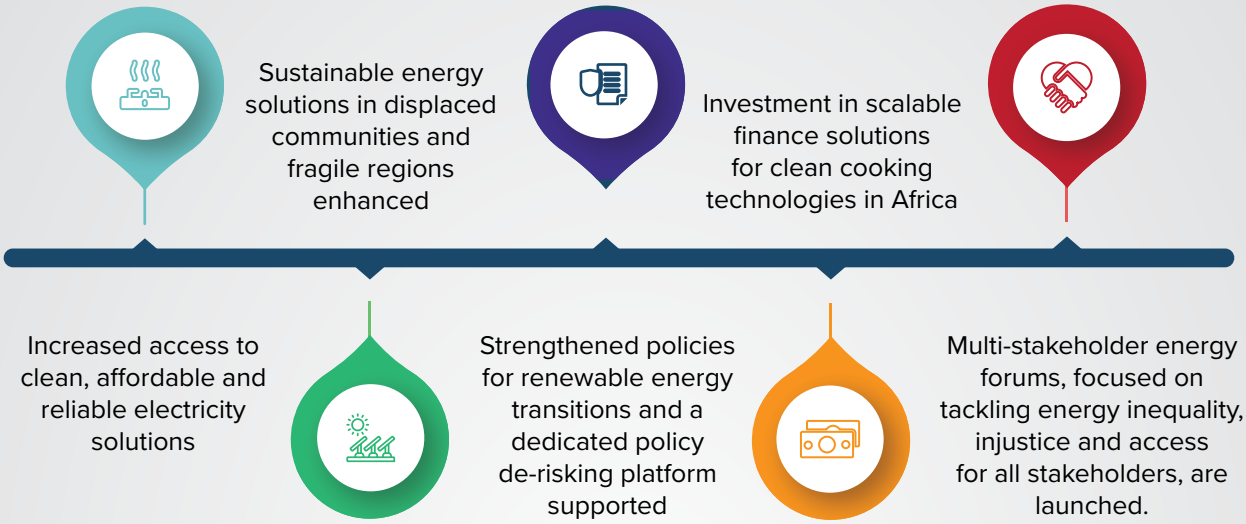
At **country level**, activities will be coordinated by National Project Management Unit (NPMUs) based in the respective Country Offices. Two full-time staffs (one International UN Volunteer and one National UN Volunteer) have been planned per country, in addition to a P3 Chief Technical Advisor (CTA) on energy that will be based in every other CO and support each CO on a half-time basis. Given the high variability of the planned activities, as well as the structural variety of the different countries, it can be expected that not all countries will equally implement all activities. This will also be reflected in the structural and personnel setup within the Country Offices who may, in certain circumstances, recruit additional personnel to perform the project activities including, when relevant, experts embedded into the teams of national implementing partners (such as the rural electrification agencies). It is expected that the abovementioned Sahel Energy Technical Advisory Team will play a key role in supporting technically national project teams, by deploying experts on demand to support country-level activities.

The team of the Energy4Sahel Project will benefit from support from UNDP HQ (in particular from the Sustainable Energy Hub currently being set up to ramp up UNDP's energy offer globally), RSCA Addis Ababa, Regional Hubs and Country Offices. As explained previously, UNDP will also actively seek to partner with other UN agencies for the implementation of this project, following the priority actions identified in the UN's renewable energy offer for the Sahel developed in the scope of the UNISS framework. Detailed governance arrangements of the Energy4Sahel Project are outlined in Section VIII (Governance and Management Arrangements).

Energy4Sahel

RESULTS FRAMEWORK

Results Framework[52] Intended Outcome as stated in the Regional Programme Results and Resource Framework:
UNDP Strategic Plan 2022-2025: Output 5.1.1: Number of people, who gained access to clean, affordable and sustainable energy; Output 5.1.2: Number of people, who benefitted from services from clean, affordable and sustainable energy; Output 5.2.1: Increase (in megawatt) in installed renewable energy capacity per technology.
Regional Programme for Africa (2018-2021): Results and Resources Framework, Outcome 2: Regional growth is inclusive, sustainable, with reduced economic inequalities, and characterised by structural transformation;
Africa's Promise: The UNDP Renewed Strategic Offer in Africa, Strategic Impact Area of Affordable and Sustainable Energy:



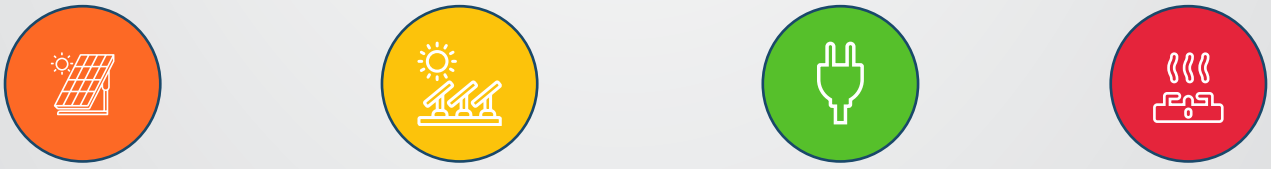
Outcome indicators as stated in the Regional Results and Resources Framework, including baseline and targets:
Regional Programme for Africa (2018-2021): Results and Resources Framework, Indicator: Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production;

Applicable Output(s) from the UNDP Strategic Plan 2022-2025: Output 5.1.1: Number of people, who gained access to clean, affordable and sustainable energy; Output 5.1.2: Number of people, who benefitted from services from clean, affordable and sustainable energy; Output 5.2.1: Increase (in megawatt) in installed renewable energy capacity per technology.

Project title and Atlas Project Number: Regional Project on Sustainable Energy for the Sahel (Energy4Sahel Project) – ATLAS Project Number: 00129783

Overall Project Objective: Sustainable socioeconomic growth and poverty reduction through increased access to clean energy in the Sahel

Project Outcomes



Gender marker: All the Outputs of this results framework can be considered as having a gender marker GEN2

52 UNDP publishes its project information (indicators, baselines, targets and results) to meet the International Aid Transparency Initiative (IATI) standards.

