

# Modalities for Operationalizing Challenge Fund in Decentralized Renewable Energy

## Background Paper on Existing Experience



Office Responsible: Practical  
Action South Asia Regional Office

Submission date: 09/10/2018

Submitted to: Policy Institutions  
Facility (PIF)

**PRACTICAL ACTION**  
Technology challenging poverty





---

# Policy Institutions Facility

---

## Nepal

---

Modalities for Operationalizing Challenge Fund in Decentralized  
Renewable Energy

Background Paper on Existing Experience

September 2018

Devendra Adhikari, Min Bikram Malla and Binu Parthan

## Contents

ACRONYMS AND UNITS .....	4
1.0 CONTEXT .....	6
2.0 OBJECTIVE .....	8
3.0 METHODOLOGY .....	8
4.0 RENEWABLE ENERGY FINANCING ARRANGEMENTS .....	9
Key Policy Arrangements and Institutions .....	9
Rural Energy Policy 2006 .....	9
Renewable Energy Subsidy Policy, 2073 (2016) .....	12
Renewable Energy Subsidy Delivery Mechanism, 2073 (2016) .....	14
CREF Financial Intermediation Mechanism, 2013 .....	15
Subsidy Delivery Mechanism for Promoting Special RE Activities, 2073 .....	18
Other Government Led Initiatives .....	20
Support Modality of Development Partner .....	21
Lessons Learned .....	21
Challenges on RE Financing .....	22
5.0 OPPORTUNITIES, AND EXPERIENCE WITH CHALLENGE FUND .....	23
Opportunity of RE Financing in New Changed Context .....	23
Federal Setup .....	23
National Renewable Energy Framework .....	24
White Paper – Roadmap for Future .....	25
Biomass Energy Strategy .....	25
Challenge Funds in Global Context .....	26
Challenge Funds Initiatives in Nepal .....	32
Sakchyam- Access to Finance .....	32
UNNATI Inclusive Growth Programme – Challenge Fund .....	34
Vendor Finance Challenge Fund on RE .....	36
Purnima – Post Earthquake Reconstruction .....	36
Government Challenge Fund to Boost Innovative Business .....	36
PLSDP Challenge Fund .....	37
Other RE Financing Initiatives in Nepal .....	37
Micro-hydro Debt Fund .....	37
Clean Start - UNCDF .....	38
Viability Gap Fund – Grid Connected Solar .....	39

<b>6.0 GOOD PRACTICES, CHALLENGES AND OPPORTUNITIES .....</b>	<b>40</b>
Potential RE Opportunities .....	40
Good Practices on RE Financing .....	41
Key Success factors.....	41
<b>7.0 WAY FORWARD .....</b>	<b>42</b>
Subsidy Handling .....	42
Challenge Fund Management .....	42
<b>SOURCES CONSULTED .....</b>	<b>44</b>
<b>ANNEXES .....</b>	<b>47</b>
Annex-1: List of People Consulted/Interviewed.....	47

## ACRONYMS AND UNITS

---

ADB	:	Asian Development Bank
ADBN	:	Agriculture Development Bank Nepal
AEPC	:	Alternative Energy Promotion Centre
BFI	:	Bank and Finance Institution
BSP	:	Biogas Support Programme
CF	:	Challenge Fund
CREF	:	Central Rural Energy Fund
DFID	:	Department for International Development
ESAP	:	Energy Sector Assistance Programme
GoN	:	Government of Nepal
GTZ/GIZ	:	German Development Organisation
HB	:	Handling Bank
KfW	:	German Development Bank
kW	:	Kilowatt
LGEA	:	Local Government Execution Act
MoEWRI	:	Ministry of Energy Water Resources and Irrigation
MW	:	Megawatt
NREF	:	National Renewable Energy Framework
NRREP	:	National Rural and Renewable Energy Programme
NRs	:	Nepalese rupees
PB	:	Partner Bank
PIF	:	Policy Institutions Facility
PPP	:	Public Private Partnership
RE	:	Renewable Energy

REDP	:	Rural Energy Development Programme
REF	:	Rural Energy Fund
RERL	:	Renewable Energy for Rural Livelihood
RET	:	Renewable Energy Technology
SASEC	:	South Asia Sub-regional Economic Cooperation
SREP	:	Scaling –up of Renewable Energy Programme
UNCDF	:	United Nations Capital Development Fund

