Project Title: Towards Environmental Sustainability in Cambodia
Project Number: 00085640
Implementing Partner: National Council for Sustainable Development
Start Date: 01 Jan 2019 **End Date:** 31 Dec 2020 **PAC Meeting date: 29 Nov 2018**

Brief Description
While Cambodia has attained impressive economic growth over the last 20 years, it presently faces a new set of developmental challenges regarding its environment. The overall project objective is to strategically position Cambodia's path towards achieving the Sustainable Development Goals related to *1) natural resources management (NRM); 2) circular economy; and 2) clean, affordable and sustainable energy.* To achieve this overall objective, the project designs and tests *innovative* environmentally sustainable models in the targeted areas through public and private partnerships. Based on evaluating results, the project further identifies venues for scaling-up workable models. The project will attain the following three outputs: • **Output 1**: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM • **Output 2:** Waste reduced, recycled and reused through application of circular economy models • **Output 3:** Improved access to clean, affordable, and sustainable energy for the rural poor

Contributing Outcome (UNDAF/CPD): By 2023, women and men in Cambodia, in particular the marginalized and vulnerable, live in a safer, healthier, more secure and ecologically balanced environment with improved livelihoods, and are resilient to natural and climate change related trends and shocks.

Indicative Output(s): Output 2.1: Targeted cities and urban centers prepare and operationalize solid waste management plans to reduce environmental pollution impact from solid waste.
Output 2.3: Rules and regulations formulated and adopted for forest/natural resource management and market solutions developed for conservation and renewable energy.

Gender Marker rating: 2

Total resources required:		**US$4,783,708**
Total resources allocated:		
	UNDP TRAC II: (parallel)	**US$200,000**
	SIDA:	**US$1,848,268**
	Government (in-kind):	**US$160,800**
	Unfunded	**US$2,735,440**

Agreed by (signatures):

UNDP	Implementing Partner
Nick Beresford Resident Representative a.i.	H.E. Say Samal, Minister of Environment Chair of National Council for Sustainable Development
Date: 28.12.18	Date: 28-12-18

Acronyms

3Rs	Reduce, Recycle and Reuse
ASEAN	Association of South East Asian Nations
AWP	Annual Work Plan
AFD	Agence Française de Développement
ADB	Asian Development Bank
CBNRM	Community Based Natural Resource Management
CCCA	Cambodia Climate Change Alliance
CCCSAP	Climate Change Strategy and Action Plan
CF	Community Forestry
CFi	Community Fisheries
CI	Conservation International
CO	Country Office (of UNDP)
COP	Conference of the Parties of the UNFCCC
CPA	Community Protected Area
CSOs	Civil Society Organizations
D &D	Deforestation and forest degradation
DIM	Direct Implementation Modality
EAC	Electricity Authority of Cambodia
EDC	Electricité Du Cambodge
EGR	Environmental Governance Reform
EIA	Environmental Impact Assessment
ELC	Economic Land Concession
EU	European Union
FA	Forestry Administration, MAFF
FAO	Food and Agriculture Organisation of the United Nations
FCPF	Forest Carbon Partnership Facility
FiA	Fisheries Administration, MAFF
FIP	Forest Investment Programme
FLEG	Forest Law Enforcement and Governance
GAEA	Global Action for Environmental Awareness
GCF	Green Climate Fund
GDLC	General Directorate of Local Community
GDANCP	General Department of Administration for Nature Conservation and Protection, MoE
GEF	Global Environnent Facility
GERES	Groupe Energies Renouvelables, Environnement et Solidarités
GHG	Greenhouse Gas
GIS	Geographic Information System
GSSD	General Secretariat for Sustainable Development
H&M	Hennes & Mauritz
HACT	Harmonized Approach to Cash Transfer (of UNDP)
INDC	Intended Nationally Determined Contribution
INRM	Integrated Natural Resources Management
IPCC	Intergovernmental Panel on Climate Change
IPs	Indigenous Peoples
JICA	Japanese International Cooperation Agency
LoA	Letter of Agreement
NIM	National Implementation Modality
MAFF	Ministry of Agriculture, Forestry and Fisheries
MEF	Ministry of Economy and Finance
MME	Ministry of Mines and Energy (formerly MIME)
MoIH	Ministry of Industry and Handicraft
MLMUPC	Ministry of Land Management, Urban Planning and Construction
MoE	Ministry of Environment
MoI	Ministry of Interior

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MoE	Ministry of Environment
MoI	Ministry of Interior

MRD	Ministry of Rural Development
NAMA	Nationally Appropriate Mitigation Action
NCDD	National Committee for Sub-National Democratic Development
NCSD	National Council for Sustainable Development
NGO	Non-Governmental Organisation
NHDR	National Human Development Report
NPASMP	National Protected Areas Strategic Management Plan
NRS	National REDD+ Strategy
NRM	Natural Resource Management
NSDP	National Strategic Development Plan
NTFP	Non-Timber Forest Product
PA	Protected Area
PES	Payment for Ecosystem Services
PEB	Programme Executive Board
PF	Protection Forest
PPA	Power purchasing agreement
PPP	Public Private Partnership
PPSEZ	Phnom Penh Special Economic Zone
PV	Photovoltaics
RDF	Refuse Derived Fuel
RECOFTC	Regional Community Forestry Training Center – Center for People and Forests
REDD+	Efforts to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks
RGC	Royal Government of Cambodia
RUPP	Royal University of Phnom Penh
SBAA	Standard Basic Assistance Agreement
SDC	Swiss Agency for Development and Cooperation
SDG	Sustainable Development Goal
SEAC	Solar Energy Association of Cambodia
SEZ	Special Economic Zone
SFM	Sustainable Forest Management
SHS	Solar Home System
SLCs	Social Land Concessions
SME	Small and Medium Enterprise
SNV	Stichting Nederlandse Vrijwilligers ("Foundation of Netherlands Volunteers")
SIDA	Swedish International Development Cooperation Agency
SIS	Safeguard Information System
SREP	Scaling-up Renewable Energy for Low Income Countries Programme
SWM	Sustainable Waste Management
ToR	Terms of Reference
TWGs	Technical Working Groups
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UN-REDD	United Nations REDD Programme
USAID	United States Agency for International Development
WB	World Bank

Contents

1 Development challenges

1.1 Background

Whereas Cambodia has attained impressive economic growth over the last 20 years, it presently faces a new set of developmental challenges regarding its environment.

In 2018, Cambodia's population has reached 16 million, more than double compared to 6.9 million in 1980 (World Bank). Accompanying this rapid population growth, the Gross National Income (GNI) per capita rose from US$300 in 2000 to US$1,140 in 2016 (*ibid.*). With average annual gross domestic product (GDP) growth of 7 percent for the last decade, Cambodia has become one of the fastest growing economies in Asia.

Since the early 2000s, the Royal Government of Cambodia (RGC) has promoted large-scale economic development in both rural and urban areas.

In rural areas, there has been a rapid expansion of Economic Land Concessions (ELCs) for large-scale commercial agriculture, Social Land Concessions (SLCs) for poor households, and construction of hydropower dams and roads. A total of 205 ELCs have been granted under the jurisdictions of the Ministry of Agriculture, Forestry and Fisheries (MAFF) and the Ministry of Environment (MoE), covering an area of 1.68 million ha (MAFF 2012, MoE 2014). The area covered by SLCs also increased dramatically from 3,817 ha in 2008 to 502,400 ha in 2014 (MLMUPC, 2014). Also, 11 hydropower dams were constructed, covering 305,250 ha of forested land (FA 2012). Road networks have also expanded across regions that, connecting urban with and rural areas and providing easier access into previously remote areas that were formerly considered to be inaccessible.

In urban areas, the RGC has supported industrialization by promoting the garment industry and establishing Special Economic Zones (SEZs)[1]. The garment industry is the largest industry in Cambodia accounting for 80 % of total exports and employing over 600,000 people (upwards of 90% are women). As of 2018, the RGC has established over 35 SEZs that promote international trade by attracting foreign investment, supporting infrastructure development, and facilitating the diffusion of new technology transfers.

Regarding energy access, the RGC has also made impressive progress. Household electrification rates rose from 14% in 2006 to 70% in 2017 (MME). The RGC is committed to ensure access to any form of electricity for 100% of villages by 2020 and to connect 90% of households (HH) to the electricity grid by 2030.

These initiatives are some of the major driving forces contributing to the impressive growth rates attained by the Cambodian economy, bringing with them significant socioeconomic benefits to the Cambodian nation and its citizens.

1.2 Environmental Challenges

Moving forward, Cambodia now faces a new set of developmental challenges, which relate to sustaining its economic growth in a manner that fully integrates Sustainable Development Goals (SDGs). Achieving this task requires overcoming a wide range of environmental challenges:

[1]Since 2005, SEZ have been used to promote rapid industrialization. SEZs' are subject to a set of specific laws and regulations. These industrial areas offer preferential incentives to investors and draw upon government import-export administrative support to facilitate trade. Their creation is premised on significant infrastructure development, with a view to attract foreign investment, enhance global competitiveness and promote economic development.

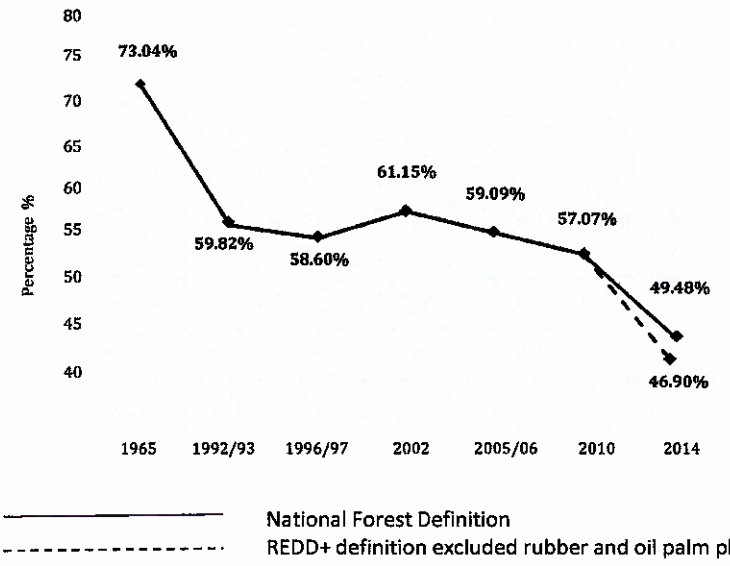
1) Degradation of natural resources;
2) Growing volume of waste, and;
3) Limited access to affordable, sustainable and clean energy among the poor.

1.2.1 Degradation of natural resources

Natural resources have been subject to growing pressure. Total forest cover of Cambodia's land declined from 57 % to 47% between 2010 and 2014 (RGC) (see Figure 1). While there are several explanations for this, the increased amount of economic activities and demand for natural resource products is identified among main reasons (see the national REDD+ strategy 2017).

Degradation of natural resources may threaten the depth of environmental and socio-economic benefits they offer. While such consequences are likely to be borne by all Cambodians, especially women, it also risks the biodiversity of wildlife living adjacent to natural resource boundaries.

Figure 1 Forest cover change in Cambodia 1965-2014



Source: NRS (2017)

Cambodia's natural resources offer many socio-economic benefits that are integral to rural livelihoods such as health and well-being, food security, as well as a variety of crucial environmental goods and services. Examples of the latter include biodiversity conservation and climate change mitigation/adaptation (see Box 1).

Box 1. The role of natural resources for rural livelihoods & environmental services and goods in Cambodia

Cambodia's natural resources are an integral part of rural life, shaping people's livelihoods and values. Around 80 % of the country's population lives in rural areas, which is also where the majority of people living in poverty are found. Rural people, and especially the rural poor, are heavily dependent upon natural ecosystems. For example, they mainly reply upon rain-fed agriculture, and they harvest vital resources for their livelihoods from the surrounding forests, waters, and floodplains.

The role of terrestrial ecosystems including forest resources is fundamental. For example, rural households use forest timber to construct their houses, as well as fences for livestock and agriculture. People collect and use fuelwood for daily cooking, and many families rely on wild fruits, vegetables, yams, fish and animals for basic nutrition. In addition to these subsistence uses, forests also provide a source of income for rural households. For example, more than 80,000 households engage in commercial charcoal production; and in 2014, more than 2 million households were estimated to depend upon non-timber forest products (NTFPs) such as bamboo, rattan, resin, honey and medicinal plants for their income and subsistence.

Aquatic ecosystems, especially those of Tonle Sap Lake, provide another vitally important contribution to Cambodian life and well-being as well as to the national economy. In terms of rural food security, fish provide the main complement to people's rice-based diet, contributing more than 60% of rural protein intake (World

Fish 2016). Fisheries are also of fundamental commercial importance. The predominantly freshwater fishery sector employs about 2 million people (ibid); and inland fisheries account for nearly 12% of the country's GDP, which is more than the contribution from rice production (Mekong River Commission 2017).
Ecosystem services reduce vulnerability and increase resilience. For example, forests play an important role in regulating water supply, which has great economic and human development significance. This is because forested landscapes provide watershed services that: (i) reduce the potential adverse effects of droughts and floods, and; (ii) ensure a vital source of clean water for rural and urban communities.

High biodiversity is another outcome of healthy ecosystems. Cambodia is home to one of the most extensive and biodiverse wildlife habitats in the world. The country's forests are home to more than 2,000 known plant species, 500 birds, 100 mammals, and 800 fish, which provide sanctuary to almost 2% of globally threatened species listed on the International Union for Conservation of Nature (IUCN)'s Red List.

Moreover, Cambodian forests are sinks of carbon emissions. According to the last forest reference level submitted to UNFCCC (MoE 2017), a total of 2.96 Gt of carbon is stored in Cambodia's ecosystems, which is significant in climate change mitigation efforts that might generate future revenue streams under REDD+. Carbon revenues could also be used to complement other sustainable forest management approaches.

Recognizing these challenges, the RGC has taken numerous policy measures that aim to promote new holistic pathways for sustainable development, which are more inclusive by considering the improvement of rural livelihoods and emphasizing conservation of natural resources and the environment. Amongst others, they include: *1) the development of new policies and legal frameworks; 2) a set of jurisdictional reforms for ecosystem and protected area management; and 3) the drafting of a new Environment and Natural Resources Code.* Each of the relevant reforms is described below in Box 2

Box 2 Key reform initiatives for ecosystem management in Cambodia

1. Development of New Policies related to NRM and the environment

Emerging policies reflect a stronger national commitment to ecosystem and environmental management. They derive in part from Cambodia's signing of international conventions, including the Convention on Biological Diversity (CBD) and the UN Framework Convention on Climate Change (UNFCCC).

Amongst the new government policies include a National Environmental Strategy and Action Plan (NESAP), a National Biodiversity Strategy and Action Plan (NBSAP), a National REDD+ Strategy (NRS), a National Protected Area Strategic Management Plan (NPASMP), and a National Production Forestry Strategy. Each of these policy documents specifies key objectives, strategies and action plans for achieving environmental sustainability. Another central policy document is the Nationally Appropriate Mitigation Action (NAMA), emerging from the UNFCCC, which aims to reduce greenhouse gas emissions and fuelwood consumption through working with the garment sector and charcoal industry.

2. Jurisdictional reforms in NRM

Since February 2016, the RGC has begun reforming natural resource management, focusing primarily on the roles and mandates of the MoE and the MAFF. These reforms had focused mainly upon the problem of currently overlapping mandates between these ministries, which before the change effectively ran their own separate sets of protected areas and ELCs.

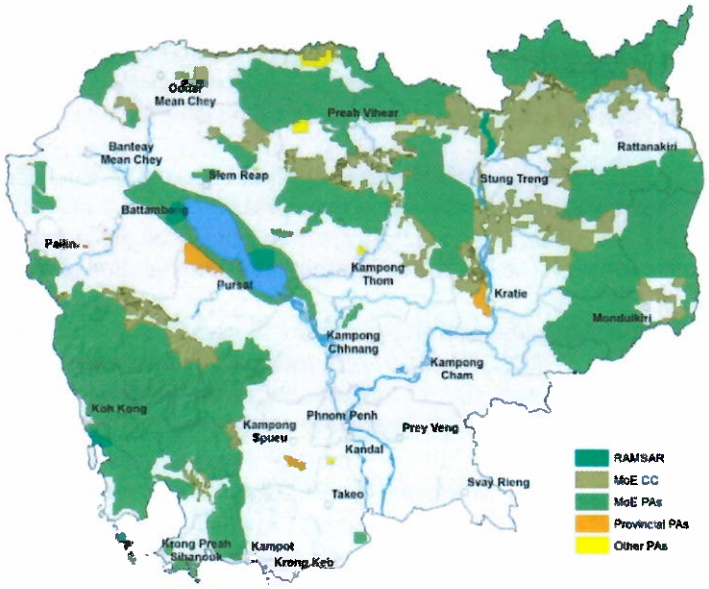
The reform, enacted through sub-decree no. 34, declares that the MoE has primary responsibility for the protection and conservation of forests and ecosystems; while the MAFF should focus on the developmental aspects of natural resource management, including ELCs. As a result, the MoE has transferred its ELCs to the MAFF, and the MAFF has transferred its protected forests to the MoE. A subsequent reform in January 2017 requires the establishment of Biodiversity Conservation Corridors (BCCs), also to be governed by the MoE. These corridors will connect existing Protected Areas. Cambodia's new system of protected areas and biodiversity CCs is shown in Figure 2, below. It now covers a remarkable 40% of the country's surface area.

3. Development of a Natural Resources and Environmental Code

The proposed Code, which currently exists in draft form, seeks to establish a set of overarching principles and guidance on the implementation of laws that apply to natural resource management and biodiversity conservation in Cambodia. The Code aims to achieve sustainable management of natural resources and the environment. Importantly, the Code includes the following provisions, which address critical deficiencies in current frameworks:

- New regulatory guidance on conducting both Environmental Impact Assessments (EIA), and Strategic Environmental and Social Assessments (SESA), to mitigate and minimise the potential for adverse impacts from development activities.
- A proposal for Collaborative Management to support and leverage the rights and interests of communities in natural resource management.

Figure 2. Cambodia's protected area system, 2017.



Source: MoE and map was created by WCS (2017)

The next challenge facing the RGC is how to effectively and sustainably manage this geographically vast Protected Area system. Specifically, these relate to *a) limited human resource; b) limited financial resource, and; c) limited incentives for communities to engage in the sustainable production of forest resources.*

a) Limited human resources for governing natural resources

At present, more than 7 million ha of protected landscapes are managed by just 1,260 rangers. This roughly average in each ranger being responsible for more than 5,000 hectares of land. There is an evident shortage of the human resources required to manage Cambodia's natural resources effectively.

Both national and international experience demonstrate that the participation of resource dependent communities through community-based NRM is the most effective way of maintaining natural resources and preventing illegal activities. It also shows that communities take an active interest in protecting natural resources (e.g., forests, land and water) when they are given rights to make use of the natural resources themselves, for instance, by sustainable harvesting and selling of natural resources products. It is therefore imperative to activate the engagement of local communities to adequately protect Cambodia's forests.

The RGC has initiated the following measures in support of community-level NRM and strengthened resource rights for indigenous communities. They are aimed at improving livelihoods and safeguarding ecosystems in the forms of Community Forestry (CF), Community Protected Areas (CPAs), and Community Fisheries (CFi) (see Box 3). The draft Environmental and Natural Resources Code also proposes collaborative management arrangements to create opportunities for communities to engage in NRM.