EXPECTED OUTPUTS	OUTPUT INDICATORS	BASELINE		TARGETS (by frequency of data collection)					
		Value	Year	Year 1	Year 2	Year 3	Year 4	Year 5	FINAL
Outcome 1: Enhanced enabling environment for the deployment of off-grid renewable energy solutions.									
Output 1.1: Partnerships and stakeholders coordination in Interventions in the off-grid clean energy sector are increased and strengthened	1.1.1. Regional multi-stakeholder coordination platform/Community of Practice created and meeting regularly	0	2021	1	0	0	0	0	1
	1.1.2. Regional multi-stakeholder coordination platform/Community of Practice institutionalized (permanent secretariat, operating autonomously with own budget)	0	2021	0	0	0	0	1	1
	1.1.3. Number of events and knowledge products created by the platform (thematic webinars, reports, policy papers, etc.) besides regular meetings	0	2021	6	12	12	12	12	54
	1.1.4 Number of national multi-stakeholder coordination platforms created or strengthened and meeting regularly	TBC	2021	5	5	0	0	0	10
	1.1.5 National multi-stakeholder coordination platforms institutionalized and operating autonomously with own budget	TBC	2021	0	0	0	5	5	10
	1.1.6 Number of research projects and studies supported	0	2021	6	6	6	6	6	30
	1.1.7 Total number of researchers (from the Sahel) participating / contributing to the various activities (disaggregated by gender)	0	2021	25	25	25	25	25	125 (min 40% women)
Output 1.2: Policy and financial derisking instruments are designed and enforced to unlock investments in the off-grid clean energy sector	1.2.1. Number of DREI analysis studies on mini-grids and SHSs conducted or updated	2	2021	6	6	6	0	20	40
	1.2.2. Number of Market analysis and diagnosis on enabling conditions for access to clean cooking conducted	TBC	2021	5	5	0	0	0	10
	1.2.3. Number of policy derisking instruments on off-grid electricity developed and endorsed by the governments.	TBC	2021	0	2	4	4	0	10
	1.2.4. Number of policy derisking instruments on clean cooking developed and endorsed by the governments	TBC	2021	0	2	4	4	0	10
	1.2.5. Number of financial derisking instruments on off-grid electricity developed and endorsed and implemented with financial partners	TBC	2021	0	2	4	4	0	10
	1.2.6. Amount leveraged to capitalize the financial derisking instruments on off-grid electricity (in USD)	0	2021	0	6,000,000	12,000,000	12,000,000	0	30,000,000
	1.2.7. Number of financial derisking instruments on clean cooking developed and endorsed and implemented with financial partners	TBC	2021	0	2	4	4	0	10
	1.2.8. Amount leveraged to capitalize the financial derisking instruments on clean cooking (in USD).	0	2021	0	12,000,000	24,000,000	24,000,000	0	60,000,000
Output 1.3: Innovation, entrepreneurship and skills building in the clean energy sector are fostered especially for women and the youth	1.3.1. Number of young people (from vulnerable or isolated communities) trained (disaggregated by gender and age group)	TBC	2021	0	0	3,000	3,000	3,000	9,000 (min 40% women and 60% youth [2])
	1.3.2. Innovation challenges, energy hackathons for Sahel entrepreneurs: Number of country events conducted the 10 Sahel countries	0	2021	10	20	20	20	20	90
	1.3.3. Number of entrepreneurs supported to develop innovations and prototypes for clean cooking (disaggregated by gender and age group)	0	2021	30	60	60	60	60	270 (min 40% women and 60% youth)
Output 1.4: Improved Government planning and policy design in off-grid electrification and clean cooking through increased access to reliable data and information platforms	1.4.1. Number of baseline assessment conducted to identify data needs.	TBC	2021	10	0	0	0	0	10
	1.4.2. Number of operational energy information, modelling and monitoring system (all data and indicators are up-to-date and can be visualized)	TBC	2021	0	2	4	4	2	10
	1.4.3. Number of civil officers/agents trained to use the energy information system (disaggregated by gender and age group)	TBC	2021	0	100	100	100	100	400 (min 40% women and 60% youth)
	1.4.4. National governments develop and endorse their national Integrated Energy Plans on basis of informed decision making supported by the energy information platforms.	TBC	2021	0	0	3	3	4	10

EXPECTED OUTPUTS	OUTPUT INDICATORS	BASELINE		TARGETS (by frequency of data collection)					
		Value	Year	Year 1	Year 2	Year 3	Year 4	Year 5	FINAL
Outcome 2: Improved public services through accelerated access to sustainable energy in vulnerable communities									
Output 2.1: Improved health services through increased access to sustainable electricity in rural health facilities	2.1.1. Number of rural schools electrified with standalone systems	TBC	2021	100	300	300	300	0	1,000
Output 2.2: Improved education services through increased access to sustainable electricity in rural public schools	2.2.1. Number of rural health centers electrified with standalone systems	TBC	2021	50	150	150	150	0	500
Outcome 3: Increased socio-economic development in rural areas through access to green productive use of energy and the promotion of the ecovillage model									
Output 3.1: Improved access to green productive use of energy through the deployment of renewable energy mini-grids	3.1.1. Number of priority villages for mini-grids identified	0	2021	75	250	300	300	75	1,000
	3.1.2. Number of mini-grids implemented	0	2021	0	50	200	250	200	700
	3.1.3. Number of connections to mini-grids	0	2021	0	5,000	20,000	25,000	20,000	70,000
	3.1.4. Number of people getting access to electricity through mini-grids (Tier 2+) (disaggregated by gender)	0	2021	0	30,000	120,000	150,000	120,000	420,000
	3.1.5. Number of jobs created through mini-grids (disaggregated by gender)	0	2021	0	1,250	5,000	6,250	5,000	17,500
Output 3.2: Rural value chains are enhanced through targeted interventions to support green productive use	3.2.1. Number of villages receiving standalone systems for powering productive use appliances	0	2021	50	200	200	200	50	700
	3.2.2. Number of people getting access to electricity through SHS or other Tier 1 equipment (disaggregated by gender)	0	2021	6,250	150,000	150,000	150,000	37,500	525,000
	3.2.3. Number of jobs created through standalone systems (disaggregated by gender)	0	2021	600	2,400	2,400	2,400	600	8,400
Output 3.3: An integrated approach to energy access and the energy-water-food nexus are enhanced through the promotion of the ecovillage model	3.3.1. Number of assessment studies / implementation plans conducted to identify suitable communities to be further developed into ecovillages.	0	2021	50	50	0	0	0	100
	3.3.2. Total number of renewable-energy powered ecovillage implemented	0	2021	0	0	10	40	50	100
	3.3.3. Number of people getting access to electricity in ecovillages (Tier 2+) (disaggregated by gender)	0	2021	0	0	6,000	24,000	30,000	60,000
	3.3.4. Number of jobs created through mini-grids (disaggregated by gender)	0	2021	0	0	1,000	4,000	5,000	10,000
	3.3.5. Number of feasibility studies conducted on national green economic hubs in selected Sahel countries.	0	2021	0	0	2	0	0	2
	3.3.6. Number of green economic hub pilot projects implemented or under implementation.	0	2021	0	0	0	1	1	2
	3.3.7. Number of direct jobs created through the implementation of green energy hubs (disaggregated by gender)	0	2021	0	0	0	2,000	2,000	4,000
	3.3.8. Number ecovillage scale-up plans developed	0	2021	0	0	0	0	10	10
Outcome 4: Priority communities in the Sahel have an increased access to clean cooking fuels and technologies									
Output 4.1: Sahel-based clean cooking entrepreneurs supported to developed advanced solutions meeting both health and energy standards	4.1.1. Number of PPP frameworks with Sahelian innovators developing prototypes for clean cooking solutions	0	2021	6	30	24	0	0	60
	4.1.2. Total number of direct jobs created through manufacturing of new/innovative clean cooking solutions (disaggregated by gender)	0	2021	100	1500	1200	0	0	3,000
Output 4.2: Clean cooking solutions disseminated at scale in priority areas in the Sahel	4.2.1. Number of people benefiting from clean cooking systems disseminated to the households in the Sahel through the project (disaggregated by gender)	0	2021	0	50,000	200,000	300,000	200,000	750,000

[1] This results framework is indicative at this stage and will be refined in light of the diagnostics and baseline analysis conducted at the beginning of the project. In particular, the number of jobs and beneficiaries will need to be re-assessed within the framework of a socio-economic inception analysis at the start of the project. This analysis shall include a methodology to evaluate, count and monitor the beneficiaries and jobs created through sustainable energy deployment in the Sahel.

[2] In this project, we understand as "youth" those persons between the ages of 15 and 24 years. This follows the definition used by the UN for statistical purposes (see https://www.un.org/en/global-issues/youth).

MONITORING AND EVALUATION

In accordance with UNDP's programming policies and procedures, the project will be monitored through the following monitoring and evaluation plans:

[Note: monitoring and evaluation plans should be adapted to project context, as needed]

Monitoring Plan

Note: An annual budget of USD 100,000 has been included in the Multi-Year Workplan (see Section VII) to cover the monitoring activities detailed below. This adds to continuous activity-level monitoring tasks whose costs will depend on the activities and have therefore been included directly in the activities budget.