## 1.0 CONTEXT

---

The Constitution --enacted in 2015 (2072 AD)-- restructured Nepal into a federal republic. There are seven provinces with 753 local governments<sup>1</sup>. The Constitution has given prominent role to Renewable Energy (RE) as an important development priority. According to the Constitution (Article 51.g.3), ensuring reliable supply of energy in an affordable and easy manner, and making proper use of energy by generating and developing RE has been kept under the obligations and guiding principles of the State (i.e. provincial government). Likewise, small hydropower projects<sup>2</sup> and alternative energy are kept in the list of local level power (Schedule-8). The federal, provincial and local governments can enact laws, prepare annual budgets, prepare and implement plans and policies with their area of authority. However, according to the Constitution, foreign aid shall be mobilised based on national needs and priority and shall be included in the national budget of the federal government.

The Ministry of Energy Water Resources and Irrigation (MoEWRI) issued a White Paper in 2075. It has analysed the challenges Nepalese energy sector is facing and subsequently presented ambitious plans to address these challenges. It aims to develop a roadmap for fulfilling national energy demand and achieving energy security. It further aims at increasing access of electricity and other renewable and alternative energies that are sustainable, reliable, affordable, quality and clean. As a part of “Harek Basti Urja Basti (Every Settlement Energy Settlement) programme, as envisioned in the White Paper, the federal government provides 50 per cent of the cost required to install 100 kW to 500 kW solar in all 753 local governments through the establishment of a Challenge Fund. Doing so, these installations will generate at least 200 MW. The local government can make provisions to utilise these electricity for community uses such as, irrigation, drinking water, streetlight and sell it to grid, if any remaining unutilised. Further, the white paper envisions making *Renewable Energy Fund* effective to mobilise and manage the funds that are received from the national and international sources.

The history of RE finance is not new in Nepal. It dates back to 1968. Agriculture Development Bank of Nepal (ADB) started providing credits to rural energy technologies, such as improved watermills, water turbines, and biogas, and lately solar. The government subsidy on RE was channelled through ADB before Alternative Energy Promotion Centre (AEP) was established in 1996.

The AEP has been promoting and disseminating alternate and RE technologies since it was established. It has been implementing various energy programmes based on the plans and policies of the government and supports from the development partners. The government promulgated *RE Subsidy Policy and Delivery Mechanism* for the first time in 2000. The AEP, with the support from

---

<sup>1</sup> It includes 6 Metropolitan Cities (Mahanagarpalika), 11 Sub Metropolitan Cities (Upa-Mahanagarpalika), 276 Municipalities (Nagarpalika) and 460 Rural Municipalities (Gaunpalika).

<sup>2</sup> Up to 1 MW, according to Local Government Execution Act, 2016.



Energy Sector Assistance Programme (ESAP), played a key role in formulating these policies and institutionalising (Interim) *Rural Energy Fund* (REF) as a mechanism to deliver subsidy funds and also credit. REF, however, could manage mostly subsidy funds received from the government and development partners. There was no prominent focus on credit financing within the REF.

The scope of REF was further broadened with the conception of *Central Rural Energy Fund* (CREF), which was created under the National Rural and Renewable Energy Programme (NRREP). The NRREP was begun following the successfully completion of ESAP in 2012. The CREF has been functioning as a financial mechanism to deliver subsidies and credits to RE sector since then. The CREF has been institutionalised to work with the banking sector augmented by selecting handing and participating banks for its operation.

Upon completion of NRREP in mid-July 2017, AEPC Board has approved *National Renewable Energy<sup>3</sup> Framework* (NREF) in November 2017<sup>4</sup>. The NREF envisions operating in a flexible and phased manner, building on the success from other initiatives, in particular the NRREP, to create shared ownership and mutual accountability in the context of federal Nepal. It, further, aims to accelerate the process of transition from a subsidy centred to a credit-focused model, together with smart subsidy provisions. Financing has been considered as one of the strong areas of theory of change in the NREF formulation.

The RE sector faces numerous challenges, including relating to financing. RE financing is largely subsidy-focused and there is no breakthrough on credit mobilization despite CREF's core focus lies on credit mobilization. Subsidies have always covered a large portion of financing. Access to finance on expanding RE access is, rather, limited. Furthermore, RE projects are yet to prove their bankability. Nevertheless, shift to federalism has warranted a new set of policies, institutional and delivery models that can attract and operationalize financing from the public and private sector for RE market expansion.