Box 3. Existing community natural resource management provisions in Cambodia

- *Community Forestry under FA*: 604 sites established by 2017, comprising 470,970 hectares (2017)
- *Community Protected Areas under MoE: 152 CPAs with 36,716 households, comprising 305,076 hectares (2018).*
- *Community Fisheries under FiA*: 516 sites established, concentrated mostly around Tonle Sap (NSDP 2014-2018).
- *Indigenous Communal Land Titles*: 8 Indigenous Communities out of 166 applications have received legal recognition of communal land titles (ILO, 2015)

At present, however, less than 10 percent of Cambodia's forests and protected areas are under community management. Communities today are only given limited rights to use resources beyond subsistence use as in the form of 15-year community leases (e.g., Community Forestry and Community Protected Areas). Economic concessions, on the other hand, are typically given 50 years of management rights.

There also remains uncertainty regarding the status and validity of community forestry (CF) groups, whose areas now fall under the jurisdiction of MoE (note: CFs were created initially under the forestry law governed by the Forestry Administration).

➔ There is a critical need to further expand community-based NRM and the rights of communities to effectively manage natural resources in a sustainable way that improves the livelihoods of communities dependent upon such resources. Accordingly, a recommended first step towards this is to support the transition from CFs to CPAs in PAs.

b) Limited financial resources for conservation

Although Cambodia has successfully advanced its national agenda for conservation, the allocation of government budget to implement conservation efforts remains minimal. The MoE's budget in 2017 comprises less than 0.4% of the entire Government annual budget (RGC, 2017b), which is financially insufficient, in sustainably managing 40 % of Cambodia's total land.

To address this problem, in October 2016, the RGC officially approved advancing dialogue on Payment for Ecosystem Services (PES) as a new sustainable financing option for the Protected Areas. Connected with this is the piloting of PES approaches at two sites (Kulen Mountain in Siem Reap province and Kbal Chhay in Sihanoukville province).

In 2017 and 2018, the UNDP assisted the RGC in conducting feasibility studies of these two pilot sites and has identified priority actions for moving towards operationalization of PES. These include 1) creation of mechanisms of fund collection and distribution, 2) development/implementation of a management plan and actions and 3) a national PES strategy.

➔ Further support is required to operationalize sustainable financing options for protected areas

Box 4: what is PES?

Figures by Aske Skovmand Bosselmann

PES are voluntary and conditional agreements in which **payments** are transferred from a **"buyer"** to a **"seller"** for the provision of a well-defined **ecosystem services**

c) Limited incentives to engage in sustainable production of forest resources

Rural communities in Cambodia today often engage in unsustainable resource use to meet immediate economic needs. Accordingly, a related challenge is to provide incentives for communities and industries to participate in the sustainable production of forest resources.

In the case of charcoal production, there are already numerous initiatives that can help promote sustainable and cleaner biofuel. Notable examples include: *1) the use of efficient charcoal kilns; 2) the use of more efficient cook stoves in households and restaurants, and; 3) a switch to alternative energy sources (e.g., bamboo, rice husk).*

Since most wood in Cambodia is sourced almost free of cost, wood collectors, households, and industries currently have few incentives to invest in more expensive technologies or alternative energy sources. This translates into limited interest in producing or purchasing legally sourced wood-fuel, including from community forestry, as it incorporates costs for management and certification, which makes them more expensive for consumers.

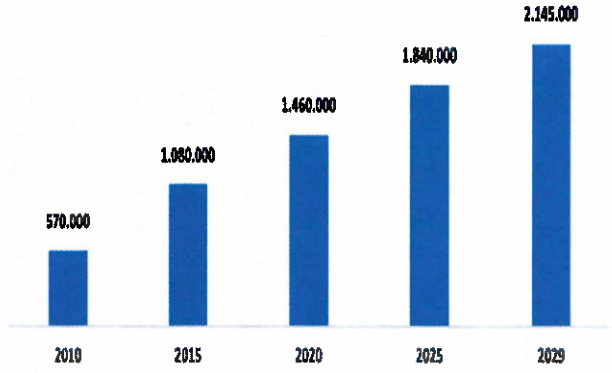
➔ This highlights the need **to improve the efficiency gains of sustainably produced products** that generate competition, thereby creating new incentives for both communities and industry to promote forest resource production.

1.2.2 Growing volume of waste

The combination of rapid population growth and industrial development has led to an exponential surge in the volume of municipal and industrial solid waste, proving to be an imminent challenge for waste management in Cambodia.

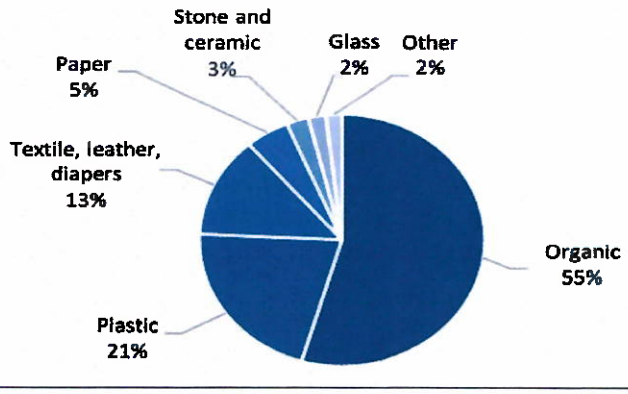
Despite the difficulties already faced, current rates of solid waste disposal in municipal landfills is expected to double by 2029, reaching 2.1 million tons. This will likely exceed the capacity of all existing landfills in Cambodia. The situation is particularly alarming in major cities such as Phnom Penh and Siem Reap. In Siem Reap, the currently operating landfill is expected to reach its maximum capacity shortly.

Figure 3. Municipal Solid Waste Disposal at Landfills in Cambodia (tons/year)



In Phnom Penh, 1,800 to 2,000 tons of waste is generated every day. More than 90 % of all this waste consists of recyclable materials (e.g. organic 55 %, plastic 31 % and paper 5%). Unfortunately, the present waste management practices of Cambodia focus mainly on collection and disposal. Private companies collect and dispose of waste at landfills without any sorting, recycling, or reuse of waste. A minimal volume is collected informally by people who gather waste from landfills and sell recovered valuables to middle men, usually destined for Thailand or Vietnam.

Figure 4 Waste composition in Phnom Penh



These informal garbage collectors tend to face health risks as a result of being directly exposed to toxic substances and accidents on landfill sites. To the general population, however, the large amount of untreated waste has created numerous issues such as water pollution, the spread of disease, GHG emissions, odor nuisance and air pollution from burning garbage. This year, for example, one of the untreated landfills in Phnom Penh had a severe fire, which produced toxic smokes across the city that led to the closure of many businesses and schools for a week.

➔ There is a need to create a compatible policy environment to design and test a circular economy[2] model for Cambodia's waste management to recycle and reduce waste.

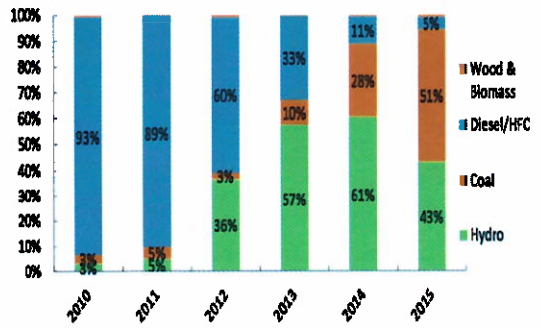
1.2.3 Lack of full access to clean, affordable, and sustainable energy

While the RGC seeks to ensure access to clean, affordable, and sustainable energy for all of Cambodia, the full implementation of SDG goal 7 is likely to remain a challenge.

[2] Circular economy refers to a system where produced materials and energies (rather than being disposed) are reused and recycled as valuable resources in a closed system. The circular economy also promotes efficiency of production, the use of fewer materials and less energy, and sustainable waste management through sorting and reduction of waste volume, turning waste into reusable materials and energy.

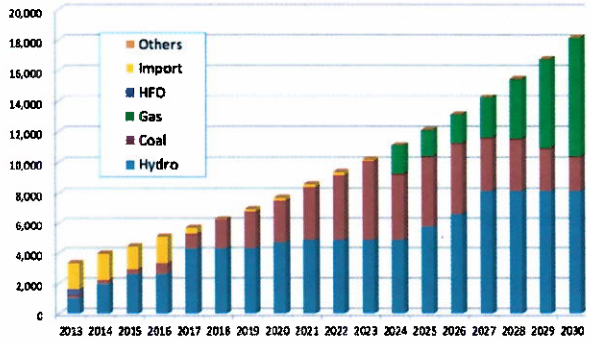
The RGC has committed to ensure access to electricity for 100% of villages by 2020 and to connect 90% of households (HH) with grid electrification by 2030. The RCG aims to expand access by extending the national grid based on a centralized approach. This means that electrification will be led by the government through state utilities, electrification agencies, and energy ministries, with the extension of the national grid as the primary channel for increasing access.

Figure 5. Current Power generation composition



Source: MIME (2016)

Figure 6 : Projected energy supply mix



Source: MIME (2015)

As both Figure 5 (current power generation composition) and Figure 6 (projected energy supply mix) detail, Cambodia's current and projected future energy supply relies on hydropower, oil, and coal as primary energy sources. Figure 6 also indicates a continued commitment to large-scale hydropower and fossil fuel-based power development programmes.

There remain several challenges to providing clean, affordable, and sustainable energy to all Cambodians, specifically to poor households living in rural and remote communities.

Constructing large centralized electricity generating infrastructure, such as hydroelectric dams and coal power plants, often gives rise to adverse environmental consequences. To feed the upstream watersheds, hydroelectric dams require the flooding of vast tracts of forests. A study done by the Natural Heritage Institute (2015) evaluating the influence of dams on river fisheries in the Mekong Region predicts that they will disrupt river ecosystems by reducing sediment flows downstream, consequently reducing fish populations by up to 50 %. The generation of electricity from coal power plants are also known to release the most harmful types of Greenhouse Gas (GHG) emissions and local ambient pollutants, resulting in adverse impacts to the health of adjacent communities.

Although the RGC has committed to ensuring household access rates to the electric grid reach 90 %, this number implies that **10 % of households may remain without grid access.** These are likely to be poor households in remote areas.

Another challenge to ensuring a **stable and secure energy supply is to** meet peak energy demands during the hot and dry season, when supply from hydropower during that time is lower.

The third challenge is to overcome the **affordability of available energy for the rural and remote population**. Electricity cost in Cambodia remains one of the highest within the region. In rural areas, diesel engines are commonly used for irrigation pumps and post-harvest processing by small-holder farmers. Diesel-generators are also the primary sources of electricity generation for rural enterprises

(e.g. rice milling, ice making, etc.). Due to a lack of access to capital, farmers and rural enterprises tend to buy cheaper or second-hand diesel engines that tend to be less fuel efficient. The lack of affordable grid electricity and the high cost of diesel leaves limited economic opportunities for the rural population and rural enterprises. The government is providing finances (through loans and grants) to expand the coverage of grid electricity, but the high cost of building national grids and distribution network is likely to keep the electricity price relatively high for the rural population.

For these reasons, **renewable energy sources such as solar energy offer significant opportunities** for **the RGC to increase provision of reliable and affordable electricity access to all Cambodian people, specifically for the most impoverished Cambodians living in rural and remote off-grid communities**. Solar energy can also offer other benefits such as employment and GHG abatement. New technology such as solar home systems (SHS) and solar irrigation pumps have emerged as major energy access opportunities for off-grid households. Although the renewable energy market for solar is exponentially growing, a set of existing barriers impedes the adoption of various solar technologies in Cambodia.

General barriers in the solar market (all technologies) include:

a) Policy barriers:

- Unclear policies and lack of incentives facilitating the application of solar technologies:
  - Lack of the national renewable energy target and plan
  - Lack of clarity about the legality of connecting solar PV rooftop systems to the grid;
  - No incentive framework for the supply of excess power to the grid
  - Value Added Tax (VAT) on solar products, while there is no VAT on electricity from the grid, and high import duties on some solar products;
  - No standardized Power Purchasing Agreements (PPAs) for solar farms;
- Inconsistent enforcement of laws and rules, including import duties, VAT and company taxes, leading to an unequal situation in the market for different solar companies;
- Limited quality and technical safety standards for solar products (for Solar Home System (SHS) there are standards under the Good Solar Programme) and limited enforcement of quality standards
- Limited coordination among solar companies to provide inputs to proposed government regulations

b) Technical barriers:

- Limited abilities to design good quality solar PV rooftop systems or solar farms suitable for local situations, while also meeting the future load profile of the client and meeting Electricité Du Cambodge (EDCs) requirements;
- Limited skills and limited availability of technicians to design, install and maintain good quality solar systems (e.g. solar PV pumping, solar PV rooftop systems);
- No (affordable) third-party independent service-provider available to support commissioning.

c) Financial barriers:

- High cost of solar systems, in particular for rural vulnerable communities.
- Limited experience among solar companies to manage finances and book-keeping in accordance with the laws, as well as to attract external financiers (debt, equity) and limited knowledge about how to meet the requirements to receive additional funding;
- High interest-rates, short tenure and collateral requirements for commercial loans for solar companies (SME financing); Financial service providers only provide loans based on collateral, not based on future cash flows or the solar assets. Likewise, no experience with project financing (SME financing); and

- Local banks unwilling to finance solar/renewable energy projects, particularly not in the development phase.

d) Information barriers:

- Limited awareness about benefits of solar energy and how to use and operate the systems, among various actors including vulnerable population;
- Limited awareness among entrepreneurs about new technological developments in the solar sector and business models developed in other countries (technologies & models which can reduce costs for end-users significantly)
- Limited support available for start-up / SME businesses (incubation);
- Building owners are not aware of the (financial) benefits of solar PV rooftop systems;
- Financiers and investors perceive the investments as risky, as they might have heard of failed projects; and
- Farm owners are unwilling to invest in solar pumps due to their limited knowledge of the technology and reluctance to pledge land or a house as a collateral for a loan.

The project aims to address some of the above-mentioned barriers, particularly the barriers related to access to clean, affordable, and sustainable energy for the rural communities. Specific attention will be given to addressing these barriers for women.

Barriers targeted under the project include:

- Information barriers related to: limited awareness on benefits of solar energy, limited awareness on technological advancements and business models developed in other countries and limited support to start-up SME companies.
- Financing barriers related to: high costs of solar systems, in particular for rural vulnerable communities and high-risk perception of investors.
- Policy barriers related to: energy planning and limited coordination among private solar companies,
- Technical barriers related to: capacity to design, install and maintain solar systems.

➔ **Achieving universal renewable energy access for off-grid households and villages requires changing existing policy, technical, financial, and informational assistance, and specifically tailored policy measures.**

2 Strategy

2.1 Overall objective

The overall project objective is to assist Cambodia in achieving the Sustainable Development Goals related to *1) natural resources management (NRM), 2) circular economy, and; 3) clean, affordable and sustainable energy.*

The project designs and tests *innovative* environmentally sustainable models in the targeted areas through public and private partnerships. Based on evaluating results, it further identifies venues for scaling-up workable models by linking initiatives to existing and future programmes, as well as developing innovative blending finance for projects.

The project will attain the following three outputs:

- **Output 1**: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM

- **Output 2:** Waste reduced, recycled and reused through application of circular economy models
- **Output 3:** Improved access to clean, affordable, and sustainable energy for the rural poor

Output 1: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM will be achieved through: *1) support to expand and enhance community based NRM; 2) operationalisation of Payment for Ecosystems Services (PES) in Cambodia, and;* 3) *support to demonstrate economically viable options for communities to engage in sustainable production of natural resources.*

Output 2: Waste reduced, recycled and reused will be attained by providing technical support for *1)* piloting circular economy with municipalities and private sector*; 2) enabling policies and measures to mainstream circular economy models, and; 3) strategies for scaling up.*

Output 3: Improved access to clean, affordable, and sustainable energy for the rural communities will be channeled through: *1) solar energy for electricity supply and increasing resilience of rural communities; 2) building technical capacity for the installation and maintenance of solar power, and; 3) strategic communication and awareness raising.*

2.2 Theory of change

2.2.1 Output 1: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM

Figure 7: Causes of degradation of natural resources and forest-based ecosystems

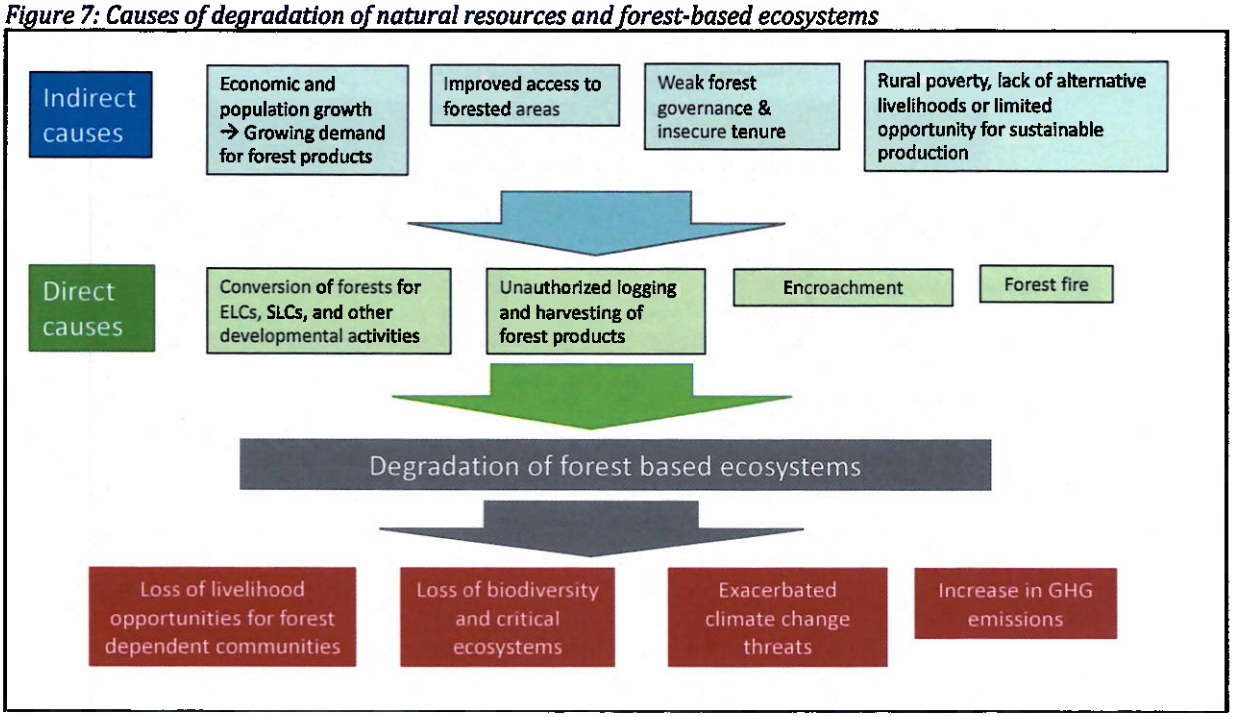


Figure 7 shows the linked causes of degradation of forest-based ecosystems and the main consequences of the degradation.