MONITORING ACTIVITY	PURPOSE	FREQUENCY	EXPECTED ACTION	PARTNERS (If Joint)	COST
Track results progress	Progress data against the results indicators in the results framework will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly/ Semi-annually.	Slower than expected progress will be addressed by project management.	N/A	N/A
Monitor and Manage Risk	Identify specific risks that may threaten achievement of intended results. Identify and monitor risk management actions using a risk log. This includes monitoring measures and plans that may have been required as per UNDP's Social and Environmental Standards. Audits will be conducted in accordance with UNDP's audit policy to manage financial risk.	Quarterly	Risks are identified by project management and actions are taken to manage risk. The risk log is actively maintained to keep track of identified risks and actions taken.	N/A	N/A
Learn	Knowledge, good practices and lessons will be captured regularly, as well as actively sourced from other projects and partners and integrated back into the project.	At least annually	Relevant lessons are captured by the project team and used to inform management decisions.	N/A	N/A
Annual Project Quality Assurance	The quality of the project will be assessed against UNDP's quality standards to identify project strengths and weaknesses and to inform management decision making to improve the project.	Annually	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.	N/A	N/A
Review and Make Course Corrections	Internal review of data and evidence from all monitoring actions to inform decision making.	At least annually	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.	N/A	N/A
Project Report	A progress report will be presented to the Project Board and key stakeholders, consisting of progress data showing the results achieved against pre-defined annual targets at the output level, the annual project quality rating summary, an updated risk long with mitigation measures, and any evaluation or review reports prepared over the period.	Annually, and at the end of the project (final report)	Performance data, risks, lessons and quality will be discussed by the project board and used to make course corrections.	N/A	N/A
Project Review (Project Board)	The project's governance mechanism (i.e., project board) will hold regular project reviews to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the project. In the project's final year, the Project Board shall hold an end-of project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences.	Specify frequency (i.e., at least annually)	Any quality concerns or slower than expected progress should be discussed by the project board and management actions agreed to address the issues identified.	N/A	N/A

Evaluation Plan

EVALUATION ACTIVITY	PARTNERS (If Joint)	RELATED STRATEGIC PLAN OUTPUT	UNDAF/CPD OUTCOME	PLANNED COMPLETION DATE	KEY EVALUATION STAKEHOLDERS	COST AND SOURCE OF FUNDING
Project Mid-Term Evaluation	ALL	**Output 5.1.1:** Number of people, who gained access to clean, affordable and sustainable energy; **Output 5.1.2:** Number of people, who benefitted from services from clean, affordable and sustainable energy; **Output 5.2.1:** Increase (in megawatt) in installed renewable energy capacity per technology	Regional Programme for Africa (2018-2021) RRF, Outcome 2	Mid-Year 3	UNDP, Project Steering Committee, Governments, Beneficiaries, Partners	USD 250,000
Project Final Evaluation	ALL			End of Year 5		USD 250,000

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MULTI-YEAR WORK PLAN

Note:[53, 54] All Outputs of this Project can be considered with a gender marker **GEN2.**

EXPECTED OUTPUTS	PLANNED ACTIVITIES	BUDGET USD					
		Y1	Y2	Y3	Y4	Y5	TOTAL USD
OUTCOME 1: Enhanced enabling environment for the deployment of off-grid renewable energy solutions.							
Output 1.1: Interventions in the off-grid clean energy sector are intensified through increased partnerships and stakeholders coordination	Activity 1.1.1: Create and operationalize a regional multi-stakeholder coordination platform /CoP on off-grid clean energy (incl. chapters on electrification, clean cooking and data for energy planning).	70,000	70,000	70,000	70,000	70,000	**350,000**
	Activity 1.1.2: Create or strengthen national multi-stakeholder coordination and consultation platforms on off-grid clean energy in the 10 countries.	400,000	400,000	400,000	400,000	400,000	**2,000,000**
	Activity 1.1.3: Build and/or intensify partnerships with academia, think-tanks and research centers to promote evidence-based solutions to sustainable development challenges in the energy sector.	165,600	331,200	331,200	331,200	331,200	**1,490,400**
	Sub-Total for Output 1.1	**635,600**	**801,200**	**801,200**	**801,200**	**801,200**	**3,840,400**
Output 1.2: Policy and financial derisking instruments are designed and enforced to unlock investments in the off-grid clean energy sector	Activity 1.2.1: Conduct or update a DREI analysis on mini-grids and SHSs in the 10 countries.	300,000	300,000	300,000	300,000	500,000	**1,700,000**
	Activity 1.2.2: Conduct a market analysis and diagnosis on enabling conditions for access to clean cooking in the 10 countries.	180,000	420,000	0	0	0	**600,000**
	Activity 1.2.3: Develop priority policy derisking instruments on access to off-grid electricity and clean cooking and promote their endorsement in the region.	150,000	900,000	1,500,000	1,350,000	600,000	**4,500,000**
	Activity 1.2.4: Develop priority financial derisking instruments (including aggregation schemes) on access to electricity and clean cooking and promote their endorsement in the 10 countries.	200,000	1,200,000	2,000,000	1,800,000	800,000	**6,000,000**
	Sub-Total for Output 1.2	**830,000**	**2,820,000**	**3,800,000**	**3,450,000**	**1,900,000**	**12,800,000**
Output 1.3: Innovation, entrepreneurship and skills building in the clean energy sector are fostered especially for women and the youth	Activity 1.3.1: Conduct training/mentorship programs to build skills and increase employability of the youth in the clean energy sector.	175,000	1,100,000	4,500,000	4,500,000	4,500,000	**14,775,000**
	Activity 1.3.2: Foster innovations and entrepreneurship to promote local marketable solutions to solve the energy gap.	1,400,000	2,800,000	2,800,000	2,800,000	2,800,000	**12,600,000**
	Sub-Total for Output 1.3	**1,575,000**	**3,900,000**	**7,300,000**	**7,300,000**	**7,300,000**	**27,375,000**
Output 1.4: Governmental institutions have an increased access to reliable data on off-grid electrification and clean cooking to support their planning and policy design	Activity 1.4.1: Conduct a baseline assessment in each country to identify data needs for the planning of energy access activities.	120,000	120,000	0	0	0	240,000
	Activity 1.4.2: Operationalize an energy information, modelling and monitoring system in the 10 countries, covering both electrification and clean cooking.	582,000	2,082,000	2,082,000	2,082,000	2,082,000	8,910,000
	Activity 1.4.3: Develop or strengthen national Integrated Energy Plans on electrification and clean cooking in the 10 countries.	0	1,000,000	1,100,000	200,000	200,000	2,500,000
	Sub-Total for Output 1.4	**702,000**	**3,202,000**	**3,182,000**	**2,282,000**	**2,282,000**	**11,650,000**
GMS OUTCOME 1 (8%)		**299,408**	**857,856**	**1,206,656**	**1,106,656**	**982,656**	**4,453,232**
SUBTOTAL OUTCOME 1		**4,042,008**	**11,581,056**	**16,289,856**	**14,939,856**	**13,265,856**	**60,118,632**
OUTCOME 2: Improved public services through accelerated access to sustainable energy in vulnerable communities							
Output 2.1: Improved health services through increased access to sustainable electricity in rural health facilities	Activity 2.1.1: Conduct an energy needs assessment and feasibility study to design appropriate "Energy as a Service" (EaaS) models for healthcare facilities	1,050,000	1,400,000	1,050,000	0	0	3,500,000
	Activity 2.1.2: Mobilize partners and resources and deploy standalone renewable energy solutions in priority health centers through innovative EaaS models	0	8,100,000	10,800,000	8,100,000	0	27,000,000
	Sub-Total for Output 2.1	**1,050,000**	**9,500,000**	**11,850,000**	**8,100,000**	**0**	**30,500,000**
Output 2.2: Improved education services through increased access to sustainable electricity in rural public schools	Activity 2.2.1: Conduct an energy needs assessment and feasibility study to design appropriate "Energy as a Service" (EaaS) models for rural schools	600,000	800,000	600,000	0	0	2,000,000
	Activity 2.2.2: Mobilize partners and resources and deploy standalone renewable energy solutions in priority rural schools through innovative EaaS models	0	5,400,000	7,200,000	5,400,000	0	18,000,000
	Sub-Total for Output 2.2	**600,000**	**6,200,000**	**7,800,000**	**5,400,000**	**0**	**20,000,000**
GMS OUTCOME 2 (8%)		**132,000**	**1,256,000**	**1,572,000**	**1,080,000**	**0**	**4,040,000**
SUBTOTAL OUTCOME 2		**1,782,000**	**16,956,000**	**21,222,000**	**14,580,000**	**0**	**54,540,000**
OUTCOME 3: Increased socio-economic development in rural areas through access to green productive use of energy and the promotion of the ecovillage model							
Output 3.1: Improved access to green productive use of energy through the deployment of renewable energy mini-grids	Activity 3.1.1: Conduct a mapping and pre-feasibility study to identify priority villages eligible for electrification through mini-grids	0	1,200,000	1,200,000	600,000	0	3,000,000
	Activity 3.1.2: Deploy mini-grid pilots in priority communities, leveraging the Africa Minigrids Program	0	16,100,000	24,150,000	24,150,000	16,100,000	80,500,000
	Activity 3.1.3: Scale-up mini-grids deployment based on the learnings from the pilots	0	0	150,000	200,000	150,000	500,000
	Sub-Total for Output 3.1	**0**	**17,300,000**	**25,500,000**	**24,950,000**	**16,250,000**	**84,000,000**