This study is carried in out in the changed context, where the mandate to develop renewable energy shifts from the central level nodal agency (i.e. AEPC) to local and provincial government. The change will warrant redefinition of functions of the key actors in the RE sector, mainly the provincial and local government and also AEPC. The government's White Paper emphasises establishing

#### Box-1: Challenge Fund

A challenge fund: (i) provide grants or subsidies (ii) with an explicit public purpose (iii) between independent agencies (iv) with grant recipients selected competitively (v) on the basis of advertised rules and processes (vi) who retain significant discretion over formulation and execution of their proposal and (vii) share risks with the grant provider.

Source: Challenge Funds in International Development, Triple Line/University of Bath, 2013

<sup>3</sup> According to NREF, RE refers to hydropower up to 10 MW (including water mills), solar energy (both photo voltaic and thermal), wind energy, and bioenergy systems that are used in households, communities and institutions/enterprises for cooking and heating and generating electricity.

<sup>4</sup> The NREF is approved by AEPC Board, means it is applicable only within the AEPC's institutional framework. It is still to be endorsed by the higher authority for it to become a national framework.

Challenge Fund (CF)<sup>5</sup> as a means to expand the RE access (at least on solar). Box-1 illustrates widely used definition of CF<sup>6</sup>.

In the changed context, Policy Institutions Facility (PIF), a Department for International Development (DFID) project, was invited to conduct a study exploring what needs to be done by the Government of Nepal (Ministry of Energy, Water Resources and Irrigation), and in particular Alternative Energy Promotion Centre (AEPC), to promote decentralised renewable energy and financial resources through the use of an innovative finance facility of a Challenge Fund.

In this backdrop, this report serves as a background paper as a part of the study on modalities for operationalizing Challenge Fund in decentralised renewable energy in Nepal.

## 2.0 OBJECTIVE

---

The major objective of the whole task is to identify challenge fund options under the NREF to address existing challenges in financing RE in Nepal. The study also elaborates modalities for establishing and operationalizing challenge fund. The specific objectives include:

- Understand the existing fiscal arrangements for subsidy, challenge fund and other RE financing;
- Compile learning of challenge funds in RE and other sectors in Nepal and abroad those are relevant to RE financing in Nepal.
- Identify opportunities for mobilising a challenge fund to address RE financing barriers in Nepal and leveraging investments.
- Provide recommendations on the institutional and governance mechanism, and fund flow process for operationalizing CF
- Operationalising CF in the federal context and prepare detail implementation modality for the challenge fund.

This background paper focuses more on the first three objectives of the study.

## 3.0 METHODOLOGY

---

The background paper is largely based on secondary information collected through literature review (about 36 different sources as outlined on Section: Source Consulted), and also primary information based on interviews and consultations with key stakeholders (refer Annex-1). In-depth review of existing documents on RE financing in Nepal and challenge fund is carried out. Findings of literature review are

---

<sup>5</sup> The Government on its annual budget for fiscal year 2018/19 announced to establish a Challenge Fund to provide startup capital for businesses initiated by entrepreneurs with innovative knowledge, skill and capacity. But it is not clearly evident whether it also implies to overall RE sector.

<sup>6</sup> Different institutions based on the context of its application define challenge Fund differently. One of most sought definitions is presented in the box.

further verified from the field information involving key informant interviews, and stakeholders' consultations as appropriate.

## 4.0 RENEWABLE ENERGY FINANCING ARRANGEMENTS

---

As it is evident, Nepal has a long history on RE financing, dates back to 1968. Agriculture Development Bank of Nepal (ADB) was providing credit and channeling government subsidies to RE technologies, mainly micro-hydropower, biogas, and solar systems. Bank credit mixed with the government subsidy made the RE sector very popular among the private sector service providers and rural people (Adhikari, 1998). Nepal's ADB was perhaps the most well known example for financing RE during the decades of eighties and nineties. The government subsidy on RE was channelled through ADB before AEPC was established in 1996.