Degradation of ecosystems adversely affects the country's biodiversity and carbon sequestration capacities. It also negatively impacts the livelihoods of many rural people, especially women and the poor, who are very dependent on forests for subsistence and income. Among the direct causes of degradation are: *1) the conversion of forest areas for ELCs, SLCs, and other development activities such as hydropower and mining; 2) the unauthorized logging and harvesting of forest products; 3) encroachment, and; 4) forest fire. The situation is further exacerbated by indirect factors, which include: 1) growing demand for forest products due to economic and population growth; 2) improved access to forested areas; 3) weak forest governance including insecure tenure, and; 4) rural poverty and lack of opportunities for sustainable production of natural resources.*

As described in section 1 (background), the RGC has made a number of policy interventions to stop degradation and ensure sustainable NRM. Several challenges remain including: *1) limited human resources; 2) limited financial resources for conservation, and; 3) limited opportunities and incentives for communities to engage in sustainable management of natural resources (See Figure 8).*

Figure 8: Policy interventions and related challenges for sustainable NRM

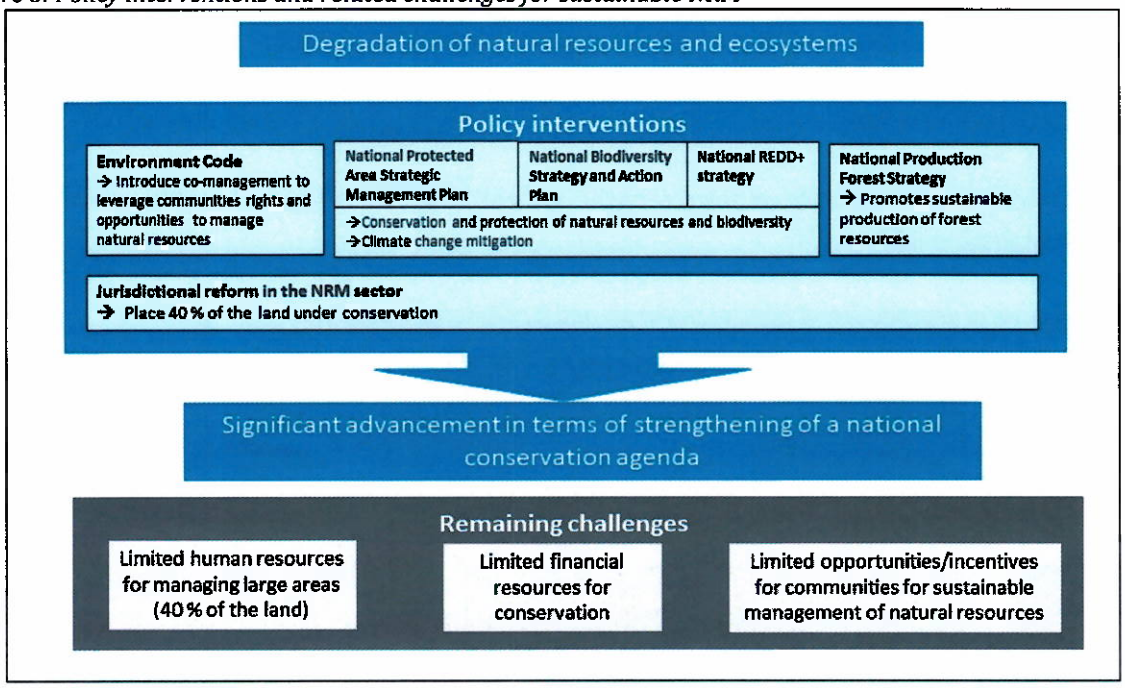
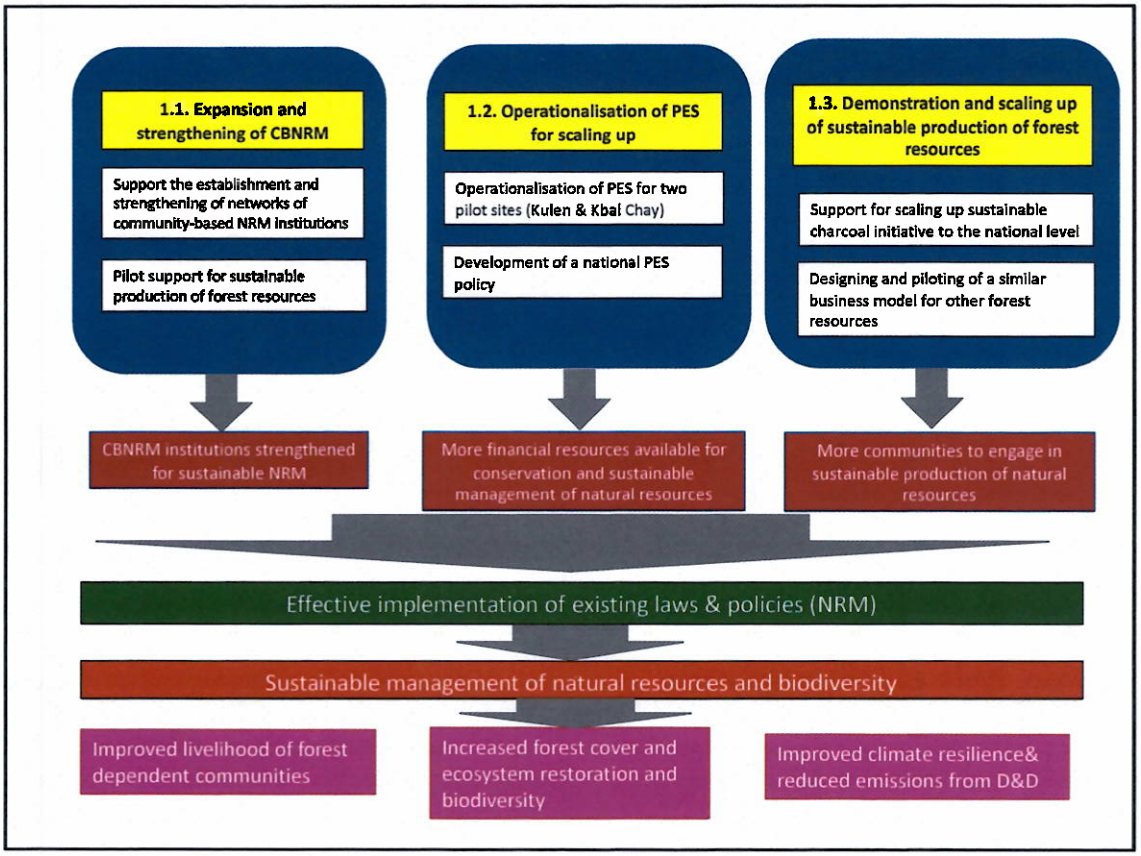


Figure 9 Theory of change of the output 1 activity



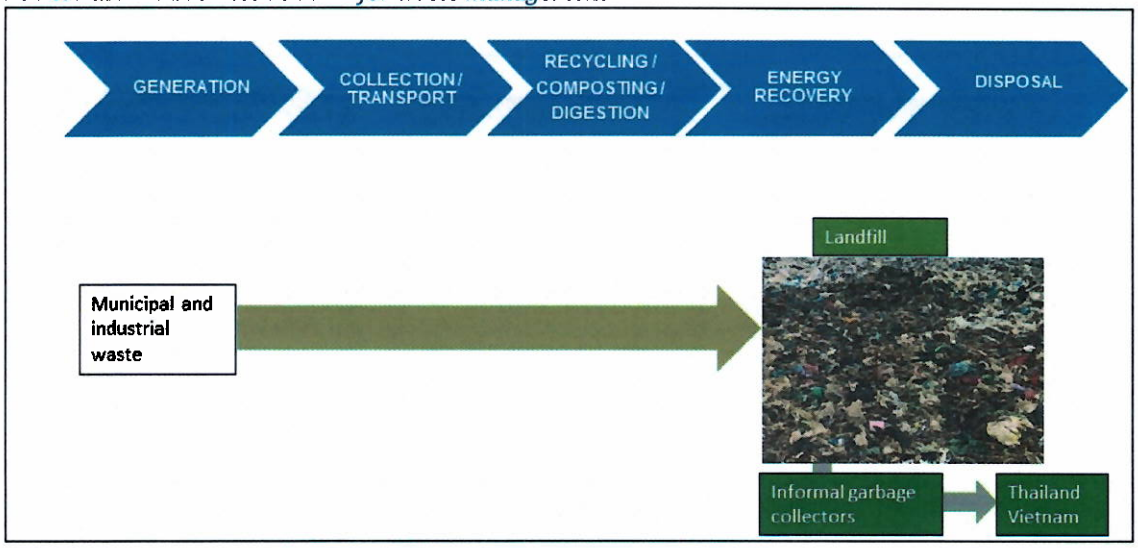
As shown in Figure 9, the output 1 activity will focus on tackling these three challenges through: *1) expansion and strengthening of CBNRM; 2) operationalisation of PES to ensure sustainable financing options for conservation, and; 3) demonstration and scaling up of sustainable production of forest resources.* These interventions are envisaged to contribute to the effective implementation of existing policies and laws related to NRM with subsequent impacts on the sustainable management of natural resources and biodiversity. This will result in improved livelihoods for natural resource dependent communities, enhanced conditions of forest-based ecosystems, improved climate resilience, and reduced emissions from deforestation and forest degradation (D&D).

2.2.2 Output 2: Waste reduced, recycled and reused through the application of circular economy models

Cambodia increasingly faces the challenge of growing municipal and industrial waste. As a potential solution, the project introduces and mainstreams the concept of a "circular economy" to promote sustainable management and reuse of waste (depending on funding availability, the project will also address the issue of energy efficiency as a part of a circular economy initiative).

Under the business as usual scenario for waste, almost all municipal and industrial waste goes to untreated landfills where informal garbage collectors gather and sell recovered valuables to middle-men, for subsequent export to Thailand or Vietnam.

Figure 10. Baseline business as usual for waste management



For municipal waste, the project will pilot 1 or 2 initiative(s) (the pilot site will be determined after consultation).

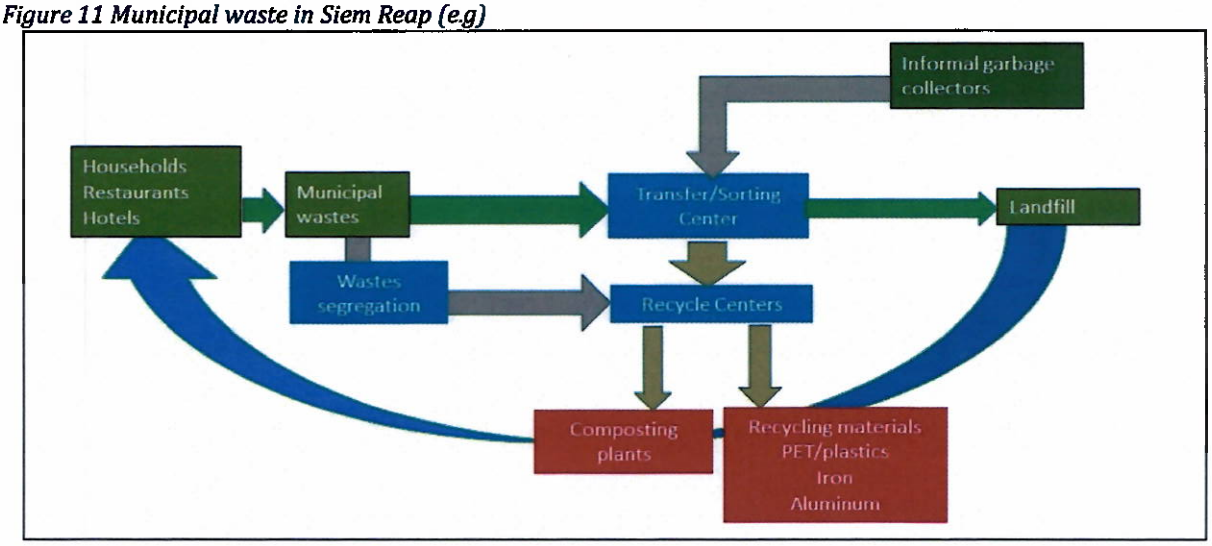
Option 1: Kep

The project tests a sustainable waste management approach in semi-urban/rural areas in collaboration with the district and provincial administration, as well as the NCSD, the NCDDS, and the MoE. The project will support the formulation and implementation of a waste management strategy. The strategy entails overall plans on waste sorting, recycling, collection, disposal and treatment and defines the roles and responsibilities of the Administration, the private sector and citizens in waste sorting, recycling, collection, disposal, and treatment. The activity also includes the development of standard sanitary landfills for industrial and general waste and development of revenue generation mechanisms under for landfill management as well as expanding the potential for a recycling market with waste generated from markets and households.

Option 2: Siem Reap (TBC): In Siem Reap, the project will test a new business approach for municipal waste with GAEA (TBC) and municipalities. This business model will consider three sets of interventions.

- **Establishment of a transfer centre and recycling mechanism** to intercept waste flows and channel all valuable materials to recycle centres for conversion into new products and energy sources. This business model also aims to transform informal garbage collectors into wage laborers at the transfer/sorting centre (on a performance-based payment). Aside from providing employment opportunities, this will also reduce the occupational risks to which they are exposed at landfill sites.

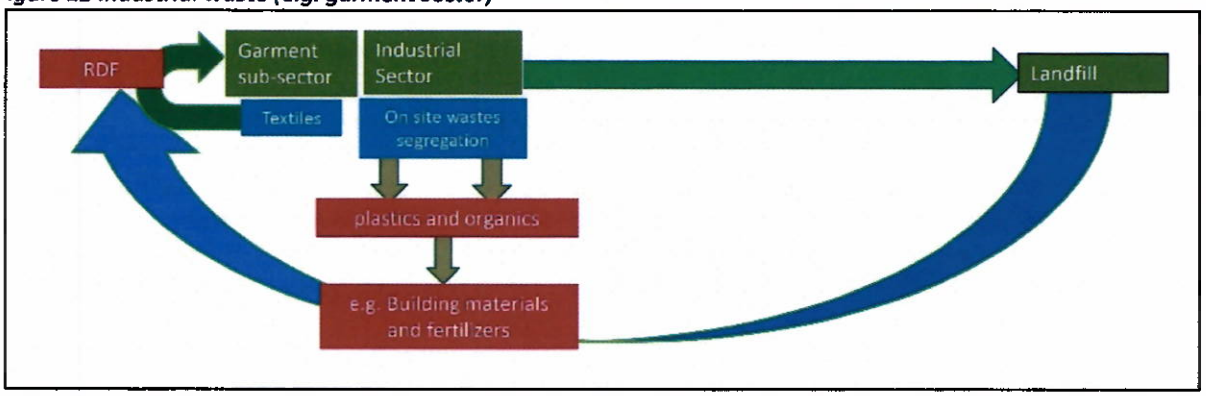
Figure 11 Municipal waste in Siem Reap (e.g)



- **On-site waste segregation at hotels in Siem Reap**, which are the largest producer of municipal waste. Once this new value chain generates sufficient profit, it will be used to purchase more waste collection trucks to enable differentiated waste collection. For example, plastic and organic materials will be transported directly to recycle centres for further processing. This intervention will be coupled with raising awareness and inducing behavioural change for waste segregation among a network of Siem Reap hotels.

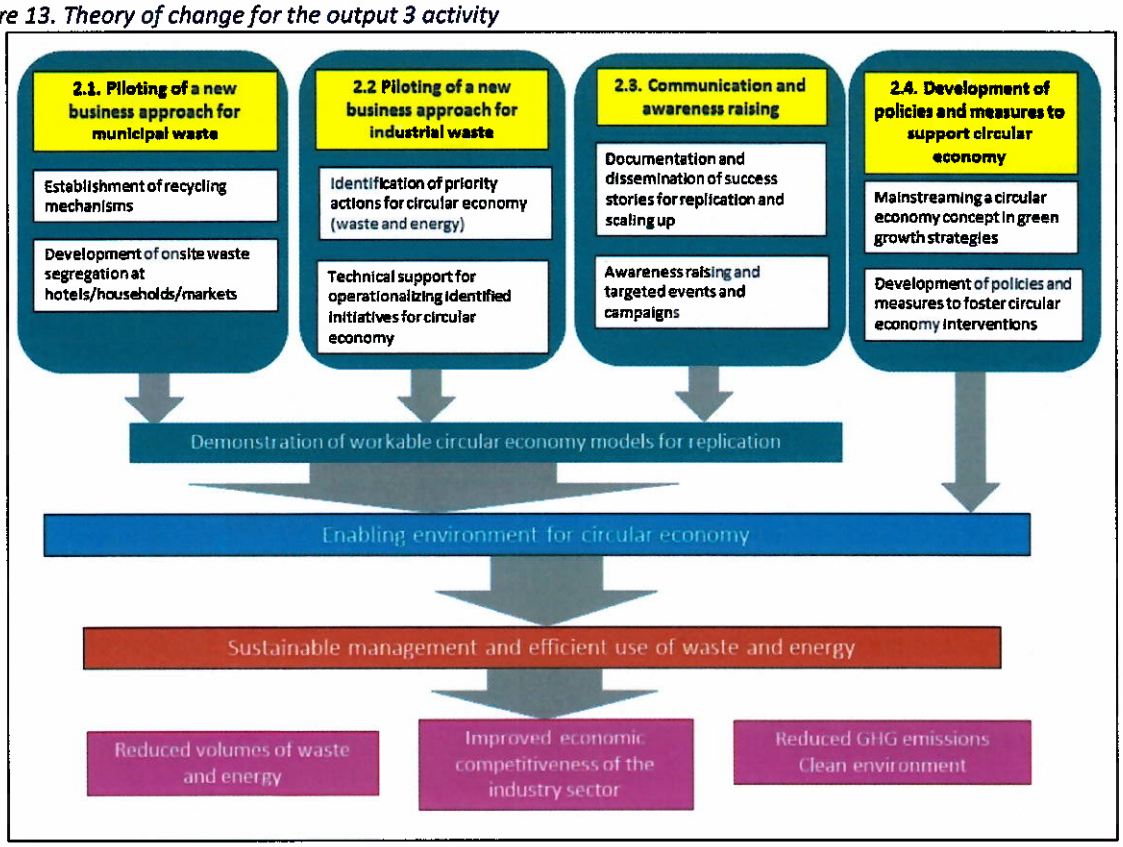
For industrial waste, the project will work with the private sector to do business and environmental feasibility assessments for creating new business approaches for SWM and energy efficiency.

Figure 12 Industrial waste (e.g. garment sector)



Together with the Private sector, the project will explore a business option of on-site segregation for plastic and organic materials and to promote circular economy models within the garment sector.

Figure 13. Theory of change for the output 3 activity



The project will support awareness raising about a circular economy concept by means of: *1) targeted events and campaigns, and; 2) documentation and dissemination of best practices of circular models.* For awareness raising campaign, besides the government and private sector, the project will actively engage universities such as Royal University of Phnom Penh (RUPP) to engage students and citizens to promote behavioral changes.

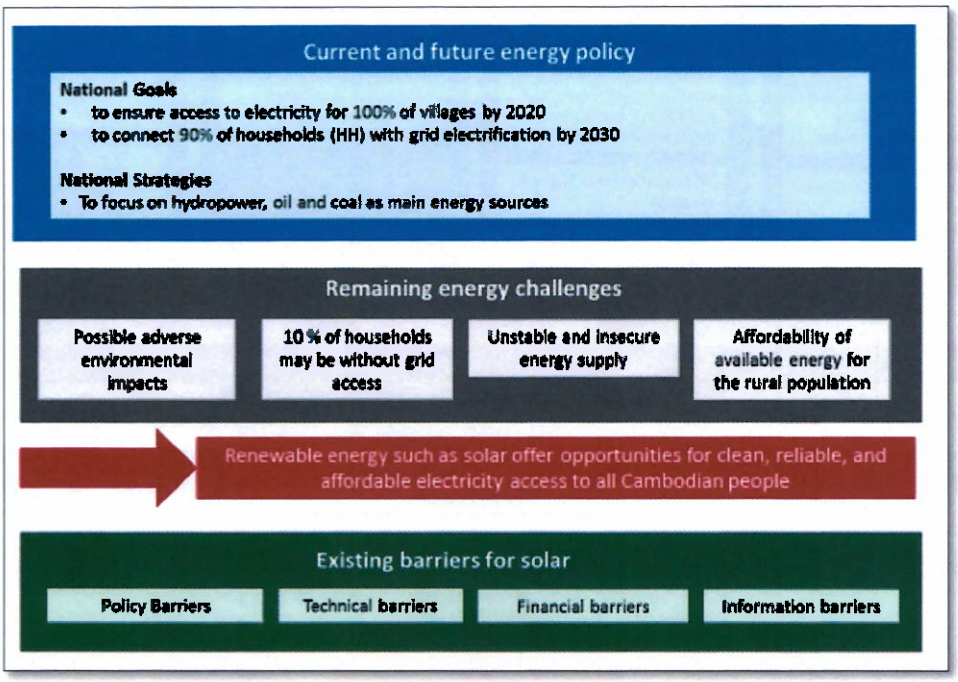
In sum, the output 2 activity will focus on the development and testing of new business models for circular economy targeted at promoting sustainable waste management. The project will implement pilot projects for dealing with municipal waste and pilots with industrial waste.