53 Cost definitions and classifications for programme and development effectiveness costs to be charged to the project are defined in the Executive Board decision DP/2010/32

54 Changes to a project budget affecting the scope (outputs), completion date, or total estimated project costs require a formal budget revision that must be signed by the project board. In other cases, the UNDP programme manager alone may sign the revision provided the other signatories have no objection. This procedure may be applied for example when the purpose of the revision is only to re-phase activities among years.

Output 3.2: Rural value chains are enhanced through targeted interventions to support green productive use	Activity 3.2.1: Assess priority vulnerable communities ineligible for mini-grids to determine alternative options to support green productive use	0	800,000	800,000	400,000	0	2,000,000
	Activity 3.2.2: Deploy standalone renewable energy solutions for green productive use in priority communities	0	2,400,000	4,800,000	4,800,000	4,800,000	16,800,000
	Sub-Total for Output 3.2	**0**	**3,200,000**	**5,600,000**	**5,200,000**	**4,800,000**	**18,800,000**
Output 3.3: An integrated approach to energy access and the energy-water-food nexus are enhanced through the promotion of the ecovillage model	Activity 3.3.1: Transform selected villages into ecovillages and mobilize partners for long-term development, linking with ongoing initiatives such as the Great Green Wall	0	6,000,000	12,000,000	36,000,000	6,000,000	60,000,000
	Activity 3.3.2: Develop Green Economic Hubs pilots as a scale-out option for selected ecovillages	0	0	1,800,000	1,800,000	0	3,600,000
	Activity 3.3.3: Develop a replication and scale-up/scale-out plan for ecovillages	0	0	0	500,000	500,000	1,000,000
	Sub-Total for Output 3.3	**0**	**6,000,000**	**13,800,000**	**38,300,000**	**6,500,000**	**64,600,000**
GMS OUTCOME 3 (8%)		**0**	**2,120,000**	**3,592,000**	**5,476,000**	**2,204,000**	**13,392,000**
SUBTOTAL OUTCOME 3		**0**	**28,620,000**	**48,492,000**	**73,926,000**	**29,754,000**	**180,792,000**
OUTCOME 4: Priority communities in the Sahel have an increased access to clean cooking fuels and technologies							
Output 4.1: Sahel-based clean cooking entrepreneurs supported to developed advanced solutions meeting both health and energy standards	Activity 4.1.1: Gather lessons learnt from previous projects on clean cooking in the Sahel	150,000	350,000	0	0	0	500,000
	Activity 4.1.2: Conduct a market analysis on clean cooking solutions and companies in the Sahel with highest potential to scale	210,000	490,000	0	0	0	700,000
	Activity 4.1.3: Develop a PPP program with relevant regional and national stakeholders to support selected clean cooking entrepreneurs	0	2,400,000	4,800,000	4,800,000	0	12,000,000
	Sub-Total for Output 4.1	**360,000**	**3,240,000**	**4,800,000**	**4,800,000**	**0**	**13,200,000**
Output 4.2: Clean cooking solutions disseminated at scale in priority areas in the Sahel	Activity 4.2.1: Conduct a baseline assessment to identify priority communities to benefit from clean cooking interventions	180,000	420,000	0	0	0	600,000
	Activity 4.2.2: Mobilize partners and financing to disseminate advanced clean cooking solutions at scale	0	1,200,000	2,400,000	3,600,000	4,800,000	12,000,000
	Sub-Total for Output 4.2	**180,000**	**1,620,000**	**2,400,000**	**3,600,000**	**4,800,000**	**12,600,000**
GMS OUTCOME 4 (8%)		**43,200**	**388,800**	**576,000**	**672,000**	**384,000**	**2,064,000**
SUBTOTAL OUTCOME 4		**583,200**	**5,248,800**	**7,776,000**	**9,072,000**	**5,184,000**	**27,864,000**
MONITORING AND EVALUATION							
Monitoring & Evaluation	Monitoring and Evaluation	125,000	125,000	375,000	125,000	375,000	1,125,000
GMS M&E (8%)		**10,000**	**10,000**	**30,000**	**10,000**	**30,000**	**90,000**
SUBTOTAL EVALUATION		**135,000**	**135,000**	**405,000**	**135,000**	**405,000**	**1,215,000**
PROJECT MANAGEMENT							
Project Management Unit	1 Project Manager (P5)	300,000	300,000	300,000	300,000	300,000	1,500,000
	1 Operations Associate (G7)	60,000	60,000	60,000	60,000	60,000	300,000
	1 M&E/Digital Expert (IUNV)	60,000	60,000	60,000	60,000	60,000	300,000
	1 Communication Expert (IUNV)	60,000	60,000	60,000	60,000	60,000	300,000
	1 Partnerships Expert (IUNV)	60,000	60,000	60,000	60,000	60,000	300,000
	5 Energy CTAs P3	1,200,000	1,200,000	1,200,000	1,200,000	1,200,000	6,000,000
	10 National Coordinators (IUNV)	600,000	600,000	600,000	600,000	600,000	3,000,000
	10 Project Associates (NUNV)	250,000	250,000	250,000	250,000	250,000	1,250,000
Technical Expertise (Consultants for advisory/ supervision/oversight support)	1 Rural Electrification Expert - Senior International	130,000	130,000	130,000	130,000	130,000	650,000
	1 Rural Electrification Expert - Senior Regional	130,000	130,000	130,000	130,000	130,000	650,000
	1 Clean Cooking Expert - Senior International	130,000	130,000	130,000	130,000	130,000	650,000
	1 Clean Cooking Expert - Senior Regional	130,000	130,000	130,000	130,000	130,000	650,000
	1 Energy Finance/Economics Expert - Senior International	110,000	110,000	110,000	110,000	110,000	550,000
	1 Energy Regulation Expert - Senior International	85,000	85,000	85,000	85,000	85,000	425,000
	1 Rural development Expert - Senior Regional	90,000	90,000	90,000	90,000	90,000	450,000
	Multidisciplinary Experts (Agriculture, Forestry, Sociologist, Environmental, Gender ...)	500,000	500,000	500,000	500,000	500,000	2,500,000
Miscelleneous	Communication	145,368	150,000	150,000	150,000	150,000	745,368
	Office equipment + ICT + rental + common charges	650,000	650,000	650,000	650,000	650,000	3,250,000
	Travels	400,000	400,000	400,000	400,000	400,000	2,000,000
SUBTOTAL PROJECT MANAGEMENT		**5,090,368**	**5,095,000**	**5,095,000**	**5,095,000**	**5,095,000**	**25,470,368**
TOTAL		**11,632,576**	**67,635,856**	**99,279,856**	**117,747,856**	**53,703,856**	**350,000,000**