The present RE financing is guided by policy provisions of the government and institutional setup mainly the AEPC and later the banking sectors organised under the CREF framework. Additionally some funds are also channelled to RE sector outside the AEPC financing framework. AEPC's contribution on RE sector development is considered outstanding with good lessons to share. There are, however, still challenges that need to address in future programme implementation in general, and RE financing on particular.

### Key Policy Arrangements and Institutions

The Government of Nepal approved Rural Energy Policy in 2006. The Subsidy Policy and Subsidy Delivery Mechanism were promulgated for the first time in 2000. These two documents were amended from time to time and the latest versions are available in May 2016 and November 2016 respectively. As a part of the NRREP, AEPC instituted CREF to channel the subsidy and credit funds to promote RE activities in 2013. A document on CREF Financial Intermediation Mechanism was prepared in 2013.

These are the key policy documents that guide the RE financing activities executed under the AEPC through the CREF. Additionally, the government also approved work *Execution and Subsidy Delivery Mechanism for Promoting Special RE Activities* in 2013; which can be considered as an addendum to the Subsidy Delivery Mechanism.

### Rural Energy Policy 2006

The RE Policy recognizes rural and renewable energy as synonymous to each other. The RE Policy sees ample possibility to improve the living standard of rural people by developing environment-friendly energy resources making them financially affordable. One of the objectives of the RE Policy is to establish Rural Energy Fund at the central level and gradually expanding it to the local level as per need. The policy has also envisioned expanding the Rural Energy Fund into Central Rural Energy Fund.

The policy envisages mobilizing the capital from banks and financial institutions, internal capital market, and community using economic instruments. Funds received

from selling greenhouse gas emission reduction shall also be used for the promotion and development of rural energy.

The policy has also made some provisions for subsidy arrangement. The subsidy rate and disbursement criteria are provisioned to be revised as required and subsidy delivery follows the provisions of the subsidy delivery mechanism. One of the important directives relating to subsidy is that subsidy rate is gradually reduced in accessible areas as it becomes commercially viable. On the other hand, the directive foresees need for additional supports to poor and backward families for the use of rural energy system.

The RE Policy contributed RE sector expansion in Nepal. A mass scale dissemination of RE technologies were possible through the support of various programmes mainly the Rural Energy Development Programme (REDP), Biogas Support Programme (BSP), Energy Sector Assistance Programme (ESAP) at the initial stage and later from Rural Energy for Rural Livelihood (RERL) and National Rural and Renewable Energy Programme (NRREP). Table-1 shows the RE systems deployed within the AEPC in the period of last 10 years in Nepal. Nevertheless, the policy could not contribute remarkably on the following policy visions.

- Gradual expansion of REF into local level
- Mobilizing capital from banks and financial institutions
- Gradually reducing subsidies in accessible areas as RE becomes commercially viable

District Energy Funds were created in some of the districts but these funds could not continue due to lack of policy and institutional supports at the district level. Mobilizing capital from banks and financial institutions is still an issue to resolve in RE sector. It has been a general conclusion that dependency on subsidy has increased and RE projects are yet to prove their commercial viability.

Table-1: Trend of RE Installations Under AEPC

RET Units		2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Micro/ Mini Hydro (kW)		994	2,081	795	1,193	1,695	2,453	3,258	3,366	3,288	3,346	1,910		
Solar	SHS individual	6,788	6,690	34,755	60,502	36,135	57,059	35,627	96,495	87,035	56,770	103,161		
	Institutional/ commercial								41	244		254		
	Mini-grid										7	4		
	Solar Dryer/cooker	214	356	379	596	338	272	202	140	202	22	30		
Biogas Plants	Households	16,118	17,663	14,844	19,479	19,511	17,907	18,972	17,635	31,512	16,706	30,078		
	Institutional/ commercial							340			37	20		
Improved Water Mill		878	671	1,346	1,168	986	353	971	1,256	341	641	673		
Metallic Improved Cooking Stoves						1,913	3,031	2,405	3,806	5,060	6,443	1,896		

Source: Alternative Energy Promotion Centre (2018); Note: Data for the recent two years is expected to receive from AEPC.

## Renewable Energy Subsidy Policy, 2073 (2016)

The subsidy policy is approved by the Council of Ministers. The Subsidy Policy recognizes that the past subsidy could not effectively mobilise private investment or commercial credit into Nepal's RE sector. Rather dependency on subsidy has increased. It was inferred in the policy document that communities were striving for finding subsidies from multiple sources on top of what they received from the AEPC. One of the reasons for it, as stated in the policy document, was related to energy tariffs in rural areas which were not sufficient to recover the initial investment costs of the system.