For this activity, the project targets actors within the private sector who have demonstrated a commitment to SDG integration. H&M is proposed as a partner because it is a leading fashion brand in terms of promoting sustainability initiatives in the garment sector. Their adoption of sustainable practices will influence their suppliers as well as other business actors in the garment industry.

The results of these pilots will thus be used to demonstrate workable circular economy models for management of waste and energy in Cambodia with a view to broader adoption. Promotion of circular economy is envisaged to bring outcomes that include a reduced volume of waste and expenditure of energy, improved economic competitiveness of the industry sector, reduced GHG emissions, and a cleaner local environment.

2.2.3 Output 3: Improved access to clean, affordable, and sustainable energy for the rural poor

Figure 14. Energy situation in Cambodia



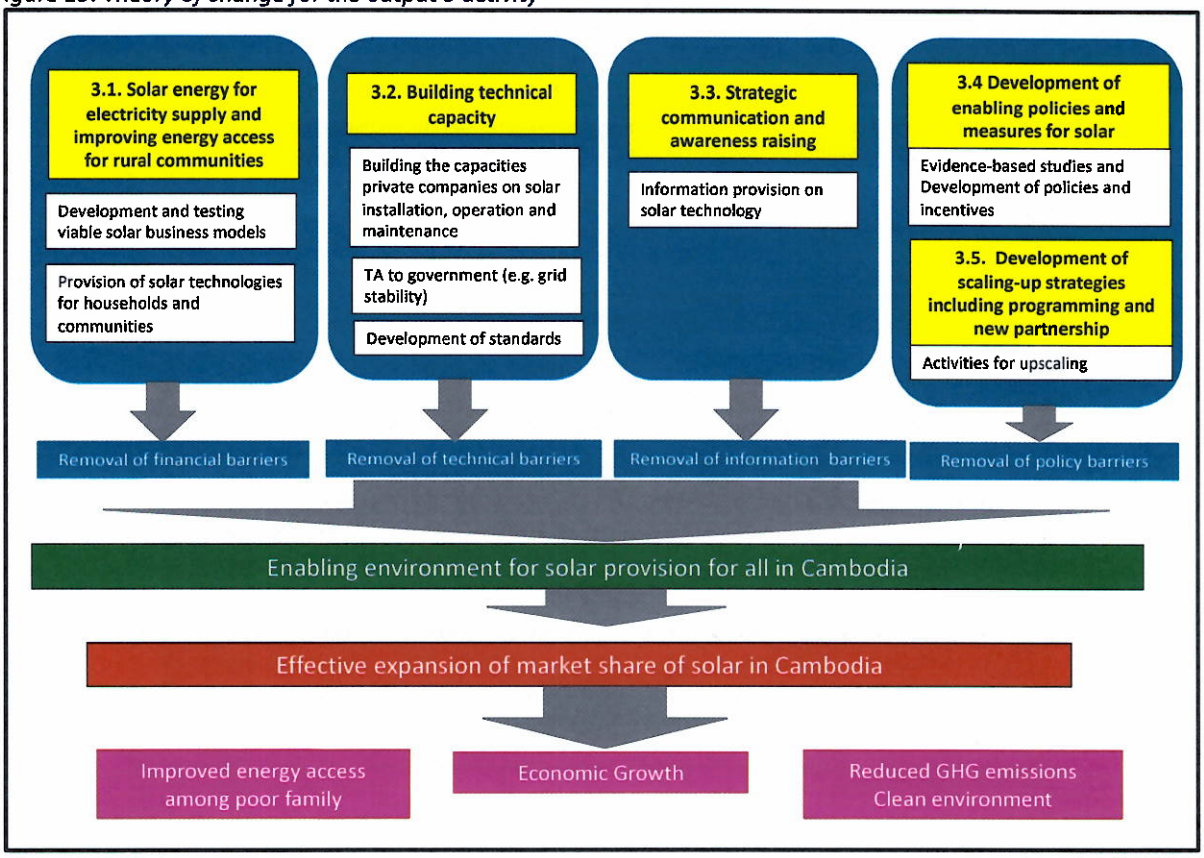
As described in section 1 (background), the RGC's current and future energy policy focuses on hydropower, oil, and coal as Cambodia's primary energy sources for energy generation.

This emphasis creates challenges regarding: *1) the adverse environmental impacts of these energy sources; 2) the risk of 10 % of households to be left without grid access; 3) an unstable and insecure energy supply, and; 4) the affordability of energy for much of the population.*

In this context, solar energy offers opportunities for providing clean, reliable and affordable electricity access to all Cambodian people including those who may be left out from grid access. However, there several political, technical, financial and informational barriers currently make it difficult to scale-up solar energy use in Cambodia.

As shown by Figure 15, the output 3 activity will focus on removing the identified policy, technical, financial, and informational barriers for the adoption of solar energy. These interventions are envisaged to open up opportunities for solar energy to meet the needs of the Cambodian people, particularly for rural and remote off-grid households. The expansion of solar energy use will also have other positive spill-over effects such as contributing to national economic growth, reducing GHG emissions, and sustaining a cleaner local environment.

Figure 15: Theory of change for the output 3 activity

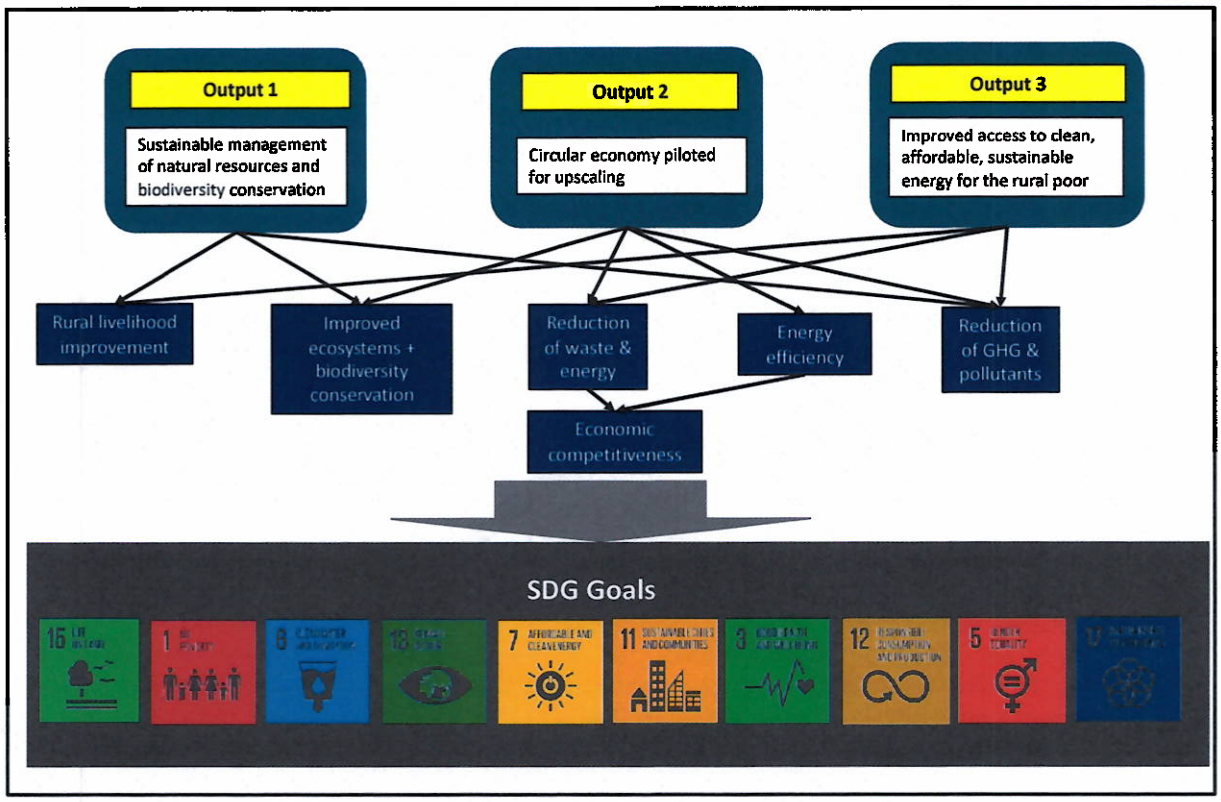


2.2.4 Overall theory of change

Error! Not a valid bookmark self-reference. provides a diagram of the overall Theory of Change, illustrating how the project contributes to several outcomes including rural livelihood improvement, improved ecosystem and biodiversity conservation, reduction of GHG and pollutants, reduction of waste and energy consumption, an increase of energy efficiency and economic competitiveness, and improved policy coordination.

These expected outcomes contribute to the attainment of Sustainable Development Goals (SDGs) such as: *SDG 1 (No Poverty), SDG 3 (Good health and wellbeing), SDG 5 (gender equality), SDG 6 (clean water and sanitation), SDG 7 (affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 12 (responsible consumption and production), SDG 13 (climate action), SDG 15 (life on land) and SDG 17 (partnerships for the goals).*

Figure 16: theory of changes for the overall project



3 Results and Partnerships

3.1 Expected Results

Output 1: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM

Activity 1.1. Expansion and strengthening of community based NRM: This component of activity aims to:

- Rapid gender assessment to understand 1) different roles which women and men play in using natural resources, and 2) identification of areas which require improvement in terms of gender equality and women's empowerment, for example, decision making posts, processes and access to knowledge and technology.
- Support the establishment and strengthening of networks of community-based NRM institutions (Collaborative management, CF and CPAs) wherever possible, simplified policy measures would be promoted and gender considerations are to be incorporated.
- Strengthening the capacity of CBNRM institutions and the capacity of women in addressing their concerns by supporting the formation and operationalisation of CBNRM federations at district, provincial and national levels, along with promoting the leadership of women in CNBRM institutions.
- Support for community-based NRM institutions with attention to female headed households to engage in sustainable production of forest resources in a pilot area (Kulen Mountain) (linked to the component of activity described below)

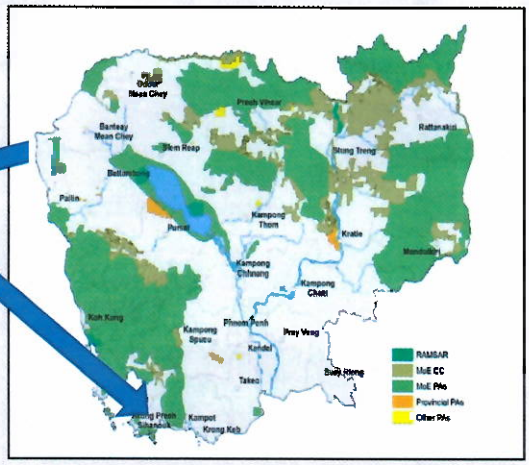
Activity 1.2. Implementation of Sustainable Financing Options for scaling up: This activity builds on the on-going support for Kulen Mountain under the Forest Carbon Partnership Facility (FCPF) project and aims to operationalise and implement sustainable financing options for conservation for two pilot sites in coordination with FCPF and GEF6 Integrated NRM, both of which have components related to PES.

Box 5. PES government decisions and status of PES activities

In October 2016, the RGC officially approved advancing the dialogue on Payment for Ecosystem Services (PES) as one of the new sustainable financing options for the PAs.

Priorities of the government include:

- Implement two PES pilot projects
  - Phnom Kulen National Park in Siem Reap
  - Kbal Chhay in Sihanoukville
- Design a PES policy in cooperation with relevant ministries



PES Status

In 2017, the Ministry of Environment requested UNDP and Cambodia Climate Change Alliance (CCCA) to lead feasibility studies in designing PES in Phnom Kulen National Park and Kabal Chay respectively and to contribute to the design of a PES policy in coordination with Conservation International (CI) and the Food and Agriculture Organization of the United Nations (FAO).

Based on on-site data collection, UNDP and CCCA experts prepared a draft option paper for PES at the two sites in cooperation with the General Secretariat of National Council for Sustainable Development (GSSD), Conservation International and the Food and Agriculture Organisation (FAO). This report presented initial proposals for PES designs for two sites defining:

- Potential key ecosystem services/goods subject to payments under PES
- Potential key users of services – payment transfer mechanisms
- Possible units for measurement—how these would be measured and monitored
- Potential payment transfer mechanisms between users and managers of services
- Identification of additional data needs and priority actions which are required to operationalize PES at the two pilot sites
- Policy recommendations and key elements for a PES policy for Cambodia

Implementation of PES approaches includes:

- Identification of options for payment collection and distribution
- Designing and establishment of a PA fund: *1) defining revenue sources; 2) creation of the fund, its management structure and monitoring systems, and; 3) development of regulations to enable the PA fund.*
- Designing an implementation structure which includes*: 1) management arrangements among the government, the private sector, local communities, and payers of environmental services; 2) targeted interventions, and; 3) monitoring systems.* Designing the structure pays particular attention to potential impacts of measures on women and men. If any adverse effects are anticipated, specific measures are to be developed for avoidance and mitigation.
- Updating and development of management plans including land-use plans to conserve and protect upper watersheds for Phnom Kulen & Kbal Chay
- Initiation of the pilots
- Documentation of the implementation progress and lessons learned
- Development of a PES policy

- Development of mechanisms to support regulations for implementing PES
- Development of the PES implementation guidelines

Activity 1.3. Demonstration and scaling up of sustainable production of natural resources: (note: this activity is to be implemented subject to availability of additional funding)

This activity aims to build on and scale up an existing pilot initiative related to sustainable charcoal to the national level.

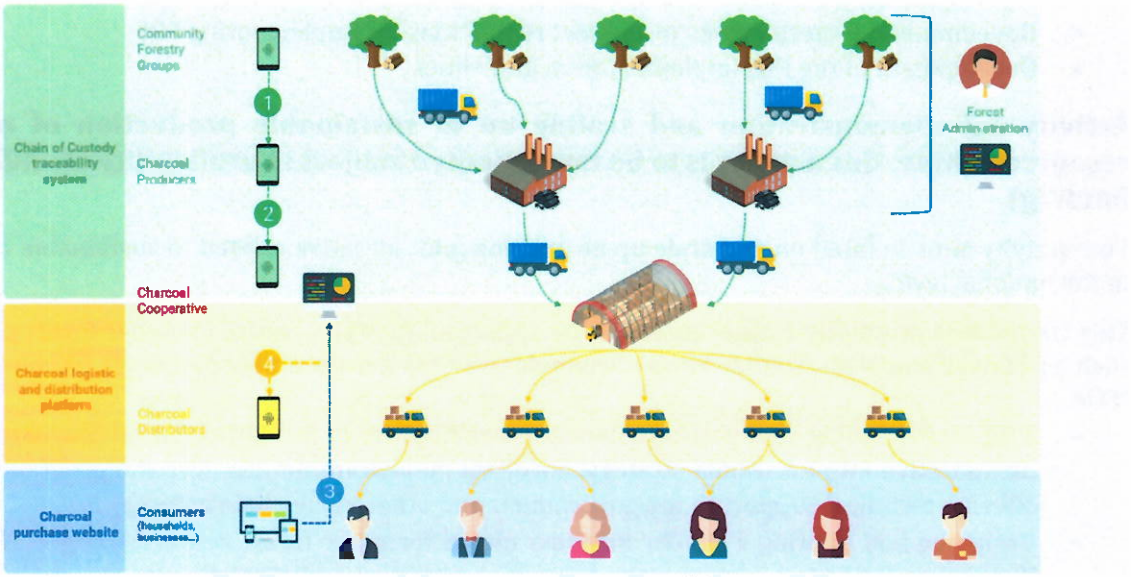
This component of activity further assesses the applicability of this model for other forest products such as Timber and Non- Timber Forest Products (NTFPs) to create new pathways for sustainable NRM.

- Support for scaling up the sustainable charcoal initiative to the national level (mainstreaming the initiative into a national strategy, enrolling more communities into the programme and offering technical support to the government and other value-chain actors)
- Designing and piloting a similar business model for other forest resources (e.g. NTFPs and Timber) and creating opportunities to promote enterprises led by women

Box 6. Sustainable charcoal initiative: bringing innovation for sustainable NRM

Background: Since December 2017, UNDP has been implementing a pilot initiative on the sustainable charcoal initiative in partnership with GERES, RECOFTC, and Okoone. Its ultimate objective is to transform illegal, non-sustainable charcoal production and consumption into sustainable activities by improving efficiency gains for sustainable charcoals through the formation of a producer and consumer network and the application of mobile technology.

On the production side, this initiative will create a cooperative with a network of registered community forests, traditional charcoal producers, and distributors for the production, processing and distribution of sustainable wood-fuel. This production will be further assisted by the provision of incentives for tree planting and the implementation of a low-cost certification scheme. Integrated production models like coppicing with standards could be used to provide a significant amount of wood-fuel. This could generate both short-term income from wood-fuel production and long-term higher-added value income through the production of round wood. The implementation of a low-cost certification scheme is also an instrument for tracing a chain of custody and for ensuring sustainable production of fuel-wood and charcoal.
On the consumer side, a mobile application has been developed to enable online ordering of charcoal, and to connect a network of regular consumers, for example households and restaurants. This will enable factories to significantly reduce the transaction costs associated with searching for customers.



Activity 1.4. Support for integrated land use planning (planted forests and protected forests) (note: this activity is to be implemented subject to availability of additional funding)

This activity supports piloting of integrated land use planning to promote sustainable management of natural resources. Through integrated land use planning, the project designates some areas for production and other areas for conservation.

- Support for participatory land use planning at the local level to designate areas for production (i.e. plantation)
- Promote sustainable management of areas reserved for production and effective conservation of areas reserved for protection

Activity 1.5. Strategic communication and awareness raising: This activity entails

- Development of communication strategy and materials.
- Consolidation and dissemination of information on project led activities on NRM
- Organization of environmental awareness events and campaigns: this activity focuses on advocacy relating to project priorities

Activity 1.6. Development of scaling-up strategies including programming and new partnership

- Development of strategies and plans for scaling up and new project formulation

Output 2: Waste reduced, recycled and reused through application of circular economy models

The overall purpose of this activity is to design and propose **Circular Economy business models in cities and industries.**

Activity 2.1. Piloting new business approaches for municipal waste

(The project plans to select one municipality listed below for the first two years. Subject to funding availability, another option may be selected)

This activity will build on the existing initiatives of solid waste management, especially in Kep and Siem Reap. For Kep, the project is to align with the several future and ongoing initiatives in

relation to solid waste and sustainable cities from the Global Green Grow Institute (GGGI), the Asia Foundation and United Nations Environment Programme (UNEP).

Thus, the first priority will be given to Kep to demonstrate success and include Siem Reap as the second priority. However, if the budget can cover both locations, this project will cover both to explore an opportunity to scale up circular models in other cities or provinces.