Energy4Sahel

GOVERNANCE AND MANAGEMENT ARRANGEMENTS

The Energy4Sahel Project will be governed by a Project Board, providing strategic orientation to and overseeing the activities of the Energy4Sahel Project Management Unit (PMU). The latter is organized as a two-level structure, with a dedicated regional project management unit within the UNDP Dakar Sub Regional Hub, as well as ten distinct national project management units (constituted essentially by the Energy4Sahel National Coordinators, Project Associates and half-time Energy Chief Technical Advisors) being responsible to plan and coordinate the activities at the country level.

Project Board

The overall governance and strategic leadership will be ensured by the Project Board that will be chaired by the Regional Director (RBA). The Board will be composed by representatives of the regional bodies (AU, ECOWAS/ECREEE, ECCAS/CEMAC, G5 Sahel) and the 10 targeted countries' governments. It will also comprise the UNDP RRs, UNDP Dakar Sub Regional Hub Manager, the Regional Service Centre for Africa (RSCA) Director. The Energy4Sahel Project will also seek to include representatives of other stakeholders on the Project Board, particularly representatives of partnering development agencies (including UN agencies), as well as industry associations and other umbrella organizations of the rural electrification and clean cooking sectors (see Figure 4). The precise composition of the Project Board will be determined at the inception phase of the project.

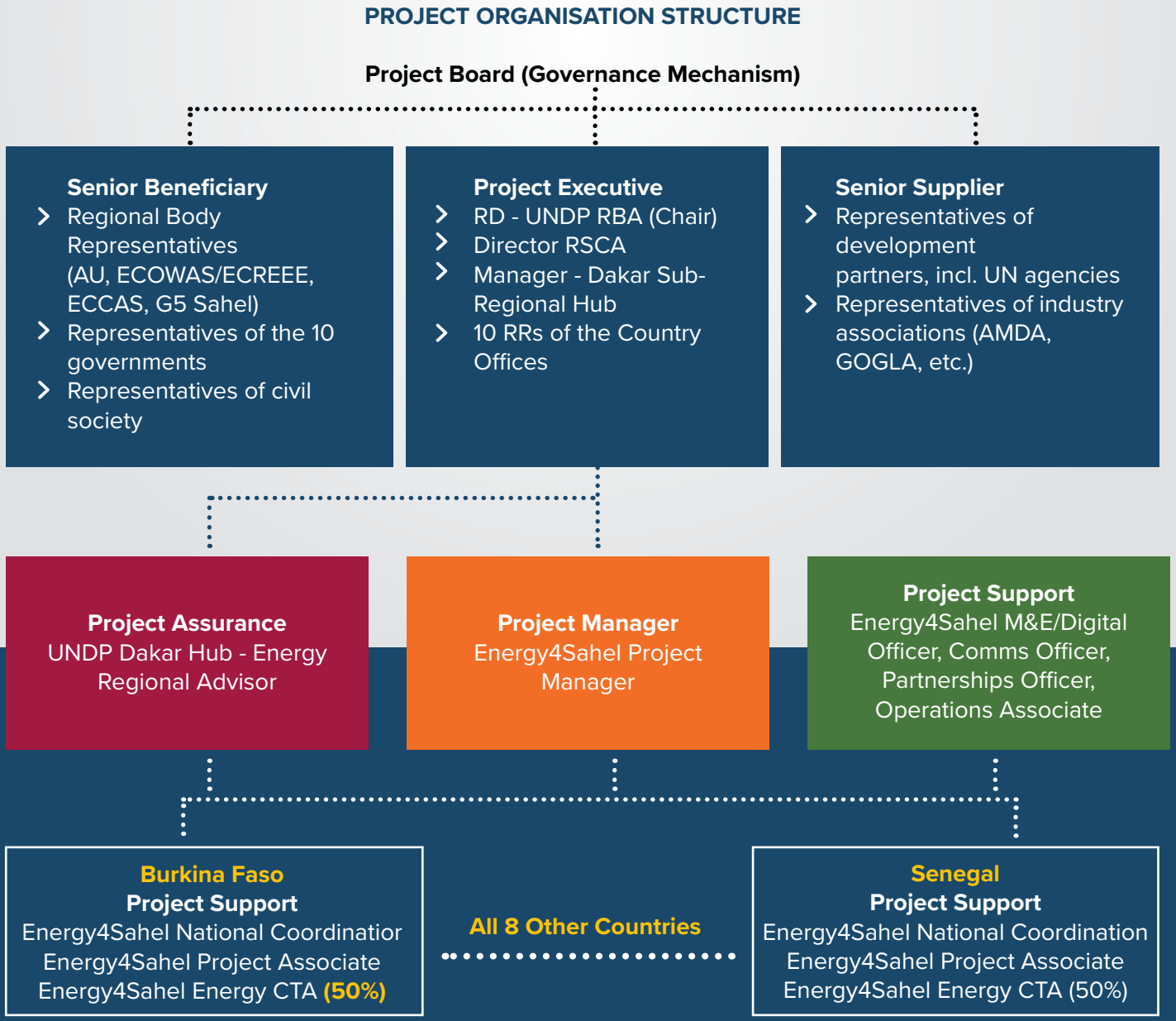

Figure 4: Project Organisation Structure

The Project Board will meet twice a year to assess progress and provide strategic orientation to the regional and country level technical teams with regards to achievement of the project objectives and quality assurance.

Project Management Structure

UNDP will establish a Regional Project Management Unit (RPMU) within the UNDP Dakar Sub Regional Hub under the overall supervision of the UNDP Dakar Sub Regional Hub Manager. In addition, a Sahel Energy Technical Advisory Team (SETAT) reporting to the RPMU will be created, composed of on-site or remote technical experts in support of the project. The RPMU, led by the Energy4Sahel Project Manager, will be responsible for the day-to-day implementation of the Energy4Sahel Project and provide operational and advisory support to the project coordination units at national level.

At **regional level**, the Energy4Sahel project team (RPMU and SETAT) will feature a cross-functional structure accommodating the expertise required to drive the electrification and clean cooking agendas, along with dedicated facilities to support the derisking and innovation focus of this project. By combining conceptual expertise and implementation strength, the team is expected to drive the efficient roll-out of UNDP's strategy for sustainable energy in the Sahel. The SETAT will be composed of 4 complementary technical units.