The latest subsidy policy (2016) focuses on replacing subsidies with credit in a long run and achieving universal access to clean, reliable and affordable RE solutions by 2030. The strategic considerations of the policy are to reduce the upfront cost, encourage public-private partnership, and strengthening and expanding CREF's role in mobilizing credit in the RE sector development.

The key determinants of subsidy (subsidy formula) are based on (i) remoteness and geographical region (regions are categorized as A, B, C based on remoteness), (ii) subsidy, credit and equity ratio – generally 40%, 30% and 30% respectively, (iii) cost competitiveness (least cost), and (iv) social, economical and technological appropriateness (best available technology). Based on these criteria, the policy comes up with the subsidy amounts to be given for different technologies such as mini/micro-hydropower, improved water mill, solar energy, biomass including biogas, wind energy, etc.

On top of this, a provision of additional subsidy is also made for some technologies such as mini/micro-hydropower. Additional subsidy is allocated to the targeted beneficiary groups by counting the number of households which are served by the project.

The policy has, also, made a provision of one time subsidy of up to 80% (that includes regular and additional subsidies) for the incomplete old micro-hydropower in remote areas that have not been completed due to lack of financial resources.

Furthermore, there is one criterion that relates to credit for mini/micro-hydropower, wind, solar mini-grid, biomass, and hybrid systems, larger than 10 kW<sup>7</sup>. According to the criterion, these projects are only be eligible for subsidy either by mobilizing a minimum of 20% credit from bank and financial institutions (BFIs) or alternatively financial closure achieved within six months. The same criterion also applies for other institutional and community owned projects, but there should either be a minimum of 10% credit from BFIs or financial closure achieved within three months.

The subsidy policy is the highest level policy document under which CREF has been created. The CREF is an institutional credit mechanism that is reacted which can

---

<sup>7</sup> This criterion is applicable to the micro-hydropower projects from Mugu, Humla and Dolpa, which are larger than 50 kW.

encourage financial institutions to invest in RE. According to the policy, CREF shall disburse both soft loan and subsidy and also help establishing both a credit-line and credit guarantee scheme.

The policy provides following institutional mandates:

- AEPC, at the central level. AEPC is responsible for providing technical assistance, evaluating subsidy applications, and selecting private sector service providers, along with others. The policy has also mandated AEPC to prepare and implement the subsidy delivery mechanism after its approval from the Ministry.
- CREF at the central level. CREF is responsible for mobilizing subsidy and is managed by an “A class” commercial bank selected by the government through a competitive process.
- Local Bodies, at the local level. Local bodies are responsible for the promotion, demand collection, disbursement of the subsidy according to the subsidy delivery mechanism.

The subsidy policy has been applicable largely to deliver subsidy. Table-2 shows the financial flows through the CREF since it was established.

Table-2: CREF Financial Flows in RE Sector Development.

Type of fund	2013	2014	2015	2016	2017	2018
Total Funds Received for Subsidy	Nil as CREF was not in place	Nil as CREF was not in place	1 Billion	3 Billion		
Total Funds Disbursed for Subsidy	Nil	Nil	400 Million	1.7 Billion		
Total Funds Received for Credit	Nil	Nil	237.4 Million	Nil		
Total Funds Disbursed for Credit	Nil	Nil	230 Million	Nil		

Source: CREF (2018); Note – information for the last two years is expected from CREF.

It is evident from the table that CREF is still struggling to mobilise credit in the RE sector.

The subsidy policy provides equal thrust to mobilizing credit (at least 30%) and subsidy. Nevertheless, it has at the same time made provisions for up to 80% subsidy in some technologies; contradicting with its own vision to gradually reduce the dependency on the subsidy.

Nevertheless, there were cases of financial allocations for RE subsidy from local bodies (Village Development Committee and District Development Committee). These subsidies from the local bodies were topped up in the subsidy provided by the AEPC/CREF. The same also applies to now in some of the newly elected local governments which set aside some funds to provide subsidy on RE technologies.