Option 1: Kep

- Formulation of a strategy/action plan for integrating circular economy principles in the provincial waste management plan and regular planning process of the province (e.g. investment plan, strategic plan, and 3-year rolling plan).
- Clarifications of roles and responsibilities of different entities (e.g. NCDDS, MoE, NCSD, provincial government and private sector) in waste management and strategies to implement circular economy options and concrete action plans (e.g. waste reduction, recycling, and reuse of waste, environmentally friendly incineration, improved dumping sites or sanitation).
- Conduct awareness raising campaigns among business operators, including hotels, guesthouses, restaurants, and recreational places/resorts.

Option 2: Siem Reap

- Technical support for piloting identified business models along with rapid gender assessment of potential impacts and opportunities for women in 3Rs (circular economy).
- Campaigning to raise awareness among a network of Siem Reap hotels, targeted Siem Reap villages and local markets to induce behaviour change related to waste segregation.
- Refinement of business models based on lessons learned from piloting for replication and scaling up.
- Formulation of a strategy/action plan for integrating circular economy principles in the provincial solid waste management and regular planning process of the province (e.g. investment plan, strategic plan, and 3-year rolling plan).

Activity 2.2. Designing a new business approach to industrial waste with the Private Sector (e.g. Garment Sector and organic waste for agriculture)

Option 1: H&M: industrial waste recycling for the garment sector

- Feasibility assessments and development of business and investment proposals for using Refuse-derived fuel (RDF) (such as textiles, other biomass) as alternative energy sources for boiler and energy efficiency measures
- Technical support for piloting identified priority business models (e.g. identification of partners for use of RDFs and energy efficiency)
- Refinement of business models based on lessons learned from piloting for replication and scaling up

Option 2: Turn organic waste into organic fertilizers for high value agriculture production

- Designing of mechanisms for using organic waste into fertilisers with TwinAgri
- Technical support for piloting identified business models (e.g. identification of partners for recycling.
- Designing strategies for replication and scaling up.

In addition to the above, the project will explore the option of waste recovery (3Rs) at dumping sites/landfills by testing new business models and technologies with possible investment from the private sector.

Activity 2.3. Strategic communication and awareness raising: This activity entails:

- Development of communication strategy and materials for the government
- Consolidation and dissemination of information on project led activities on circular economy
- Organization of environmental awareness events and campaigns including plastic campaigns: this activity focuses on advocacy relating to project priorities such as fighting plastic in collaboration with RUPP, University of Cambodia, the government, and private sector

Activity 2.4. Development of enabling policies and measures for circular economy

- Identification of existing regulations that inhibit the promotion of circular economy (e,g. new regulations on plastic and other kinds of waste)
- Development of an enabling framework for SWM

Activity 2.5. Development of scaling-up strategies including programming and new partnership

- Development of strategies and plans for scaling up and new project formulation
- Development of a national strategy and action plan for circular economy in Cambodia.
- Mainstreaming circular economy concepts into key national policies and laws such as Rectangular Strategy, NSDP etc

Output 3: Improved access to clean, affordable, and sustainable energy for the rural poor

Interventions under this output seek to provide clean and sustainable energy supply through provision of solar PV energy to the rural population.

The project seeks to remove existing policy, technical, and information barriers for solar energy (see the background) and at creating an enabling environment for ensuring energy access for the rural poor.

Among other ways, the project supports development, rolling out and/or scaling up of proven solar PV technologies (i.e. solar water pumping, solar drier, etc.) to improve productive uses in rural areas. This work entails the following activities:

Activity 3.1. Solar energy for improving energy access for rural communities

- Feasibility assessments, studies or needs assessments of solar technologies (i.e. SHSs, DC or AC grids, solar water pumping and other productive use applications, etc.) for rural communities.
- Development and testing of viable solar business models to provide solar PV technologies to rural communities. This initiative entails: 1) organisation of a prize challenge & a springboard programme, and; 2) provision of a minimum start up grant
    - The project will organise a prize challenge to select 4-5 solar PV companies, entrepreneurs, and/or practitioners to identify solar PV technologies that are technically, and economically viable in a local context.
    - The project will organize a springboard programme for selected candidates to receive training and coaching support to refine viable solar business models.

- The project will provide a minimum start up grant to companies/entrepreneurs to roll out in the actual solar market for rural communities.

Through the prize challenge and springboard programme, the project aims to demonstrate workable models for solar PV technologies, to improve market confidence on solar energy and therefore to create market proven solar to be scaled up through future larger investment.

- Provision of solar technologies, mainly targeting off-grid rural households and communities who do not have access to electricity or are vulnerable to climate change: The project will allocate a dedicated fund to support installation of solar applications for the poor and vulnerable households in pilot sites (e.g. DC/AC mini-grids, solar pumping, productive use, etc.) The project sites and beneficiaries will be determined during the project inception phase). Attention will also be given to the solar PV technologies that can contribute to women empowerment.

Activity 3.2. Building technical capacity for solar PV technology installation, operation and maintenance

- Enhancing the national capacity on energy planning and development (grid stability), quality standards/guidelines and enforcement of standards/guidelines: The project will provide capacity development programme to staff from the Ministry of Mines and Energy, Electricité Du Cambodge (EDC), and Electricity Authority of Cambodia (EAC) on aspects related to energy planning, integration of variable renewable energy into the grid, grid stability, quality standards/guidelines and enforcement of quality standards/guidelines.
- Development and provision of capacity development activities to private companies supplying solar PV technologies in the project targeted areas. The capacity development will include upgrading technical skills in designing, installation, operations and maintenance of solar systems using quality and installation standards/guidelines. It will also promote technical capacity of female technicians.
- Support for expanding and further application of quality standards/guidelines. This activity will build upon the existing approach of Good Solar Initiative of AFD-EU funded project. Ultimately capacities from private sector parties should be enhanced to perform independent third-party verification services.
- Cooperation with the Solar Energy Association of Cambodia (SEAC) for improving awareness of public on the solar PV technologies as well as strengthen coordination/communication between solar companies, development partners and government.

Activity 3.3. Strategic communication and awareness raising:

- Development of communication materials.
- Raising awareness about solar technologies among communities, with special attention to women and other vulnerable groups. This activity focuses on addressing misconceptions about solar energy, benefits of solar energy, on offering information about the importance of using high and long-lasting quality solar equipment, and on appropriate methods for maintenance.
- Consolidation and dissemination of information on project led activities on solar to enhance trust on the solar technologies.

Activity 3.4. Development of enabling policies and measures for solar

- Support evidence-based studies to support policy and institutional planning on solar PV such as Economics of solar PV energy study, geospatial modelling for energy access, potential tax reduction schemes, potential funding mechanism / credit enhancement instruments (such as green bonds and bank guarantees) and other regulations. (The geospatial modelling could be implemented in collaboration with KTH Royal Institute of Technology in Stockholm to carry

out the modelling exercise focusing on mapping low-cost technology choices for off-grid areas) (note: these activities are to be implemented subject to availability of additional funding).

Activity 3.5. Development of scaling-up strategies including programming and new partnership

- Development of strategies and plans for scaling up and new project formulation to upscale the activities under the project, as well as addressing other barriers.

Table 1 shows a summary of expected results for each output.

Table 1: Project outputs and expected results

Output 1: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM
Activity 1.1. Expansion and strengthening of CBNRM
Activity 1.2. Implementation of sustainable financing options for protected areas
Activity 1.3. Strategic communication and awareness raising
Activity 1.4. Development of scaling-up strategies including programming and new partnership
Output 2: Waste reduced, recycled and reused through application of circular economy models
Activity 2.1. Circular economy pilot: Municipal level
Activity 2.2. Circular economy pilot: Industrial level
Activity 2.3. Strategic communication and awareness raising
Activity 2.4. Development of enabling policies and measures
Activity 2.5. Development of scaling-up strategies including programming and new partnership
Output 3: Improved access to clean, affordable, and sustainable energy for the rural poor
Activity 3.1. Solar energy for electricity supply and increasing resilience of rural communities
Activity 3.2. Building technical capacity for solar PV technology installation, operation and maintenance
Activity 3.3. Strategic communication and awareness raising
Activity 3.4. Development of enabling policies and measures for solar
Activity 3.5. Development of scaling-up strategies including programming and new partnership

3.2 Resources Required to Achieve the Expected Results

Resources required to achieve the expected results include

- Staff time of key government officers, RUPP and technical inputs;
- Project staff:
  - 1 Environmental Policy Specialist (P4) for overall technical coordination and technical guidance for the output 1 and 2 (30 % time), with the rest (70%) co-financed by UNDP CO
  - 1 Energy advisor (P5) (40 % time) for the output 3, the rest (60%) co-funded by UNDP CO
  - 2 National specialists or consultants (SB5 NRM and waste specialist (80% time), and SB4 Energy Specialist (80 % time) the rest co-financed by UNDP CO
  - 1 Project assistant (100% time) to handle administrative and financial tasks related to the project.
- Staff time of UNDP country office in terms of technical advice, quality assurance, administration and finance support;
- International and national consultants to provide technical inputs;
- International and national organization(s)/ firm(s)to undertake project activities.

3.3 Partnerships

The project will be implemented in partnership with the following partners from the government, development partners and private sector.

Table 2: Project partners

Partners	Government	Civil society	Private sector	Link to UNDP projects
Output 1: CBNRM institutions strengthened and financial resources mobilised for sustainable NRM				
1.1. CBNRM	MoE/MAFF	RECOFTC		
1.2. Sustainable financing options for protected areas	MoE/NCSD/MEF			GEF6 INRM
1.3. Sustainable production of natural resources	MoE/MAFF	GERES RECOFTC		FCPF II
1.4 Integrated land use planning	MoE			
1.5. Development of scaling-up strategies including pipeline and new partnership	MoE/NCSD			
Output 2: Waste reduced, recycled and reused through application of circular economy models				
2.1. Circular economy pilot: Municipal level	NCDDS/MoE/NCSD		GAEA for Siem Reap	
2.2. Circular economy pilot: Industrial level			H&M and garment industries	
2.3. Strategic communication and awareness raising	NCDDS/MoE/NCSD	RUPP		
2.4. Development of enabling policies and measures	NCSD/MoE/NCDDS			
2.5. Development of scaling-up strategies including programming and new partnerships				
Output 3: Improved access to affordable, and sustainable energy for the rural communities				
3.1. Solar energy for electricity supply and increasing resilience of rural communities	MME	Energy lab	Solar companies and entreprene urs	GEF 7
3.2. Building technical capacity for solar PV technology installation, operation and maintenance	MME/NCSD/MEF/EDC/EAC	Energy lab	Solar companies	GEF 7
3.3. Strategic communication and awareness raising	MME/NCSD	SEAC and Energy lab		GEF 7
3.4. Development of enabling policies and measures	MME/NCSD			
3.5. Development of scaling-up strategies including programming and new partnerships				

The project plans to collaborate and coordinate with the following related projects.

Sustainable Natural Resources Management

- ***UNDP Forest Carbon Partnership Facility (FCPF) II:*** The main purpose of the FCPF II project is to assist Cambodia to be fully ready for REDD+ implementation by 2020 to tackle the alarming rates of deforestation and forest degradation in the country and to improve the livelihoods of forest dependent communities. To realise this objective, the project seeks to attain the following four outputs: a) strengthening of REDD+ management arrangements; b) development of NRS Action Plan(s) and other relevant enabling policy instruments for project; c) enhancement of subnational capacities for REDD+ planning, and; d) monitoring system designed for REDD+ with capacity for implementation.

- ***UNDP Cambodia Climate Change Alliance (CCCA) phase II:*** The project aims to strengthen national systems and capacities to support the coordination and implementation of Cambodia's climate change response, contributing to a greener, low carbon, climate-resilient, equitable, sustainable and knowledge-based society. The Specific Objective is to contribute to the implementation of the Cambodia Climate Change Strategic Plan (CCCSP), which focuses on three main drivers of change: a) strengthening CC governance; b) harnessing public and private, domestic and external resources in support of the CCCSP vision, and; c) developing human and technological capital for CC response.

- ***UNDP Environmental Governance Reform (EGR) project:*** This project aims to assist the RGC to attain the following key deliverables under the Environmental Governance reform to create an enabling policy and legal environment for achieving sustainable development and effectively conserving and protecting environmental resources that are currently at risk. KD1: New Structure of MoE Operationalized, KD 2: New NCSD Organizational Structure and Authorities Operationalized, KD3: New Environmental Code Drafted and KD4: Integrated Ecosystem Mapping Developed and Operationalized.

- ***ADB/WB Forest Investment Programme (pipeline):*** ADB and WB designed a proposal to implement Forest Investment Programme (FIP). The proposed programme has three major activities to support the forestry sector: 1) design and pilot a framework for landscape management inside and outside biodiversity conservation corridors; 2) supporting reforestation and production forests through public and private partnership, and; 3) implementing national forest monitoring. Since these proposed activities are highly relevant for proposed project readiness activities, the project aims to maximize synergy and alignment between REDD+ readiness and investment activities.

- ***Swiss Development Cooperation Partnership for Forestry and Fishery Communities (PaFF) in the Mekong Flooded Forest Landscape of Cambodia.*** The PaFF programme started in November 2014 and covers three phases over eight years until 2022. The second phase will be running from August 2017 until June 2021 implemented by a consortium of Cambodian NGOs on a budget of USD 6.1 million contributed by a range of international. The aim of PaFF is to support local and indigenous communities and households in increasing their income and improving their resilience to economic and natural shocks. This is done by engaging in sustainable community-based livelihood approaches that protect ecosystems and reduce pressure on communal natural resources. To achieve these objectives, PaFF phase 2 has three interlinked outcomes: 1) securing and exercising rights to natural resources; 2) increasing income through sustainable community-based forestry and fishery enterprises, and; 3) enabling policy at national and local levels to support rights over natural resources and community-based enterprises' sustainability.

- ***ADB:*** The ADB's Environmental Operations Center (EOC) Core Environment Program (CEP) is currently designing Phase 2 of the Biodiversity Corridor's Initiative (BCI). Over the next 7-8

years, BCI Phase 2 will focus on the Eastern Plains and Cardamom Mountains corridors in Cambodia. The Core Environment Program also has funding to technical assistance for work on REDD+ and PES at the national level and in each of the three biodiversity corridors: Eastern Plains, Cardamom Mountains and the Northern Plains.

Circular economy

There are four relevant initiatives launched in the 3Rs area:

- ***UNDP Inclusive Governance for Service Delivery and Social Accountability (IGSS);*** The Inclusive Governance for Service Delivery and Social Accountability Project is established building on the achievements and lessons learned from the previous Association of Councils Enhanced Services Project in which UNDP helped to establish and build the capacity of 25 Provincial Associations of District, Municipality, Khan, Commune/ Sangkat, the National League of Local Councils, the National Association of Capital and Provincial Councils and their Joint-Secretariat.

  As one of the key activities, this project aims to build capacity on local service delivery for District, Municipality, Khan, Commune and Sangkat: District, Municipality, Khan, Commune and Sangkat administrations in 3 target areas will have a better understanding about their generic roles and be more able in performing specific service delivery functions, such as Solid Waste Management In doing so, selected District, Municipality, Khan, Commune and Sangkat will develop and implement their own models of solid waste management in ways that benefit local citizens, including women, youth, and other vulnerable groups.

  In working the implementing partners, UNDP will explore the innovative business models to put the 3Rs initiative into practice through engaging with private sector to invest in technology development on waste management and removal of legal barriers where appropriate.

- ***SNV Cambodia Waste to energy funded by EU, SWITCH-Asia:*** SNV Cambodia implemented the Waste to Energy (WtE) project for the rice milling sector in Cambodia – a technology to generate electricity from rice husks – from 2012 to 2015. It targeted nine provinces across Cambodia: Battambang, Pursat, Kompong Speu, Banteay Meanchey, Kompong Thom, Siem Reap, Kandal, Kompong Cham and Prey Veng. This project aimed to make the industry greener, cleaner and more competitive.

- ***Anti-plastic bags campaign:*** UNESCO Cambodia, Ministry of Environment, Ministry of Tourism and Union of Youth Federations in Cambodia jointly organized the Cambodian Anti-Plastic Bag Campaign to raise awareness on reducing plastic and recycling. It also aimed to influence behavioural change in Cambodian people.

- ***GEF regional project on waste management (Cambodia, Philippines, Vietnam, Laos and Mongolia).*** The GEF has earmarked US$7.5 million for the project. In Cambodia, this project will be undertaken by the Ministry of Environment, the United Nations Industrial Development Organization (UNIDO) and Phnom Penh Municipal Hall, and it will first be implemented in Phnom Penh's largest dumpsite Choeung Ek.

Solar energy

The project will benefit from lesson learned and good practices from ongoing solar projects such as EDC led Rural Electrification Fund on SHS provision to off-grid households, the MME/AFD Green Microfinance Programme implemented by SNV for the SHS activities and the MME/ADB 10MW solar farm project in Bavet district, Svay Rieng province. The project will collaborate with the ADB on the its pipeline solar PV project funded under the SREP. The project will associate with USAID funded project on Clean Power Asia on preparing Policy Option on solar PV. It will, amongst other things, liaise with EDC/REF and Energy and Environment Partnership Mekong initiative to build synergies and avoid duplication on the solar projects funded under the them. When relevant, the project will exchange findings from the research activities with 3i programme of the DFAT. The project will collaborate with GGGI on potential solar city support in Kep province.

- ***ADB:*** installed 10MW solar farm in Svay Rieng province. In collaboration MME, Sunseap is a partner implementing project. This is the first solar utility scale in Cambodia. It runs from It aims to provide electricity access especially to the industrial sector and to support EDC's capacity for integration of renewable energy, including advanced technologies such as energy storage, into the national grid strengthened. Another upcoming project under ADB Scaling-up Renewable Energy for Low Income Countries Program (SREP). SREP designed to help remove principal barriers impeding investments in renewable energy resources development. It will support biomass, SHSs, mini-grids, solar rooftop and utility scale solar farm. Under another technical support to EDC, ADB is supporting a technical study on the capacity of the grid to handle integration of intermittent renewable energy sources such as solar.

- ***EU and AFD's Green Microfinance Programme***: started since 2014 and is providing assistance to the government on awareness raising to increase demand on solar energy, the development of a sustainable offer of high quality individual solar equipment through the structuring of association of solar equipment suppliers and the creation of an accreditation program for the products and services provided by suppliers, and the development of a credit offer through the training of MFIs staff to solar technologies. Under this programme, SNV is implementing the Good Solar Initiative, the first certification and quality control system for solar companies and their products (SHSs) in Cambodia.

- ***USAID's Clean Power Asia: started Jan 2017.*** It is implemented by ABT associates to provide support related to renewable energy to Lower Mekong countries including Cambodia. It provides policy and technical support on solar power and other renewable energies to Ministry of Mines & Energy (MME), Energy Authority of Cambodia (EAC) and utility (EDC). Currently, Clean Power Asia and UNDP is preparing a joined Policy Brief on Solar Energy to provide policy recommendations to policy makers.

- ***Energy and Environment Partnership Mekong***: is a regional implemented since December 2009. The programme aims at contributing to improved access to sustainable energy while mitigating global climate change. A couple of projects has been approving and in the pipelines for Cambodia. The project has difficulties in finding a project to finance due to the stringent criteria set under the project and difficult for projects/companies to comply with all requirements.

- ***Australian Development of Foreign Affairs and Trade***: Investment in Infrastructure (3i) is financing a $20M project since 2015 to implement clean water and energy related infrastructure projects. Under the energy component, the project is supporting energy access to rural population through evidence-based research and providing technical advices for private investment.

- ***Global Green Growth Institute (GGGI):*** is trying to realize a solar city in Cambodia in cooperation with MME, EDC and NCSD. Kep will be the target province. The project is still under consultation with stakeholders especially negotiation with MME and EDC.