01

Electrification Implementation Unit: The Electrification Implementation Unit will be dedicated to off-grid electrification and will be in charge of designing and implementing the project's interventions in the area of rural electrification, as well as establishing and nurturing partnerships and alliances with national and regional stakeholders, such as the national rural electrification agencies. The unit will work closely with the other units to systematically apply barrier removal approaches and innovative concepts into its interventions.

02

Clean Cooking Implementation Unit: The Clean Cooking Implementation Unit will have a similar role as the Electrification Implementation Unit but with focus on clean cooking. Importantly, this unit will also work closely with the Electrification Implementation Unit on the intersection between clean cooking and electrification, for example when exploring the potential of electricity-powered cooking solutions for the Sahel.

03

Sustainable Energy Derisking Facility (SEDF): The SEDF will be in charge of supporting the design and implementation of policy and financial derisking instruments adapted to the countries' contexts in the Sahel, in order to facilitate investments into energy access projects in the Sahel. For the electrification part of the project, experts joining the SEDF will work on the application of the existing UNDP's DREI methodology for off-grid electrification, while for the clean cooking part, the experts will follow a less codified approach to identify a suitable basket of policy and financial derisking measures adapted to each country. This work may lead to some level of systematization and may result in a new DREI chapter on clean cooking. It is expected that during the 5-year duration of the Energy4Sahel Project, the SEFD will be composed of alternating teams of experts hired by UNDP, but also invited experts from the governments and from external partners, such as AfDB, UNEP, UNCDF and others.

04

Regional Accelerator Lab on Sustainable Energy: Inspired by the UNDP Accelerator Labs (AccLabs) initiative[55] (and aimed to work closely with the national AccLabs in the region), the Regional Accelerator Lab on Sustainable Energy will work on harnessing the creative potential of the youth to develop solutions for energy access in the Sahel. The Lab's precise agenda, which will be further detailed in the project's inception phase, will combine initiatives such as vocational trainings, energy hackathons, energy innovation challenges, etc. – to be organized with participants of the 10 Sahel countries – in order to support entrepreneur networks, start-up communities and talented individuals in the region. The youth will be incited to develop ideas, technical solutions or experiment social and financial models to address challenges in the Sahel's off-grid electricity and clean cooking sectors. A particular aim of this Lab is to create a collaborative environment of mutual learning across borders, and hence to contribute to strengthening the South-South and triangular cooperation in Sub-Saharan Africa. Potential partners of this activity will include national and international industry partners, or industry associations. In practice, the Regional Accelerator Lab on Sustainable Energy will be embedded in the UNDP Sahel Development Solution Lab (SAHELAB) hosted in the UNDP Dakar Sub-Regional Hub.

55 https://acceleratorlabs.undp.org

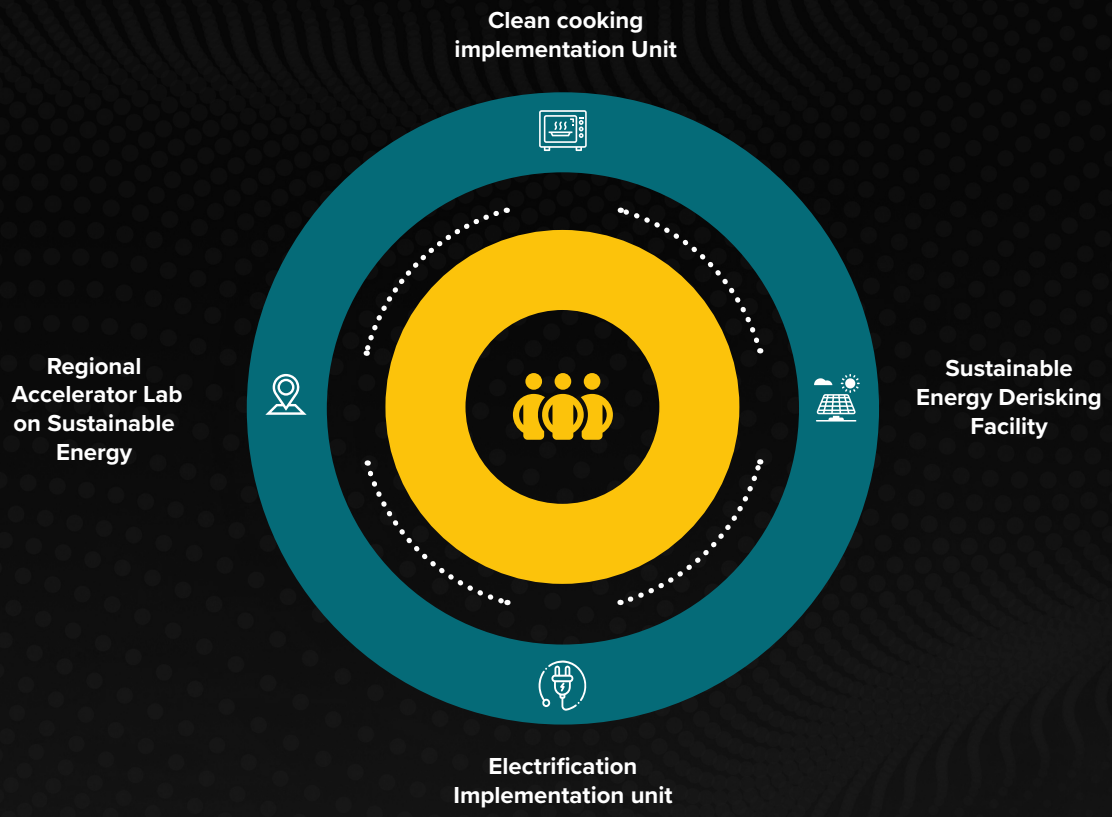

Figure 5: Management and advisory arrangement at regional level

Sahel Energy Technical Advisory Team (SETAT)

Regional Project Management Unit (RPMU)

The fixed staff (core team) of the Regional Project Management Unit (RPMU) of the Energy4Sahel project will consist of:

- 1 Project Manager (P5)
- 1 Operations Associate (G7)
- 1 M&E/Digital Expert (IUNV)
- 1 Communication Expert (IUNV)
- 1 Partnerships Expert (IUNV)

The flexible staff of the Sahel Energy Technical Advisory Team (SETAT) that will complement the RPMU will be specialized experts in key areas such as development and energy finance, rural electrification, clean cooking and gender. They will be hired on the basis of a competitive selection process and - depending on their assignment -, will either work on-site or remotely. This team will conduct a range of activities including but not limited to project scoping, design and formulation, project and budget management, advisory and support to the Country Offices, knowledge management, monitoring and evaluation and partnerships building.

At **national level,** UNDP will build on its network of Country Offices located in the 10 countries of the Sahel (Burkina Faso, Cameroun Gambia, Guinea, Mali, Mauritania, Niger, Nigeria, Chad, and Senegal) to deliver activities in the specific targeted zones. It will also capitalize on the network of the UNV programme in the region, through its West and Central Africa Regional Office (WACARO) and Field Units (FUs) in the targeted countries. For each Country Office, the project will recruit at least one National Coordinator (International UN Volunteer), one Project Associate (National UN Volunteer) and one half-time Chief Technical Advisor on Energy (P3). Additional staff – including external short-term or long-term experts – will be hired depending on the requirements of the activities.