### **Renewable Energy Subsidy Delivery Mechanism, 2073 (2016)**

The delivery mechanism is prepared by the Ministry of Population and Environment, by exercising the power conferred to it by Clause 16.1 of the RE Subsidy Policy 2073. The delivery mechanism is promulgated to operationalise the subsidy policy 2016.

The subsidy delivery mechanism is divided into two parts: (i) The core part having 12 clauses, and (ii) Annexes. The core part describes general principles while the annexes are giving details specifics for each RE technologies and system types.

The delivery mechanism has made the following institutional arrangements for mobilizing the subsidy within the AEPC:

- AEPC: The AEPC provides necessary technical and financial support for the promotion, development and expansion of RE.
- Components under the AEPC: The AEPC provides necessary technical support through its various Components (i.e. like departments).
- CREF: The GoN has established CREF as a financial intermediation mechanism under the NRREP with the primary aim of effective delivery of subsidies and credits. The CREF primarily conducts two activities: (i) approving and disbursing subsidies on the recommendation of the AEPC, and (ii) providing credit facilities to those who wish to acquire RE. Activities of the CREF is regulated by Investment Committee. Subsidy and credit are disbursed through bank and finance institutes (BFIs), selected on transparent and competitive basis in accordance to well-defined eligibility criteria. CREF disburses subsidies on AEPC's recommendation.
- Outreach Centres: The outreach centres, selected at the regional level, perform works for creating demand, providing technical supports, carry out preliminary assessment of feasibility reports, carrying out monitoring and supervision, and others as required by the AEPC. At the local level, District Energy Environment and Climate Change Section (DEECCS) supports the activities as specified in this delivery mechanism.

The delivery mechanism has also made provisions for (i) Monitoring and Evaluation Mechanism, (ii) Grievance Handling Facilitation Mechanism, and (iii) Consumer Protection Measures. Additionally a Subsidy Delivery Facilitation Committee has also been provisioned at the AEPC to identify, coordinate and overcome problems during subsidy delivery. According to the delivery mechanism, the Committee comprises: Executive Director of AEPC as a coordinator, and others members representation the Ministry of Population and Environment, concerned business



association, concerned AEPC Technical Component Manager, and Component Manager of AEPC Planning Section as a member secretary.

The RE technologies/areas covered in the delivery mechanism for the subsidy are (i) electrification through mini/micro/pico-hydro and improved water mill (ii) improved water mill (agro-processing) (iii) solar energy in non-electrified areas (iv) solar energy in electrified areas (v) biogas (vi) biomass energy (vii) wind energy and solar-wind hybrid, and(viii) productive end use (PEU).

The delivery mechanism also comprises credit delivery mechanism. All the RE technologies including PEU are eligible for credit/loan from the CREF. Any other RE technologies which are not explicitly mentioned in the subsidy policy are, also, eligible for the credit/loan from the CREF, but in such a case, a pre-approval is needed from the AEPC and CREF.

The present delivery mechanism does not recognize the federal and local government setups. The provisions on the Subsidy Delivery Mechanism need updates aligning to the Constitution and according to the changed context in Nepal. According to AEPC's communication, AEPC is in the process of revising the delivery mechanism in order to take into the considerations of the recent development of federalism in the country. Now, there is a need to specify the role of provincial and local government offices, other line entities, and also outreach Centres.

### **CREF Financial Intermediation Mechanism, 2013**

AEPC Board approved CREF Financial Intermediation Mechanism in 25 February 2013 and by NRREP Steering Committee in 27 February 2013.

The overall guiding principle of creating CREF framework is that subsidies for RE promotion should gradually be phased out and is replaced by credit facilities. Furthermore the management of such credit facilities should lie with the responsibility of the private sector banks.

Created under the NRREP, the CREF is the core financial mechanism to deliver subsidies and credits to the RE sector. There are two committees that execute its functions (i) Steering Committee, and (ii) Investment Committee. The NRREP Steering Committee that was instituted to execute the programme also functioned as an Executive Committee for the CREF<sup>8</sup>. An Investment Committee is formed to execute strategic management, planning, monitoring, and oversight of the CREF financial intermediation mechanism. The Investment Committee is chaired by the Ministry of Population and Environment (Joint Secretary)<sup>9</sup> where other members are from Ministry of Finance, Alternative Energy Promotion Centre (Executive Director), and representatives of Nepal Bankers' Association and Development Partners. CREF executes its daily activities by a secretariat.