3.4 Risks and Assumptions

Table 3 summarise key sets of anticipated risks and countermeasures to address each type of risk (See Annex 3: risk log for more details).

Table 3. Types of risks and counter measures to be taken by the project

No	Types of risks	Counter measures
1	Government staff capacity is not fully available for programme implementation	The project activities include capacity building of key government staff for effective design and implementation of project activities. Key government staff include staff from the Ministry of Environment (MoE), Ministry of Agriculture, Forestry and Fishery (MAFF), National Council for Sustainable Development (NCSD), National Committee for Sub-National Democratic Development (NCDD), Ministry of Mines and Energy (MME).
2	Government agencies do not cooperate and coordinate activities effectively.	The project supports the strengthening of NCSD, an inter-ministerial coordination mechanism to assure support and coordination.
3	Lack of adequate skills and knowledge among NGO partners	Proposed NGOS partners, RECOFTC and GERES for the output 1 have decades of working experiences in and in-depth knowledge of the NRM sector. For instance, RECOFTC has supported the establishment of more than 185 community forestry, and 20 community protected areas. GERES has conducted a number of research projects related to wood-fuel and is a key partner for the development of a pilot initiative of sustainable charcoal along with RECOFTC.
4	The private sector does not cooperate and coordinate activities effectively	The project will work with actors within the private sector who have demonstrated commitments to integrate SDGs into their business operations. These partners include H&M and GAEA. Based on the demonstration of successful results, the project seeks to influence and transform other actors in the private sector to adopt sustainable practices in their business operations (e.g. other municipalities, other types of industry).
5	Governments do not commit to promoting renewable energy or circular economy	For both renewable energy and circular economy, the project unpacks the political and economic context concerning energy and waste management and develops strong cases for adopting these new models.
6	Subnational activities entail environmental and social impacts that significantly affect land tenure arrangements and/or traditional cultural ownership patterns	The project seeks to ensure positive impacts on land tenure and cultural ownership for local communities and Indigenous Peoples through promoting and expanding community-based natural resource management as well as by supporting communities to engage in sustainable management of natural resources (see the project output 1). The project also seeks to make positive impacts on rural households by enabling solar energy access (see the project output 2).
7	Programme inputs (funds, human resources, etc.) are not mobilized in a timely fashion	The project seeks to avoid this risk by ensuring that procurement of services (individuals, firms) is done in the most efficient manner with due consideration of the need for high levels of expertise to successfully implement the project.

8	Potential impact on gender equality, women's empowerment and human rights	The project fully considers and promotes the gender equality and women's empowerment. During the initiation phase of the project, the project conducts a rapid gender assessment of social dynamics of the proposed project sites for NRM and waste management. This assessment will entail assessments of 1) different roles which women and men play in using natural resources, and energy as well as managing waste and 2) identification of areas which require improvement in terms of gender equality and women's empowerment, for example, decision making posts, processes and access to knowledge and technology. Among others, the project will ask the questions: 1. who among communities make key decisions about use of resources and energy? 2. how do these decisions differentially impact the choices of women and men in pursuing their freedom in their lives? and 3. what are means to improve equality and women empowerment? Based on the assessment, the project will propose and implement measures to ensure gender equality and women empowerment. Among others, possible measures include promoting women to take leadership positions and to improve their leadership skills. For output 1 activity, the project pays special attention to ensuring equal participation of women in managing CBNRM institutions and the productive use of natural resources. For output 2, 80 % of workers in the garment sector are women. The project interventions to promote sustainable waste management and energy efficiency also contribute to creating a clean and safe working environment for women workers. For output 3, the project provides solar PVs to rural households with special attention to women-headed households.
9	The project's major focus is testing of new approaches for scaling up. However, reflective and timely learning does not take place to effectively incorporate lessons from pilots for successful scaling up.	The project places a central focus on "effective learning" to identify what works and what does not work in a timely manner. For this reason, the project conducts regular assessments to rigorously evaluate the design of models applied under the project and to improve the design and implementation approaches, by incorporating lessons learned. The project will make use of the lessons learned for designing a successful approach for scaling up.

Below is listed the set of assumptions central to project success:

- Government ownership is feasible since the government priorities SDGs as a key policy measure to promote sustainable development pathways;
- Sufficient capacities such as basic knowledge of environmental issues, energy and NRM and technical expertise (e.g. forestry, PA management, renewable energy, management of waste and energy) are readily available among key government agencies, (i.e. the Ministry of Environment (MoE), Ministry of Agriculture, Forestry and Fisheries (MAFF), National Council For Sustainable Development (NCSD), National Committee for Sub-National Democratic Development (NCDD), Ministry of Mines and Energy (MME). The project can build on these capacities to ensure that project activities are smoothly and satisfactorily facilitated;
- An inter-ministerial decision-making body such as NCSD and NCDD is able to facilitate inter-ministerial discussions and decisions to mainstream proposed environmental policies and measures into line-ministries policies and planning;

- Non-governmental stakeholders such as representatives from IPs, Civil Society, Gender Group, academics and the private sector have sufficient interests and capacities to engage in environmental discussions to address the relevant concerns;
- Domestic and international high-quality technical expertise is available to assure the highest quality of project deliverables.

3.5 Stakeholder Engagement

The main target groups for the project include 1) local and poor communities for output 1 and output 3 centering on the promotion of sustainable NRM and assuring access to clean, affordable and sustainable energy, and 2) national and subnational governments for output 1-3 for creating an enabling policy environment while further building their technical capacity.

Throughout project implementation, the key guiding principle of the project is to ensure the **full and effective participation of all relevant stakeholders**. Stakeholders include civil society organizations, the private sector, academic institutions, local communities, indigenous peoples and women, with particular attention to the rights of socially marginalized groups. This will be facilitated through the following activities.

- Developing and institutionalising national and sub-national consultation and participation mechanisms;
- Organizing consultation and information sharing meetings with other stakeholders to inform about and seek inputs for any proposed measures prior to official decisions;
- Strengthening measures to ensure that gender is adequately addressed in national and sub-national project planning processes, for example, through development of gender sensitive stakeholder engagement tools to facilitate gender responsive stakeholder engagement approaches across sectors.

3.6 South-South and Triangular Cooperation (SSC/TrC)

The project will promote South-South and Triangular Cooperation through close coordination with UNDP environment regional and global offices.

The UNDP regional and global offices will play a lead role in disseminating best practices and lessons learned from other countries and in connecting Cambodia with other countries in order to share lessons and experiences related to environmental activities. This will happen through exchange visits and regional workshops/meetings.

The project will organize regional level learning events and study tours to foster knowledge sharing of environmental challenges and devising common and regional level solutions and strategies to tackle environmental problems among the ASEAN countries including Laos, Myanmar, Vietnam, and China.

3.7 Knowledge

This project places a strong focus on the use of existing knowledge and the generation and dissemination of new knowledge.

The project will not re-invent the wheel but rather build on existing environmental practices and lessons learned from Cambodia and other countries. The project consolidates and applies lessons learned from Cambodia and elsewhere about mainstreaming environmentally responsible practices. Examples include circular economy initiatives promoted in Sweden, EU and Japan and solar heating systems adopted by rural households in China.

Knowledge generation and dissemination plays a central role in the project given that its main focus is on piloting innovations in the areas of NRM, energy, and waste management practices for up-scaling and mainstreaming. The project will reflexively learn from what works and what does not work from tested models and adopt the lessons to improve the business models for replicability and scaling up.

This project entails the development of a communication strategy and materials. It entails consolidation and dissemination of information on project-led activities on NRM, biodiversity conservation, solar energy and circular economy, and information materials relevant to project themes.

The project ensures full access to information to project-related activities and decisions by making all relevant information available on our project and UNDP country website. Furthermore, the project conducts awareness-raising activities (i.e. events and campaigns) to ensure that relevant stakeholders fully understand key concepts such as sustainable NRM, sustainable energy and circular economy through the creation of strategic information materials.

3.8 Sustainability and Scaling Up

Financial sustainability: the project provides a seed grant for replication and scaling up. Financial sustainability will be achieved by developing mechanisms to self-generate finances for future activities such as PES and by profits generated by recycling and improved energy efficiencies. The project also ensures mainstreaming interventions into the regular operations and budgets of involved government and private sector partners. During project implementation, different financing mechanism (i.e. partial guarantee mechanism) will be explored to support solar business models. Following the completion of the project these institutions and authorities will be empowered and better equipped to exercise their mandates, without the need for additional external resources.

Institutional sustainability: will be improved through systematic capacity development measures for government partners at the level of national and subnational government officials. The project supports the leadership of the government agencies in further developing and facilitating inter-ministerial mechanisms for information sharing and decision making on environmental issues.

Social sustainability: will be improved through the development of effective stakeholder engagement mechanisms for output 1 and 3 activities. For output 1, the project supports a group of communities to join community-based NRM initiatives and to actively engage in sustainable production of forest resources as well as PES schemes. Capacity building packages will be developed to enhance knowledge and management capacities of community base NRM for sustainable production of forest resources and PES. For output 3, the project will work very closely with rural communities to raise awareness of appropriate solar technology, its utility and to create know-how for usage and maintenance with a view to enabling continuous use of solar energy beyond the project duration.

Environmental sustainability: will be achieved through a coordinated approach involving a wide range of government, private sector and civil society organizations and communities to address deforestation and forest degradation at both national and subnational levels.

For outputs 2 and 3, the project targets actors within the private sector who have demonstrated commitment to SDG integration. H&M is proposed as a partner since it is the leading fashion brand in terms of promoting sustainability initiatives in the garment sector. Their adoption of sustainable practices will impact the supply-chain as well as other business actors in the garment industry.

Innovation and scaling up: innovation and scaling up are central to the project. The project will pioneer a number of innovative approaches not currently widely applied or practiced in Cambodia. These innovations include PES, sustainable charcoal, solar, sustainable waste management & 3Rs, and energy efficiency.

The project strategy is to establish localized pilot initiatives, which will test new approaches and models for the management of natural resources, waste and energy that are amenable to replication and scaling-up. Knowledge and good practices from the pilot initiatives will be demonstrated and scaled up to national level implementation.

3.9 Communication and Visibility

The project will follow UNDP's Editorial Style Manual and Brand Manual. Amongst other things, these guidelines describe when and how the UNDP logo needs to be used, as well as how the logos of donors to UNDP projects needs to be used. For the avoidance of any doubt, when logo use is required, the UNDP logo needs to be used alongside the Sida logo. UNDP will also acknowledge the Embassy of Sweden's contribution in this project in the Cambodian Development Cooperation database.

4 Project Management

4.1 Cost Efficiency and Effectiveness

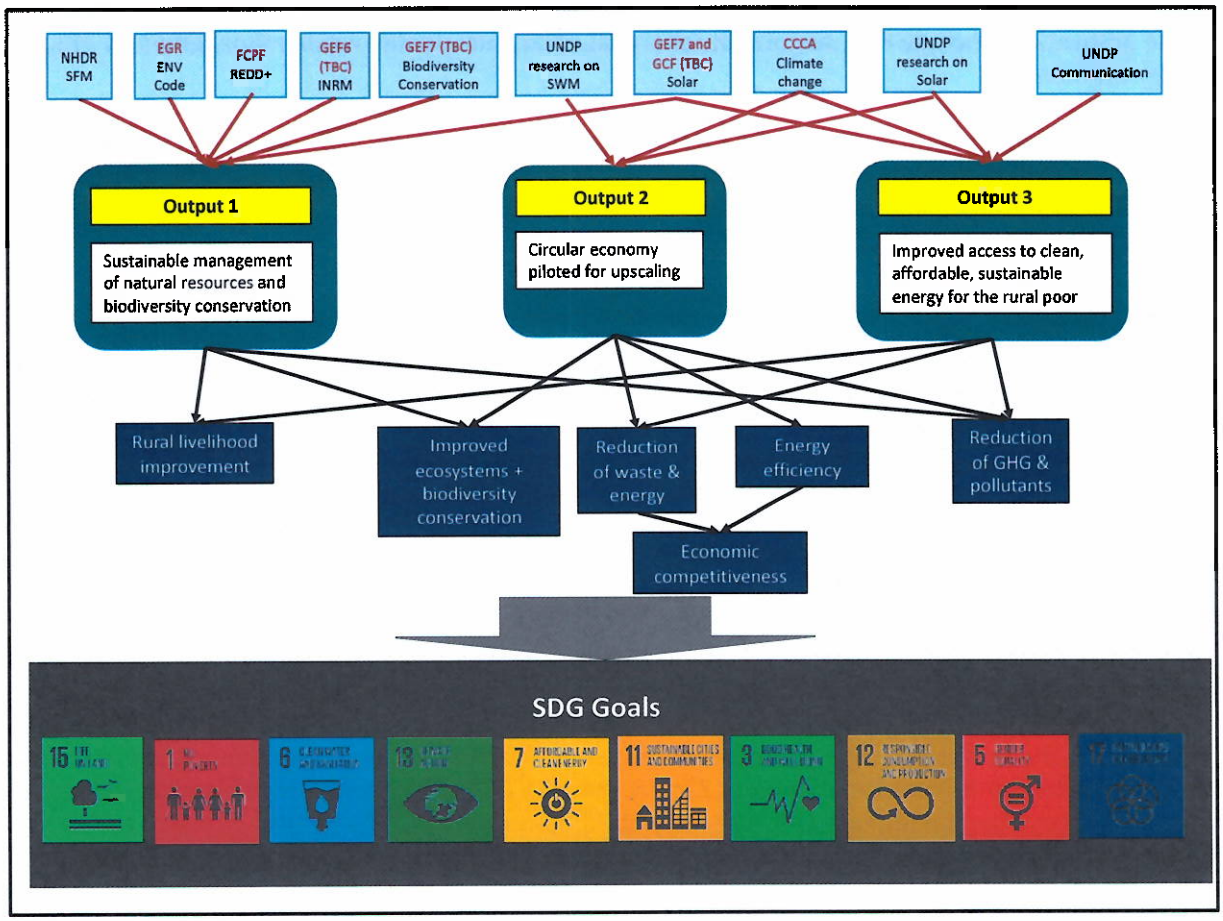
The project seeks to deliver maximum results with the available resources by partnering with related initiatives and by linking the project with pipeline projects for scaling up (See Figure 17).

For output 1, the project will apply lessons learned from various research initiatives conducted under the UNDP National Human Development Report (NHDR) on forest resources, which have identified ways to improve the livelihoods of forest dependent communities. The project will also collaborate closely with the Environmental Governance Reform (EGR) project., which supports the development of an Environment and Natural Resources Code. Among other things, the draft Code includes provisions to strengthen tenure and management rights of communities in relation to natural resources through collaborative management. The project will build on and operationalise this approach to collaborative management. The Project will also coordinate with other related initiatives such as Forest Carbon Partnership Facility (FCPF) REDD+ initiative to reduce emissions from the forestry sector, and with other GEF pipeline projects related to NRM and biodiversity conservation (GEF6 and GEF7) to ensure synergy and maximize desired impacts on sustainable NRM and biodiversity conservation. For PES, the project works with the GEF 6 integrated NRM project covering the Siem Reap Area to operationalise a PES approach for Kulen Mountain. The project will also coordinate with other related initiatives, led by World Bank, ADB, and SDC on NRM issues.

For output 2, the project will build on and apply the results of research on solid waste management to identify priority actions for sustainable waste management. The project will also coordinate with other related initiatives, led by World Bank, and ADB on solid waste management issues, through knowledge sharing and seeking opportunities for joint implementation, if and when deemed effective.

For output 3, the project will build on and apply the results of research on solar to develop a strategy and implementation: 1) solar PV business model, 2) de-risking solar investment study, 3) economics of solar and 4) solar water-pumping market study. The project also seeks to expand its impacts and scale by pursuing options such as GEF 7 and Green Climate Fund (GCF) to invest in solar energy. The project will also coordinate with other related initiatives, led by AFD, ADB and SNV on energy issues, through knowledge sharing and seeking opportunities for joint implementation, if and when deemed effective.

Figure 17. Coordination with other related initiatives



4.2 Project Management

The project will be implemented under the National Implementation Modality (NIM). The National Council for Sustainable Development is the Implementing Partner.

Project activities will be undertaken by three main Responsible Parties from the government, namely the Ministry of Environment, National Committee for Sub-National Democratic Development and Ministry of Mines and Energy.

The quality of the project will be regularly monitored and assured by UNDP staff, including country office advisers, regional advisors, programme analysts and associates.

UNDP Country Office support to the National Implementation

The UNDP country office will also provide support services such as policy advisory; developing and testing innovative solutions; exploring and testing of Public Private Partnership (PPP); coordination; communication and advocacy; resource mobilization; recruitment of key project personnel; procurement of goods and services; and the identification and facilitation of training activities in accordance with the Letter of Agreement between UNDP and the Government for the Provision of Support Services (Annex 5). UNDP policies on cost recoveries will apply to these activities.

The project will be audited as per requirements stipulated in UNDP's Programme and Operations Policies and Procedures and the UN's Harmonized Approach to Cash Transfer (HACT) Framework.

Additional technical support will be provided by external expertise locally and internationally, including by regional experts or institutions from the region, according to needs identified by the Project Management Team. The UNDP will also provide support, particularly for compiling lessons learned and sharing experiences with other stakeholders locally and internationally.

5 Results Framework

Intended Outcome as stated in the UNDAF/Country Programme Results and Resource Framework:
UNDAF Outcome 3: **By 2023, women and men in Cambodia, in particular the marginalized and vulnerable, live in a safer, healthier, more secure and ecologically balanced environment with improved livelihoods, and are resilient to natural and climate change related trends and shocks.**

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:
3.2.3: The extent to which natural resources are protected, conserved and sustainably managed as measured in: (i) Percentage of forest cover; (ii) Percentage of protected area
(i) Baseline (2016): 48.14% Target (2023): TBD; (ii) Baseline (2018): 41% Target (2023): TBD
3.3.1: Number of multi-sectoral policies, legislation, plans and strategies relevant to sustainable production and living, which are developed/updated
Baseline (2018): 7 Target (2023): 15

Applicable Output(s) from 2018-21 Strategic Plan:
Output 1.4.1: Solutions scaled up for sustainable management of natural resources including sustainable commodities and green and inclusive value chain
Indicator: Natural resources that are managed under a sustainable use, conservation, access and benefit sharing regime: a) Area under sustainable forest management (hectares)
Baseline (2017): 776.046 ha (under CF and CPAs); Target (2020): 1 million ha
Output 1.5.1: Solutions adopted to achieve universal access to clean, affordable and sustainable energy
Indicator Number and proportions of households benefiting from clean, affordable and sustainable energy access disaggregated by a) women-headed, b) in rural areas, c) in urban and peri urban areas
Baseline (2017): 0; Target (2020): a) 50 HH, b) 200 HH, c) NA.

Project title: Towards Environmental Sustainability and Atlas Project Number: 00085640

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS[3]				DATA COLLECTION METHODS
			Value	Year	2019	2020	2021	2022	
Output 1 CBNRM institutions strengthened and financial resources mobilised for sustainable NRM	**1.1. Extent to which CBNRM institutions are strengthened** Measured on a three-point scale: 1= Some extent: Initial fund collection and distribution mechanism agreed 2= Moderate extent: PES operational mechanisms (including fund collection & management, implementation strategies and arrangements, and monitoring system) designed 3=Great extent: PES operational mechanisms implemented	Project report (annual and quarterly report)	0	2018		1	2	3	Reviews of pilot documents and field monitoring, meeting minutes
	1.2. Number of total and female headed households benefit from CBNRM	Project report (annual and	0	2018		30	50	100	Reviews of pilot documents and field monitoring

[3] Targets are cumulative.