Activities will be implemented by the RSCA in close collaboration and coordination with the regional and sub-regional institutions such as G5 Sahel, ECOWAS/ECREEE, ECCAS and AU. The project management structure will draw support and guidance from relevant staff within the UNDP's Regional Bureau for Africa (RBA), BPPS, CB, Regional Service Centre in Addis Ababa and the Dakar Sub-Regional Hub as part of the regional and global support mechanism. Importantly, the Energy4Sahel project management structure will be fully integrated in the UNDP Sustainable Energy Hub, in order to contribute to the sub-regional operationalization of the Energy Promise (see presentation of the Sustainable Energy Hub in Section I – Development Challenge).

LEGAL CONTEXT

This project forms part of an overall programmatic framework under which several separate associated country level activities will be implemented. When assistance and support services are provided from this Project to the associated country level activities, this document shall be the "Project Document" instrument referred to in: (i) the respective signed SBAAs for the specific countries; or (ii) in the Supplemental Provisions to the Project Document attached to the Project Document in cases where the recipient country has not signed an SBAA with UNDP, attached hereto and forming an integral part hereof. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by UNDP ("Implementing Partner") in accordance with its financial regulations, rules, practices and procedures only to the extent that they do not contravene the principles of the Financial Regulations and Rules of UNDP. Where the financial governance of an Implementing Partner does not provide the required guidance to ensure best value for money, fairness, integrity, transparency, and effective international competition, the financial governance of UNDP shall apply.

RISK MANAGEMENT

1. UNDP as the Implementing Partner will comply with the policies, procedures and practices of the United Nations Security Management System (UNSMS.)

2. UNDP as the Implementing Partner will undertake all reasonable efforts to ensure that none of the [project funds][56] [UNDP funds received pursuant to the Project Document][57] are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via **http://www.un.org/sc/committees/1267/aq_sanctions_list.shtml.** This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document.

3. Social and environmental sustainability will be enhanced through application of the UNDP Social and Environmental Standards (http://www.undp.org/ses) and related Accountability Mechanism (http://www.undp.org/secu-srm).

4. UNDP as the Implementing Partner will: (a) conduct project and programme-related activities in a manner consistent with the UNDP Social and Environmental Standards, (b) implement any management or mitigation plan prepared for the project or programme to comply with such standards, and (c) engage in a constructive and timely manner to address any concerns and complaints raised through the Accountability Mechanism. UNDP will seek to ensure that communities and other project stakeholders are informed of and have access to the Accountability Mechanism.

5. In the implementation of the activities under this Project Document, UNDP as the Implementing Partner will handle any sexual exploitation and abuse ("SEA") and sexual harassment ("SH") allegations in accordance with its regulations, rules, policies and procedures.

6. All signatories to the Project Document shall cooperate in good faith with any exercise to evaluate any programme or project-related commitments or compliance with the UNDP Social and Environmental Standards. This includes providing access to project sites, relevant personnel, information, and documentation.

7. UNDP as the Implementing Partner will ensure that the following obligations are binding on each responsible party, subcontractor and sub-recipient:

a. Consistent with the Article III of the SBAA [or the Supplemental Provisions to the Project Document], the responsibility for the safety and security of each responsible party, subcontractor and sub-recipient and its personnel and property, and of UNDP's property in such responsible party's, subcontractor's and sub-recipient's custody, rests with such responsible party, subcontractor and sub-recipient. To this end, each responsible party, subcontractor and sub-recipient shall:

   i. put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;

   ii. assume all risks and liabilities related to such responsible party's, subcontractor's and sub-recipient's security, and the full implementation of the security plan.

b. UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of the responsible party's, subcontractor's and sub-recipient's obligations under this Project Document.

c. In the performance of the activities under this Project, UNDP as the Implementing Partner shall ensure, with respect to the activities of any of its responsible parties, sub-recipients and other entities engaged under the Project, either as contractors or subcontractors, their personnel and any individuals performing services for them, that those entities have in place adequate and proper procedures, processes and policies to prevent and/or address SEA and SH.

56 To be used where UNDP is the Implementing Partner
57 To be used where the UN, a UN fund/programme or a specialized agency is the Implementing Partner

d. Each responsible party, subcontractor and sub-recipient will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, subcontractors and sub-recipients in implementing the project or programme or using the UNDP funds. It will ensure that its financial management, anti-corruption & anti-fraud policies are in place and enforced for all funding received from or through UNDP.

e. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to each responsible party, subcontractor and sub-recipient: (a) UNDP Policy on Fraud and other Corrupt Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. Each responsible party, subcontractor and sub-recipient agrees to the requirements of the above documents, which are an integral part of this Project Document and are available at www.undp.org.

f. In the event that an investigation is required, UNDP will conduct investigations relating to any aspect of UNDP programmes and projects. Each responsible party, subcontractor and sub-recipient will provide its full cooperation, including making available personnel, relevant documentation, and granting access to its (and its consultants', subcontractors' and sub-recipients') premises, for such purposes at reasonable times and on reasonable conditions as may be required for the purpose of an investigation. Should there be a limitation in meeting this obligation, UNDP shall consult with it to find a solution.

g. Each responsible party, subcontractor and sub-recipient will promptly inform UNDP as the Implementing Partner in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

Where it becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, each responsible party, subcontractor and sub-recipient will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). It will provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

h. UNDP will be entitled to a refund from the responsible party, subcontractor or sub-recipient of any funds provided that have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of this Project Document. Such amount may be deducted by UNDP from any payment due to the responsible party, subcontractor or sub-recipient under this or any other agreement. Recovery of such amount by UNDP shall not diminish or curtail any responsible party's, subcontractor's or sub-recipient's obligations under this Project Document. Where such funds have not been refunded to UNDP, the responsible party, subcontractor or sub-recipient agrees that donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities under this Project Document, may seek recourse to such responsible party, subcontractor or sub-recipient for the recovery of any funds determined by UNDP to have been used inappropriately, including through fraud or corruption, or otherwise paid other than in accordance with the terms and conditions of the Project Document.

Note: The term "Project Document" as used in this clause shall be deemed to include any relevant subsidiary agreement further to the Project Document, including those with responsible parties, subcontractors and sub-recipients.

i. Each contract issued by the responsible party, subcontractor or sub-recipient in connection with this Project Document shall include a provision representing that no fees, gratuities, rebates, gifts, commissions or other payments, other than those shown in the proposal, have been given, received, or promised in connection with the selection process or in contract execution, and that the recipient of funds from it shall cooperate with any and all investigations and post-payment audits.

j. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project or programme, the Government will ensure that the relevant national authorities shall actively investigate the same and take appropriate legal action against all individuals found to have participated in the wrongdoing, recover and return any recovered funds to UNDP.

k. Each responsible party, subcontractor and sub-recipient shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to its subcontractors and sub-recipients and that all the clauses under this section entitled "Risk Management Standard Clauses" are adequately reflected, mutatis mutandis, in all its sub-contracts or sub-agreements entered into further to this Project Document.

ANNEXES

Annex 1: Project Quality Assurance Report

See separate document.

Annex 2: Social and Environmental Screening Template

See separate document.

Annex 3: Risk Analysis

Following the standard **Risk Register template**.