The CREF framework is implemented through private commercial and development banks selected on a transparent and competitive basis. There are two levels of

---

<sup>8</sup> After completion of NRREP in July 2017, the AEPC Board performs this function.

<sup>9</sup> Presently by Ministry of Energy Water Resources and Irrigation (Joint Secretary).

institutional arrangements within the CREF: a Handling Bank (HB) and Partner Banks (PB). The Handling Bank –the apex financial institution within CREF-- is responsible for managing the core function of CREF, i.e. wholesale lending to partner banks, subsidy fund management, and investment management. The Partner Banks -- the second tier financial institutions within CREF -- are responsible for retailing of CREF funds to eligible projects in the RE sector. The PBs may form strategic alliances with local financial institutions and take the credit risks and are also responsible for loan appraisal and supervision following their own norms and procedures.

CREF is, however, responsible for assisting the banks in their capacity building in order to increase outreach, efficiency, infrastructure and stability of the financial systems for lending to the RE sector.

A link has been established between the AEPC and CREF. AEPC supports RE project developers (communities, households, manufacturers, installer, and distributors) in preparing bankable projects to be presented to the Partner Banks. AEPC is, furthermore, the point of entry for subsidy applications and is responsible for the technical verification of the RE projects before these submitting to the Handling Bank for financial verification and payment in accordance with the subsidy policy and delivery mechanism.

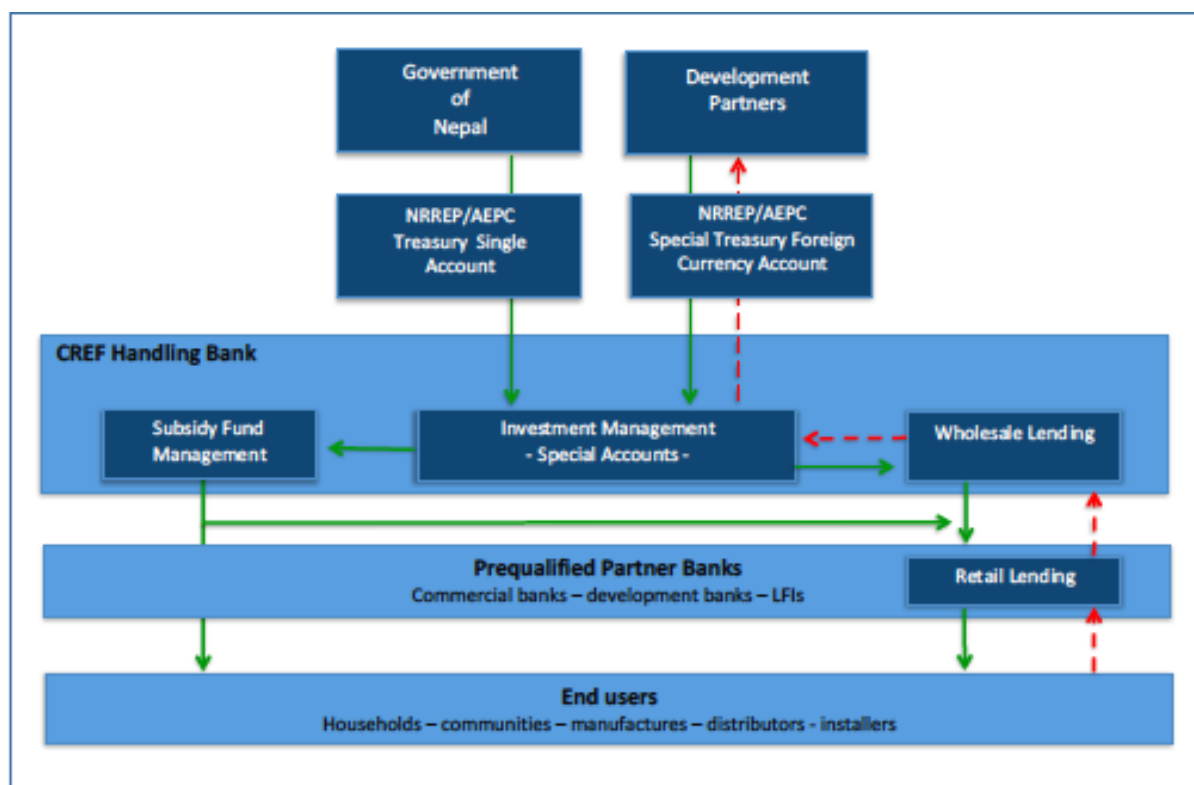
Institutional overview of the CREF organization is given in Figure-1.