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS[3]				DATA COLLECTION METHODS
			Value	Year	2019	2020	2021	2022	
		quarterly report)							
	1.3. Extent to which pilot PES approaches are operationalised for Kulen Mountain Measured on a three-point scale: 1= Some extent: Initial fund collection and distribution mechanism agreed 2= Moderate extent: PES operational mechanisms (including fund collection & management, implementation strategies and arrangements, and monitoring system) designed 3=Great extent: PES operational mechanisms implemented	- Project report (annual and quarterly report)	NA	2018	1	2	3	3	Reviews of documents
	1.4. Extent to which pilot PES approaches are operationalised for Kbal Chay Measured on a three-point scale: 1= Some extent: Initial fund collection and distribution mechanism agreed 2= Moderate extent: PES operational mechanisms (including fund collection & management, implementation strategies and arrangements, and monitoring system) designed 3=Great extent: PES operational mechanisms implemented	- Project report (annual and quarterly report)	0	2018	1	2	3	3	Reviews of documents
	1.5. Extent to which a national PES policy is developed Measured on a three-point scale: 0= None: No initial drafts 1= Moderate extent: Initial assessment and analysis 2= Great extent: final draft of policy ready for endorsement	- Project report (annual and quarterly report) - Policy measures	0	2018	0	1	2	2	Reviews of documents, meeting minutes

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS[3]				DATA COLLECTION METHODS
			Value	Year	2019	2020	2021	2022	
	1.6. Extent to which gender concerns are integrated into the proposed policy measures Measured on a three-point scale: 1= Some extent: relevant policy documents refer to their possible impacts on men and women 2= Moderate extent: relevant policy documents refer to their possible impacts on men and women and include some measures to ensure positive impacts 3=Great extent: relevant policy documents include full measures and budget to ensure positive impacts	- Project report (annual and quarterly report) Policy measures	0	2018	1	2	2	3	Reviews of documents
	1.7. Volume of financial resources mobilized to support proposed measures, measured in USD	- Project report (annual and quarterly report)	0	2018	0	500K		1 M	Reviews of documents,
Output 2 Waste reduced, recycled and reused through application of circular economy models	**2.1. Extent to which a pilot is designed and implemented (municipality)** Measured on a three-point scale: 0= None extent: Pilot is not designed 1= Moderate extent: Business model for pilot is designed, proposed, and consulted on with stakeholders 2=Great extent: Pilot is designed and implemented, with a business model tested and resulting data collected	- Project report (annual and quarterly report)	0	2018	0	1	2	2	Document reviews Field monitoring
	2.2. Extent to which a circular economy pilot is designed and implemented (industry) Measured on a three-point scale: 0= None extent: Pilot is not designed 1= Moderate extent: Business model for pilot is designed, proposed, and consulted on with stakeholders 2=Great extent: Pilot is designed and implemented, with a business model tested and resulting data collected	- Project report (annual and quarterly report)	0	2018	0	1	2	2	Document reviews Field monitoring
	2.3. Number of people outreached for raising awareness on appropriate waste management Measured by number	- Project progress reports -	0	2018	200	400	600	800	Document reviews

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS[3]				DATA COLLECTION METHODS
			Value	Year	2019	2020	2021	2022	
	2.4. Extent to which enabling policy measures are developed for the support of circular economy Measured on a three-point scale: 0= None: 1= Moderate extent: an initial set of policy measures are proposed 2= Great extent: agreed set of measures receive government endorsement	- Project report (annual and quarterly report) - Policy measures	0	2018	0	1	2	2	Document reviews
	2.5. Volume of financial resources mobilised to support proposed waste management measures, measured in USD	- Project report (annual and quarterly report)	0	2018	0	500K		3M	Document reviews Field monitoring
Output 3 Improved access to clean, affordable and sustainable energy for rural communities	**3.1 Solar PV energy business models developed and rolled out to provide electricity, incl. for productive use** Measured by number of business models	Project report (annual and quarterly report)	0	2018	2	2	4	4	Reviews of documents Field monitoring
	3.2 Number of rural households benefit from solar PV system installed for access to energy incl. for productive use Measured by number households (male and female headed)	Project report (annual and quarterly report)	0	2018	100	200	300	400	Reviews of documents, meeting minutes
	3.3 Number of female headed households benefit from solar PV system installed for access to energy, water and productive use Measured by number of households (female headed only)	Project report (annual and quarterly report)	0	2018	30	50	80	100	Reviews of documents, meeting minutes
	3.4 Number of technicians with enhanced capacities to design, install and maintain solar PV as per installation standards/guidelines (to be prepared) Measured by number of male and female technicians	Project report (annual and quarterly report)	0	2018	20	20	20	20	Reviews of documents, meeting minutes
	3.5 Number of community members with improved awareness on benefits of solar and appropriate use of solar technologies Measured by number of community members	- Project report (annual and quarterly report)	0	2018	20	40	60	80	Reviews of documents, meeting minutes

EXPECTED OUTPUTS	OUTPUT INDICATORS	DATA SOURCE	BASELINE		TARGETS[3]				DATA COLLECTION METHODS
			Value	Year	2019	2020	2021	2022	
	3.6 Number of National quality standards/guidelines for solar PV technologies developed Measured by national quality standards/guidelines	- Project report (annual and quarterly report) - Policy measures	0	2018	0	1	1	1	Reviews of documents

6 Monitoring and Evaluation Plan

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

Monitoring Plan

Monitoring Activity	Purpose	Frequency	Expected Action	Partners	Cost
Track results progress	Progress data against the results indicators in the RRF will be collected and analysed to assess the progress of the project in achieving the agreed outputs.	Quarterly, or in the frequency required for each indicator.	Slower than expected progress will be addressed by project management.	MOE/NCSD/FA/NCDD/ /MME/MEF/ PPSEZ/GAEA/H&M	
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.	MOE/NCSD/FA/NCDD/ /MME/MEF/ PPSEZ/GAEA/H&M	Oversight, monitoring and Audit cost

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.	MOE/NCSD/FA/NCDD/ /MME/MEF/ PPSEZ/GAEA/H&M	
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.	Once every two years	Areas of strength and weakness will be reviewed by project management and used to inform decisions to improve project performance.	MOE/NCSD/FA/NCDD/ /MME/MEF/ PPSEZ/GAEA/H&M	
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.	MOE/NCSD/FA/NCDD/ /MME/MEF/ GAEA/H&M	
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)		MOE/NCSD/FA/NCDD/ /MME/MEF/ GAEA/H&M	
Project Review	The project's governance mechanism (i.e., project board) will hold regular project reviews to assess the	At least annually	Any quality concerns or slower than expected	MOE/NCSD/FA/NCDD/ /MME/MEF/ GAEA/H&M	US$12,000 (Cost of PB meetings)

(Project Board)	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.		progress should be discussed by the project board and management actions agreed to address the issues identified.		

Evaluation Plan

Evaluation Title	Planned Completion Date	Cost and Source of Funding	Key Evaluation Stakeholders	Related Strategic Plan Output	UNDAF/CPD Outcome
Final Evaluation	June 2020	$35,000 (Project budget)	MOE/NCSD/FA/NCDD/ /MME/MEF/PPSEZ/ GAEA/H&M	**Output 1.1:** National and sub-national systems and institutions enabled to achieve structural transformation of productive capacities that are sustainable and employment - and livelihoods-intensive **Output 1.3:** Solutions developed at national and sub-national levels for sustainable management of natural resources, ecosystem services, chemicals and waste **Output 1.4:** Scaled up action on climate change adaptation and mitigation across sectors which is funded and implemented	**UNDAF Outcome** 1: By 2018, people living in Cambodia, particularly youth, women and vulnerable groups, are enabled to actively participate in and benefit equitably from growth and development that is sustainable and does not compromise the well-being or natural or cultural resources of future generations

7 Multi-Year Work Plan

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Budget Description	RESPONSIBLE PARTY	Planned Budget by Year		TOTAL	Funding Source
				2019	2020	Amount	
Output 1	1.1. Expansion and strengthening of CBNRM	Rapid gender assessments on CBNRM	UNDP	10,000		10,000	SIDA
		Contractual Services-NGOs	MoE	20,000	30,000	50,000	SIDA
		LoA	MoE	30,000	30,000	60,000	SIDA
		Training, Workshops and Conference	MoE	8,000	8,000	16,000	SIDA
		Travels	MoE	3,000	3,000	6,000	SIDA
		Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
	1.2. Operationalisation of Payment for Ecosystem Services	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		International consultants (designing of PES, fund management, monitoring system, PES policy)	UNDP	30,000	30,000	60,000	SIDA
		National consultants (designing of PES, fund management, monitoring system, PES policy)	NCSD	30,000	30,000	60,000	SIDA
		National consultants (designing of PES, fund management, monitoring system, PES policy)	NCSD	20,000	20,000	40,000	SIDA
	1.5. Development of strategic communication strategy and information materials	Project staff-Specialist on NRM (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		International consultant (communication)	UNDP	10,000	10,000	20,000	SIDA
	1.6. Development of scaling-up strategies including programming and new partnership	Project staff -Specialist on NRM (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		International consultants	UNDP		20,000	20,000	SIDA
	1.3. Sustainable production of forest resources	Contractual Services-NGOs					
		International consultants					
		National consultants					
		Training, Workshops and Conference					

		Travels					
	1.4. Integrated land use planning	International consultants					
		National consultants					
		LoAs					
		Training, Workshops and Conference					
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	6,000	SIDA
	Sub-Total for Output 1			**208,000**	**228,000**	**436,000**	
Output 2	2.1. Circular economy pilot: Municipality (1) Kep led by NCSD	National Consultant	NCSD	30,000	30,000	60,000	SIDA
		Project staff-Specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		Travels	UNDP	2,000	2,000	4,000	SIDA
	2.1. Circular economy pilot: Municipality (2) Siem Reap (TBC) by NCDDS, MoE	LoA	NCDDS	30,000	30,000	60,000	SIDA
		LoA	MoE	20,000	20,000	40,000	SIDA
		National consultants	UNDP	20,000	20,000	40,000	SIDA
		LoA-Training, Workshops and Conference	NCDDS	3,000	3,000	6,000	SIDA
		Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		Project staff - Specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		Travels	UNDP	2,000	2,000	4,000	SIDA
	2.2. Circular economy pilot: Industrial level	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		Project staff - Specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	11,000	SIDA
		Grant/ Innovation Challenge (business idea for circular economy)	UNDP	80,000		50,000	SIDA
		Training, Workshops and Conference	UNDP	10,000	10,000	20,000	SIDA
	2.3. Development of strategic communication strategy and information materials	International consultant (communication)	UNDP	10,000	10,000	20,000	SIDA
		Communication campaign (grant to RUPP)	RUPP	5,000	5,000	10,000	SIDA
		Document, printing	UNDP	5,000	5,000	10,000	SIDA

	2.4. Development of enabling policies and measures	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		International consultants	UNDP	10,000	30,000	40,000	SIDA
		National consultants	NCSD	3,000	10,000	13,000	SIDA
	2.5. Development of scaling-up strategies including programming and new partnership	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	22,000	SIDA
		International consultants	UNDP		20,000	20,000	SIDA
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	0	SIDA
	Sub-Total for Output 2			**293,500**	**260,500**	**554,000**	
Output 3	3.1. Solar energy for electricity supply and increasing resilience of rural communities	LOA for electricity and resilience through provision of solar PV energy	MME		35,000	35,000	SIDA
		Monitoring/travel	MME	1,000	1,859	2,859	SIDA
		Consultants for feasibility studies	MME	2,000	2,000	4,000	SIDA
		Salary & Post Adj Cst-IP Staff (P5) 5%	UNDP	12,500	12,500	25,000	
		Contractual Services- SB4 National Energy Officer (20%)	UNDP	7,000	7,000	14,000	SIDA
		Grant to Energy Lab to design and run the Challenge Prize and Springboard programme (incubation programme)	UNDP	10,000	25,000	35,000	SIDA
		Start-up grants for rolling out solar business model	UNDP	15,000	30,000	45,000	SIDA
	3.2. Building technical capacity for installation of solar, and their maintenance	Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	50,000	SIDA
		Contractual Services- SB4 National Energy Officer (20%)	UNDP	7,000	7,000	14,000	SIDA
		Meetings and workshops (Energy planning, training installation and quality standards)	MME	7,000	7,000	14,000	SIDA
		Grant to SEAC (Solar Energy Association of Cambodia)	UNDP	2,500	2,500	5,000	SIDA
	3.3.Strategic communication and awareness raising	Salary & Post Adj Cst-IP Staff (P5) 5%	UNDP	12,500	12,500	25,000	SIDA
		Project staff - SB4 National Energy Officer (20%)	UNDP	7,000	7,000	14,000	SIDA
		National consultants for awareness raising and preparing communication materials	MME	10,000	10,000	20,000	SIDA
		Knowledge products (broachers/flyers/booklets)	UNDP	2,000	2,000	4,000	SIDA

	3.4. Development of enabling policies and measures	Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	50,000	SIDA
		Travel and DSA for government (capacity building to learn about good practices on integration of variable renewable energy sources into the grid system in other country)	UNDP		30,000	30,000	SIDA
		Contractual Services- SB4 National Energy Officer (10%)	UNDP	3,500	3,500	7,000	SIDA
	3.5. Development of scaling-up strategies including programming and new partnership	National consultants	UNDP	10,000	20,000	30,000	SIDA
		Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	50,000	SIDA
		Project staff- SB4 National Energy Officer (10%)	UNDP	3,500	3,500	7,000	SIDA
		Training, Workshops and Conference	UNDP	3,000	3,500	6,500	SIDA
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	6,000	SIDA
	Sub-Total for Output 3			**208,500**	**284,859**	**493,359**	
Project management		Policy Board	UNDP	2,000	2,000	4,000	SIDA
		Project Cars	UNDP	40,000		40,000	SIDA
		Information technology equip	UNDP	5,000		5,000	SIDA
		Information technology equip	NCSD	5,000		5,000	SIDA
		Travel	UNDP	5,000	5,000	10,000	SIDA
		International consultant (communication)	UNDP	20,000	20,000	40,000	SIDA
		Contractual Services-Individual national project assistant (SB3)	UNDP	22,000	22,000	44,000	SIDA
		DPC	UNDP	22,500	22,500	45,000	SIDA
		Evaluation	UNDP		35,000	35,000	SIDA
	Sub-Total for Project management			**121,500**	**106,500**	**228,000**	
TOTAL				**888,000**	**823,359**	**1,711,359**	
GMS 8 %				**71,040**	**65,869**	**136,909**	
GRAND TOTAL				**959,040**	**889,228**	**1,848,268**	

Overall budget (subject to funding availability)

EXPECTED OUTPUTS	PLANNED ACTIVITIES	Budget Description	RESPONSIBLE PARTY	Planned Budget by Year				TOTAL
				2019	2020	2021	2022	Amount
Output 1	1.1. Expansion and strengthening of CBNRM	Contractual Services	MOE /GDLC	30,000	30,000	50,000	50,000	160,000
		LoA	MOE/GDLC	30,000	30,000	30,000	30,000	120,000
		Training, Workshops and Conference	MOE/GDLC	8,000	8,000	8,000	8,000	32,000
		Travels	MOE/GDLC	3,000	3,000	3,000	3,000	12,000
		Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000
		Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
	1.2. Operationalisation of Payment for Ecosystem Services	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000
		Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		International consultants (designing of PES, fund management, monitoring system, PES policy)	UNDP	30,000	30,000	30,000	30,000	120,000
		National consultants (designing of PES, fund management, monitoring system, PES policy)	MoE+NCSD	50,000	50,000	40,000	30,000	170,000
	1.3. Development of strategic communication strategy and information materials	Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		International consultant (communication)	UNDP	10,000	10,000	10,000	10,000	40,000
	1.4. Development of scaling-up strategies including programming and new partnership	Contractual Services-Individual specialist on NRM (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		International consultants	UNDP		20,000	10000	10,000	40,000
	1.5. Sustainable production of forest resources	Grant	GERES			30,000	30,000	60,000
		International consultants	UNDP			10,000	10,000	20,000
		National consultants	NCSD			10,000	10,000	20,000
		Training, Workshops and Conference	NCSD			5,000	5,000	10,000
		Travels	NCSD			5,000	5,000	10,000
		International consultants	UNDP			30,000	30,000	60,000

	1.6. Integrated land use planning	National consultants	GDANCP			10,000	10,000	20,000
		LoAs	GDANCP			30,000	30,000	60,000
		Training, Workshops and Conference	GDANCP			5,000	5,000	10,000
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	3,000	3,000	12,000
	Sub-Total for Output 1			**208,000**	**228,000**	**363,000**	**353,000**	**1,152,000**
Output 2	2.1. Circular economy pilot: Municipality (1) Kep led by NCSD	LoA / consultants	NCSD	30,000	30,000	30,000	30,000	120,000
		Contractual Services-Individual specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		Travels	UNDP	2,000	2,000	2,000	2,000	8,000
	2.1. Circular economy pilot: Municipality (2) Siem Reap (TBC) by NCDDS	LoAs	NCDDS	30,000	30,000	30,000	30,000	120,000
		LoA	MoE	20,000	20,000	30,000	300,000	370,000
		National consultants	UNDP	20,000	20,000	20,000	20,000	80,000
		Training, Workshops and Conference	NCDDS	3,000	3,000	3,000	3,000	12,000
		Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000
		Contractual Services-Individual specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		Travels	UNDP	2,000	2,000	2,000	2,000	8,000
	2.2. Circular economy pilot: Industrial level	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000
		Contractual Services-Individual specialist on NRM waste (SB5 10%)	UNDP	5,500	5,500	5,500	5,500	22,000
		Competition	UNDP	80,000		80,000		160,000
		Training, Workshops and Conference	UNDP	10,000	10,000	10,000	10,000	40,000
	2.3. Development of strategic communication strategy and information materials	International consultant (communication)	UNDP	10,000	10,000	10,000	10,000	40,000
		Communication campaign	RUPP	5,000	5,000	5000	5000	20,000
		Document, printing	UNDP	5,000	5,000	5000	5000	20,000
		Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000

	2.4. Development of enabling policies and measures	International consultants	UNDP	10,000	30,000	10000	10000	60,000
		National consultants	NCSD	3,000	10,000	10000	5000	28,000
	2.5. Development of scaling-up strategies including programming and new partnership	Salary & Post Adj Cst-IP Staff (P4) 5%	UNDP	11,000	11,000	11,000	11,000	44,000
		International consultants	UNDP		20,000	40,000	40,000	100,000
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	3,000	3,000	6,000
	Sub-Total for Output 2			**293,500**	**260,500**	**350,500**	**535,500**	**1,440,000**
Output 3	3.1. Solar energy for electricity supply and increasing resilience of rural communities	Grant for electricity and resilience through provision of solar PV energy	UNDP/MME	0	35,000	100,000	100,000	235,000
		Monitoring/travel	MME	1,000	1,859	3,000	3,000	8,859
		Consultants for feasibility studies	MME	2,000	2,000	5,000	5,000	14,000
		Salary & Post Adj Cst-IP Staff (P5) 5%	UNDP	12,500	12,500	12,500	12,500	50,000
		Contractual Services- SB4 National Energy Officer (20%)	UNDP	7,000	7,000	7,000	7,000	28,000
		Grant to Energy Lab to design and run the Challenge Prize and Springboard programme (incubation programme)	UNDP	10,000	25,000	60,000	50,000	145,000
		Start-up grants for rolling out solar business model	UNDP	15,000	30,000	70,000	30,000	145,000
	3.2. Building technical capacity for installation of solar, and their maintenance	Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	25,000	25,000	100,000
		Contractual Services- SB4 National Energy Officer (20%)	UNDP	7,000	7,000	7,000	7,000	28,000
		Meetings and workshops (Energy planning, training installation and quality standards)	MME/UNDP	7,000	7,000	15,000	15,000	44,000
		Grant to SEAC	UNDP/MME	2,500	2,500	10,000	10,000	25,000
	3.3.Strategic communication and awareness raising	Salary & Post Adj Cst-IP Staff (P5) 5%	UNDP	12,500	12,500	12,500	12,500	50,000
		Contractual Services- SB4 National Energy Officer (20%)	UNDP	7,000	7,000	7,000	7,000	28,000
		National consultants for awareness raising and preparing communication materials	UNDP/MME	10,000	10,000	30,000	30,000	80,000