#	DESCRIPTION	RISK CATEGORY	IMPACT & LIVELIHOOD = RISK LEVEL	RISK TREATMENT/ MANAGEMENT MEASURES	RISK OWNER
1	COVID-19 Operational Risk: COVID-19 has severely impacted the socio-political and economic landscape in the Sahel, thereby resulting in project implementation constraints.	Operational	Until a vaccine/cure for COVID-19 is widely available, and business can return to normal, COVID-19 will continue to impose risks and constraints on the implementation of initiatives including this project. L = 3 I = 4 Risk level: Substantial	On the strategic level: Explore new innovative ways to deal with the crisis, focus on solutions such as improving health /vaccination facilities with sustainable energies, fostering new modalities of project implementation, develop digital/ICT post-crisis solutions powered by renewable energies. On the project execution level: apply appropriate hygiene and safety precautions (mandatory masks, social distancing, etc.) while interacting with stakeholders. Reduce in-person workshops, technical working group meetings; maximize the use of virtual meetings. Limit travels and on-site peer-to-peer exchanges, especially in order to avoid transmission between urban and rural areas in the Sahel Limit the movement of international consultants (by maximizing contributions that can be carried out home-based); increase the use of local expertise as far as practicable. Generally: follow the UNDP, ERM COVID-19 Programmatic Risk Guidance to identify and manage COVID 19 related risks during the planning and implementation.	Project Management / Country Offices
2	Conflict-related security challenges: The Sahel region is currently facing serious conflict- related challenges.	Safety and Security	Armed conflict and terrorist attacks could endanger the safety of project staff and beneficiaries; moreover, it also jeopardizes the roll-out of implementation activities in rural areas. L = 3 I = 4 Risk level: Substantial	Carefully scrutinize the security situation at each implementation step, and on a country-by-country basis, hire professional security advice, work closely with partners, shift interventions to other areas or adapt to the security profile of the respective area (hotspot, at-risk-areas, unaffected areas).	Project Management / Country Offices
3	Political Instability Certain Sahel countries have a history of political instability. This can be linked with changes in government and policy reversal.	Political	Volatile political circumstances (instability, change of government) could impact UNDP assistance at country level or lead to potential policy reversals that may impact energy policy and discourage private investment. It remains to be mentioned that the impact of the instability risk on the overall performance (of a project with 10 countries) is to be estimated rather low, as long as the political instabilities remain limited to one country and do not propagate beyond. L = 3 I = 2 Risk level: Low	UNDP will use its existing management capacities and situation analysis tools and methodologies to assess the political economy of each selected country and tailor its activities accordingly, as a way of minimizing this risk. The project is designed and based on the national commitments and targets on electrification and renewable energy that have been adopted at high level, as well as in consultation with communities and local governance institutions ensuring that it is bottom-up and demand-driven. Any proposed revisions in the policies, as well as support on new policies and regulations by the project, will also have to secure the highest level of approval based on actual needs and realities at the ground level (communities and households).	Project Management / Country Offices
4	Regulatory Risks: Changes in the regulatory framework within the countries of operation	Regulatory	Unfavourable changes of regulations, non-transparent decisions and unclear roles and responsibilities of national/government institutions can slow down or hamper the implementation of the project L = 2 I = 3 Risk level: Moderate	Work towards improved regulations, adapt implementation approach or as last resort shift the focus of interventions to other countries.	Project Management / Country Offices
5	Missing stakeholder engagement	Social and Environmental	Low engagement/ motivation of the stakeholders and beneficiaries to participate in the activities of the project L = 2 I = 3 Risk level: Moderate	UNDP will address these risks by its management capacities and notably the experience of its Country Offices. Intensified Stakeholder participation processes, information and communication, trainings	Project Management / Country Offices

#	DESCRIPTION	RISK CATEGORY	IMPACT & LIVELIHOOD = RISK LEVEL	RISK TREATMENT/ MANAGEMENT MEASURES	RISK OWNER
6	Limited funding and other financial risks - also related to COVID-19	Financial	Expected funding could not be mobilized, leading to budget limitations. Dwindling budgets of financial institutions and donors, but also decreased ability of national partners and the target population to contribute (e.g. due to economic impact of COVID-19). Decreased ability to recover costs from beneficiaries (e.g. mini-grid users) to ensure sustainability, given the high level of poverty in the region. L = 3 I = 4 Risk level: Substantial	Reach out to other funding partners beyond the traditional partners (diversify sources), promote private sector engagement. Improve communication, increase the partners' confidence in the project and their willingness to provide financial support. The risk of the beneficiaries' decreased ability to pay can be taken into account while developing business models and derisking methods for the implementation of electrification or clean cooking activities.	Project Management
7	Project Governance Risks. National partners lack capacity to implement. Coordination issues due to the high number of stakeholders involved.	Organizational	There is a risk that the Implementing Partners – i.e. renewable energy agencies, ministries in the partner countries – do not have all the required institutional capacity to implement the project's activities Moreover, due to high number of participating countries, and consequently the high number of stakeholders, overall coordination and governance issues might arise (for instance in seeking consensus among stakeholders on the modalities of the planned activities) L = 3 I = 4 Risk level: Substantial	The project will adapt its collaboration to the expected capacity profile of the national partners, which will be assessed prior to engaging with them (based on previous working experience and mandatory assessments conducted by UNDP, e.g., HACT micro-assessments). In case of an anticipated lack of management capacities external support (e.g. more external consultants or responsible parties) may be considered. The coordination risk is mitigated through increased communication and interaction with the various stakeholders. If necessary, decision-making processes are facilitated by the Project Board where stakeholders are equally represented.	Project Management / Project Board
8	Climate Change related Risks The impacts of climate change are diverse, including incidence of extreme events that can be harmful to property/ infrastructure and agricultural production. These can have a direct bearing on various operations of the project.	Social and Environmental	Technical assets (e.g. mini-grids) can be damaged or completely destroyed by extreme weather events caused by climate change Moreover, the economic viability of the projects (e.g. electrification) is exposed to liquidity and creditworthiness risks of the agricultural end users. Their ability to pay for energy services could be significantly impaired as a consequence of dropping income due droughts, extreme flooding or other climate-induced weather hazards. L = 3 I = 3 Risk level: Moderate	The project will put emphasis on designing the technical assets (i.e. electricity infrastructure, solar power generator, electricity grids) in the most resilient way possible, that is by considering extreme weather events from the outset in the technical design specifications. The risk of impaired financial viability (due to climate-induced inability of users to pay for energy services) can be anticipated and considered in the financial model. This requires an individual risk analysis which will need to be established individually for each sub-project in the context of the Energy4Sahel project. The project will also create linkages and synergies with existing initiatives on resilience, climate change adaptation and disaster risk reduction carried out by UNDP and other partners in the region.	Project Management / Country Offices
9	Environmental hazards due to waste, land use and mismanagement of natural resources	Social and Environmental	The uncontrolled disposal of electronic and technological waste and specifically batteries is a well-know challenge for any electrification project in rural areas. The waste problematic might also arise if household cooking practices change due to the project's interventions in clean cooking. For the large-scale rural operations foreseen in this project (Green Energy Hubs), also land use issues and the usual environmental concerns about extensive agriculture (monocultures, use of pesticides, etc.) might appear on the agenda. L = 4 I = 3 Risk level: Moderate	The waste risk can be controlled by (1) committing private contractors (mini-grid installers and operators and cookstoves providers) to take back their products at the of their lifetime and to recycle them properly (2) developing an Environmental and Social Management Plan together with the national authorities on the environmentally-sound collection, storage and disposal of all electronic, electrical and technological waste, including rechargeable batteries. (3) by training and educating the beneficiaries how to collect and handle the waste locally. With regards to the environmental risks of the Green Energy Hubs, likewise an Environmental and Social Management Plan needs to be established before the launch of these projects. A thorough social and environmental screening and relevant management framework and plans will be completed at the inception phase of the project. A preliminary Social and Environmental Screening Procedure (SESP) has been conducted and is attached as Annex 2.	Project Management / Country Offices

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