		Knowledge products (broachers/flyers/booklets)	UNDP	2,000	2,000	5,000	5,000	14,000
	3.4. Development of enabling policies and measures	Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	25,000	25,000	100,000
		Travel and DSA for government (capacity building to learn about good practices on integration of variable renewable energy sources into the grid system in other country)	UNDP		30,000		30,000	60,000
		Contractual Services- SB4 National Energy Officer (10%)	UNDP	3,500	3,500	3,500	3,500	14,000
	3.5. Development of scaling-up strategies including programming and new partnership	National consultants	MME/UNDP	10,000	20,000	30,000	50,000	110,000
		Salary & Post Adj Cst-IP Staff (P5) 10%	UNDP	25,000	25,000	25,000	25,000	100,000
		Contractual Services- SB4 National Energy Officer (10%)	UNDP	3,500	3,500	3,500	3,500	14,000
		Training, Workshops and Conference	UNDP	3,000	3,500	10,000	10,000	26,500
	MONITORING & EVALUATION	Audit/Capacity Assessment/Field monitoring	UNDP	3,000	3,000	3,000	3,000	12,000
	Sub-Total for Output 3			**193,500**	**299,859**	**469,000**	**469,000**	**1,431,359**
Project management		Policy Board	UNDP	2,000	2,000	2,000	2,000	8,000
		Project Cars	UNDP	40,000				40,000
		Information technology equip	UNDP	5,000				5,000
		Information technology equip	NCSD	5,000				5,000
		Travel	UNDP	5,000	5,000	5,000	5,000	20,000
		International consultant (communication)	UNDP	20,000	20,000	20,000	20,000	80,000
		Contractual Services-Individual national project assistant (SB3)	UNDP	22,000	22,000	22,000	22,000	88,000
		DPC	UNDP	22,500	22,500	22,500	22,500	90,000
		Evaluation	UNDP		35,000		35,000	70,000
	Sub-Total for Project management			**121,500**	**106,500**	**71,500**	**106,500**	**406,000**
TOTAL				**816,500**	**894,859**	**1,254,000**	**1,464,000**	**4,429,359**
GMS 8 %				**65,320**	**71,589**	**100,320**	**117,120**	**354,349**
GRAND TOTAL				**881,820**	**966,448**	**1,354,320**	**1,581,120**	**4,783,708**

8 Governance and Management Arrangements

The project will be implemented under the National Implementation Modality (NIM) with NCSD as the main Implementing Partner for 2 years: from January 2019 to December 2020 with possibility of extension subject to funding availability. The project adopts a portfolio management approach which is a flexible programme approach- allowing for interventions in different thematic areas such as NRM, circular economy and energy which contributes jointly to address environmental challenges to be governed by joint management and governance arrangement. It allows UNDP to provide stronger support to the national government in terms of policy support and resource mobilization by giving the flexibility to inject additional funding and additional initiatives to be integrated as long as they support the overall objective of the programme "Towards Environmental Sustainability in Cambodia".

The quality of the project will be regularly monitored and assured by UNDP staff, such as country office programme analysts and associates. UNDP country office will also provide policy advisory; developing and testing innovative solutions; exploring and testing of Public Private Partnership (PPP); coordination; communication and advocacy; resource mobilization; recruitment of key project personnel; procurement of goods and services; and identification and facilitation of training activities in accordance with the Letter of Agreement between UNDP and the Government for the Provision of Support Services (Annex 5). UNDP policies on cost recoveries will apply for these activities. The project will be audited as per requirements in the UNDP's Programme and Operations Policies and Procedures.

Additional technical support will be provided through access to external expertise pool locally and internationally, regional experts or institutions from the region as and when the Project Management Team identifies the need. UNDP will also provide support, particularly for compiling lessons learned and sharing experiences with other stakeholders locally and internationally.

In addition, UNDP will contribute an estimated amount of $200,000 as parallel co-financing. The parallel co-financing from UNDP will be used for supporting communication activities, providing seed fund for supporting challenge fund activities under the output 2 (circular economy) and cost sharing salary of the technical staff.

The NCSD will also contribute US$160,800 in-kind contribution to the project through the provision of staff, working space, meeting space, payment of utilities (waste and electricity) for the Project Management Office. The annual amount will be confirmed each year by NCSD at the PEB meeting following approval of the national budget.

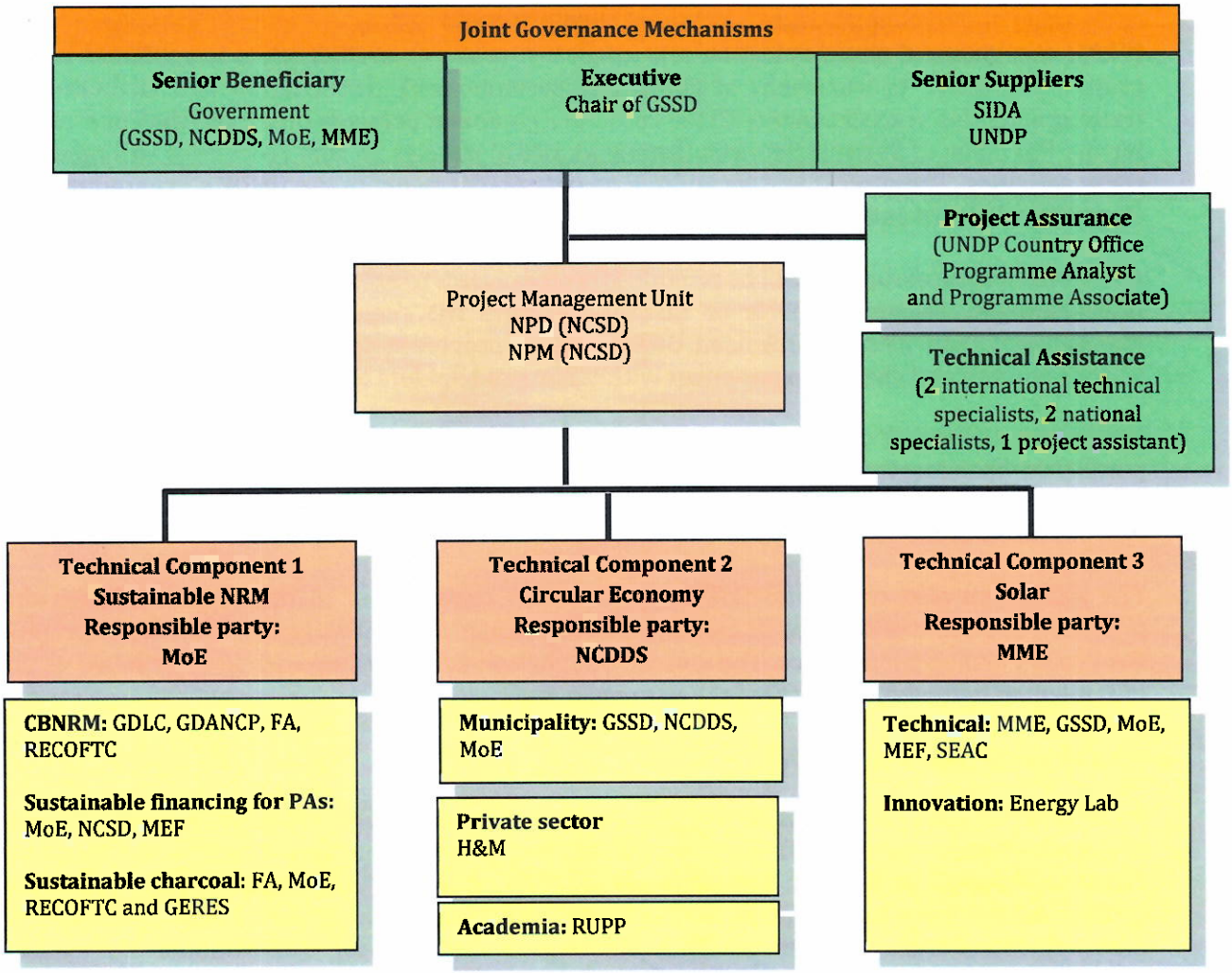
Project governance structure

Joint Programme Executive Board (PEB): Performance and results will be overseen by the Joint Project Executive Board (PEB). The PEB will be co-chaired by the Chair of NCSD and by UNDP Country Director or his/her designate. Other PEB members under the project include a representative from the National Council for Sustainable Development (NCSD), Ministry of Environment, Forestry Administration, National Committee for Sub-National Democratic Development Secretariat (NCDDS), Ministry of Mines and Energy (MME), Ministry of Economy and Finance (MEF) representative from government agencies. Other PEB members are representatives from Civil Society and Private Sector.

The PEB will be responsible for making management decisions on a consensus basis for a project when guidance is required by the National Project Director (NPD) from NCSD and National Project Manager from NCSD including approval of project revisions. PEB will be held at least annually to

evaluate activities and progress. Project assurance reviews by this group are made at designated decision points during the project implementation, or as necessary when raised by the NPD. In order to ensure UNDP's ultimate accountability, PEB decisions should be made in accordance to standards that shall ensure best value to money, fairness, integrity transparency and effective international competition. In case a consensus cannot be reached, final decision shall rest with the UNDP Programme Manager (the Country Director). Project reviews by the PEB are made at designated decision points during the project implementation, or as necessary when raised by the NPD. The PEB is consulted by the NPD for decisions when project tolerances have been exceeded[4]. Based on the approved annual work plan (AWP), the PEB may review and approve project quarterly plans when required and authorises any major deviations from these agreed quarterly plans. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems between the project and external bodies.

*Figure 18. **Project Governance Structure***



[4]The Project Executive Board has the responsibility to define for the National Project Director the specific project tolerances within which the National Project Director can operate without intervention from the Project Executive Board. For example, if the Project Executive Board sets a budget tolerance of 10%, the National Project Director can expend up to 10% beyond the approved project budget amount without requiring a revision from the Project Executive Board.

Project management unit: The team at the NCSD will provide their day-to-day technical advisory support and administrative assistance for the implementation of the project (see Figure 18).

In order to ensure the smooth and effective implementation of the project, a Project Manager will be appointed by the NCSD and will work under the direction of the NPD. The Project Manager will be responsible for all four outputs under four components (see Figure 18) to be delivered by the respective agencies on time, on scope and on budget, as well as for the application of all UNDP administrative and financial procedures and efficient use of funding.

In this programme, programme support will be provided by 1) 1 international technical specialist (P4), He or she will be responsible for consolidating results reporting from related sub-component projects (4 projects to be set up in the Atlas system as per programme results areas) for overall reporting to the Programme Board 3 national specialists (NRM, solar and circular economy), 2) a project assistant (SB3), (see annex 4 for more information about the TORs).

For each result area, there will be a Technical Committee comprised of representatives of responsible parties and other key stakeholders in the respective result area. This committee will be responsible for guiding day-to-day technical aspect of the project implementation to ensure coordination amongst responsible parties and key stakeholders, and smooth implementation of the project.

For the technical component 1 (sustainable NRM), a responsible party is the MoE. Members of the technical l committee includes GDLC, GDANCP, FA, GSSD, MEF, RECOFTC and GERES. For the technical component 2 (circular economy), a responsible party is the NCDDS. Other members include municipality, district government, MoE and GSSD, H&M, Twin Agri and RUPP. For the technical component 3 (solar), a responsible party is MME. Other members include GSSD, SEAC and Energy Lab.

Project assurance: The quality of the project will be regularly monitored and assured by UNDP staff, such as regional advisors, programme analysts and associates. Additional technical support would be provided through access to external expertise pool locally and internationally, regional experts or institutions from the region as and when the Project Management Team identifies the need. UNDP will also provide support, particularly for compiling lessons learned and sharing experiences with other stakeholders locally and internationally.

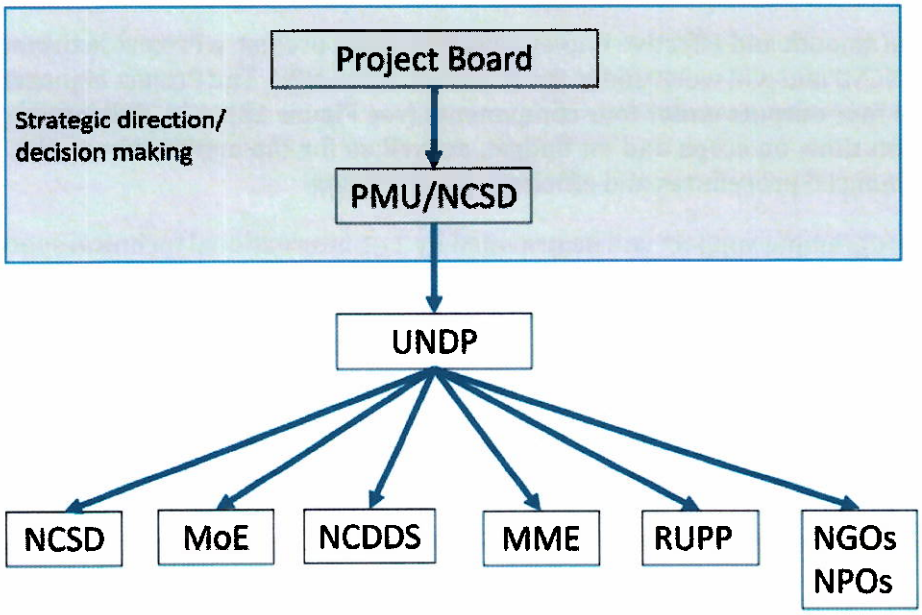
HACT Micro Assessments

For the project, GSSD of NCSD will serve as an implementing partner under the National Implementing Modality (NIM) of UNDP. Other key responsible parties include MoE (GDLC, GDANCP), FA, GSSD, NCDDS, MME, MEF, RECOFTC, GERES, RUPP, and Energy Lab under the overall guidance of the National project management unit. Below is the summary of the Harmonised Approach to Cash Transfer (HACT) Micro Assessment of these institutions:

The overall risk assessment is low for GSSD, MoE and NCDDS. It is concluded that the overall capacity of GSSD is adequate for to serve as implementing partner. Similarly, MoE and NCDDs also have sufficient capacities to be responsible parties. UNDP will conduct due diligence for the private sector, and academic institutions as necessary. Therefore, the project will use two payment modalities (see the below Figure for the financial flow):

- Direct Cash Transfer: UNDP will transfer fund to the bank account of GSSD (to be opened for receiving fund from UNDP) on a quarterly basis based on the approved workplan and request to UNDP.
- Direct Agency Implementation: UNDP will be responsible for undertaking some activities as per the agreement on UNDP's support services as specified in Annex X using UNDP's rules and procedures.

Fund flows



- UNDP/NCSD may release the fund to responsible parties such as MoE, NCDDS and MME based on the letter of agreement (LOA), that is, output based payment.

UNDP Support Services

The quality of the project will be regularly monitored and assured by UNDP staff, including country office advisers, regional advisors, programme analysts and associates. The UNDP country office will also provide support services such as policy advisory; developing and testing innovative solutions; exploring and testing of PPP; coordination; communication and advocacy; recruitment of key project personnel, procurement of goods and services, and the identification and facilitation of training activities in accordance with the Letter of Agreement between UNDP and the Government for the Provision of Support Services (Annex 5).

For the programme, UNDP is required to recover the cost for providing Implementation Support Services (ISS) on the basis of actual costs or transaction fee. These costs are an integral part of programme delivery, and hence should be charged to the same budget line as the programme input itself. In determining costs, the approach is to use actual costs for clearly identifiable transactions and when this is not possible, the UNDP Cambodia will use the Universal Price List for services (transaction fee), as reference.

9 Legal Context

This project document shall be the instrument referred to as such in Article 1 of the Standard Basic Assistance Agreement between the Government of Cambodia and UNDP, signed on 19th December 1994. All references in the SBAA to "Executing Agency" shall be deemed to refer to "Implementing Partner."

This project will be implemented by the General Secretariat for Sustainable Development (GSSD) ("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.

10 Risk Management

1. Consistent with the Article III of the SBAA, the responsibility for the safety and security of the Implementing Partner and its personnel and property, and of UNDP's property in the Implementing Partner's custody, rests with the Implementing Partner. To this end, the Implementing Partner shall:
   a) 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;

   b) assume all risks and liabilities related to the Implementing Partner's security, and the full implementation of the security plan.

2. 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 Implementing Partner's obligations under this Project Document.

3. The Implementing Partner agrees to undertake all reasonable efforts to ensure that no UNDP funds received pursuant to the Project Document 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/further to this Project Document.

4. 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).

5. The Implementing Partner shall: (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.

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. The Implementing Partner will take appropriate steps to prevent misuse of funds, fraud or corruption, by its officials, consultants, responsible parties, subcontractors and sub-recipients in implementing the project or using UNDP funds. The Implementing Partner will ensure that its financial management, anti-corruption and anti-fraud policies are in place and enforced for all funding received from or through UNDP.

8. The requirements of the following documents, then in force at the time of signature of the Project Document, apply to the Implementing Partner: (a) UNDP Policy on Fraud and other Corrupt

Practices and (b) UNDP Office of Audit and Investigations Investigation Guidelines. The Implementing Partner agrees to the requirements of the above documents, which are an integral part of this Project Document and are available online at www.undp.org.

9. In the event that an investigation is required, UNDP has the obligation to conduct investigations relating to any aspect of UNDP projects and programmes. The Implementing Partner shall provide its full cooperation, including making available personnel, relevant documentation, and granting access to the Implementing Partner's (and its consultants', responsible parties', 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 the Implementing Partner to find a solution.

10. The signatories to this Project Document will promptly inform one another in case of any incidence of inappropriate use of funds, or credible allegation of fraud or corruption with due confidentiality.

11. Where the Implementing Partner becomes aware that a UNDP project or activity, in whole or in part, is the focus of investigation for alleged fraud/corruption, the Implementing Partner will inform the UNDP Resident Representative/Head of Office, who will promptly inform UNDP's Office of Audit and Investigations (OAI). The Implementing Partner shall provide regular updates to the head of UNDP in the country and OAI of the status of, and actions relating to, such investigation.

    The Implementing Partner agrees that, where applicable, donors to UNDP (including the Government) whose funding is the source, in whole or in part, of the funds for the activities which are the subject of this Project Document, may seek recourse to the Implementing Partner 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.

    Where such funds have not been refunded to UNDP, the Implementing Partner 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 the Implementing Partner 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.

12. Each contract issued by the Implementing Partner 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 the Implementing Partner shall cooperate with any and all investigations and post-payment audits.

13. Should UNDP refer to the relevant national authorities for appropriate legal action any alleged wrongdoing relating to the project, 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.

14. The Implementing Partner shall ensure that all of its obligations set forth under this section entitled "Risk Management" are passed on to each responsible party, subcontractor and sub-recipient and that all the clauses under this section entitled "Risk Management Standard Clauses" are included, mutatis mutandis, in all sub-contracts or sub-agreements entered into further to this Project Document.

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11 Annexes

1. Project Quality Assurance Report
2. Social and Environmental Screening
3. Risk Analysis
4. Terms of References of PEB and key management positions
5. Letter of Agreement between UNDP and the Government for Provision of Support Services
6. In-kind contribution from GS of NCSD