Source: CREF Senior Adviser and Working Group (2013), CREF Financial Intermediation Mechanism (Final Draft), AEPC/NRREP.

Figure-1: Overview of the CREF

Funds from the Government of Nepal and development partners are channeled to the Handling Bank through treasury based upon requests approved by the CREF Investment Committee and endorsed by NRREP Compliance Unit. The Handling Bank and Partner Banks are responsible for the financial management of CREF funds in accordance with approved systems and procedures including internal and external auditing. The banks are to comply with Nepal Rastra Bank (the Central Bank) rules and regulations, and are subject to regular supervision by the Central Bank. Furthermore, the CREF Investment Committee monitors the performance of the selected banks. Flow of Funds in CREF framework is given in Figure-2.



Source: CREF Senior Adviser and Working Group (2013), CREF Financial Intermediation Mechanism (Final Draft), AEPC/NRREP.

Figure-2: Flow of Funds in CREF Framework

It was envisioned that CREF would work as an endowment fund and hence could earn revenue and retail surpluses to enhance long term sustainability. The lending risks lie with the responsibility of the banks (Partner), which in turn take the risk on the project developer. The fiduciary risks are expected to be addressed by external as well as internal auditing and supervision including compliance with the Central Bank regulations, and supervision by the Central Bank.

There were altogether 8 banks, selected in the first time, within the CREF framework, one handling bank operated by Global IME Bank and other seven partner banks; namely Bank of Kathmandu Limited, Civil Bank Limited, Clean Energy Development Bank Limited (merged with NMB Bank Limited), Himalayan Bank Limited, Nepal Investment Bank Limited, Siddhartha Bank Limited, and Tourism Development Bank Limited (merged with Mega Bank Limited). Now, NMB Bank is

selected as a handling bank effective from January 2018. Other partner banks are Civil Bank, Bank of Kathmandu, Himalayan Bank, Sangrila Bank Limited, Mega Bank, and Nepal Investment Bank Limited.

Since NRREP establishment in 2012, it has brought all of Nepal's small-scale RE projects together under a single programme modality. Of the total budget of around US\$ 170 million, the government's contribution was 40 per cent, with 20 per cent from Danida, 14 per cent from NORAD, 12 per cent from SREP, 4 per cent from each DFID and GTZ, 3 per cent from UNDP, 2 per cent from KfW and one per cent from the Dutch government. A total of 66 per cent budget was allocated for CREF.

CREF Financial Intermediation Mechanism is unique. It is not easy to get an answer whether it is moving in a right track or not. The present handling bank (NMB Bank) seems comfortable on its role. It may be because of its past track of working on the RE sector through Clean Development Bank, which was established specially for promoting the clean energy through the credit support.

CREF has a small secretariat, and unique approach on RE financing. However, its future operation will be guided by (i) its legal mandate, because present legal mandate for the CREF is weakly defined, (ii) composition of Investment Committee members- how to enrich its composition that can deal a larger financial matter (credit at a large) effectively, and (iii) relationship with AEPC- how far or near or independent to AEPC is a matter of decision. As RE mandates lie within the local government, there has been a concern that it must have logical presence at least at the province level<sup>10</sup>.

As per the AEPC communication, there are already about NRs 2.5 billion government fund accumulated in CREF and additional one billion funds received from carbon cell in AEPC. These funds can potentially be utilised as Challenge Fund.

### **Subsidy Delivery Mechanism for Promoting Special RE Activities, 2073**

The Government of Nepal has announced special programmes on RE such as (i) Light for Education, (ii) Shalesh-Lumbini Clean Energy, (iii) Urban Solar Programme, (iv) Solar System for Religious Establishments, (v) Solar Street Light, (vi) Institutional Urban Solar, (vii) Solar Pump for Irrigation, and (viii) Relief and Rehabilitation Programme for Earthquake and Disaster Victims.

Urban Solar Programme is implemented in electrified areas. The main objective of this programme is to address acute electricity shortage due to load shedding and inefficient electricity consumption in urban areas. The prospective applicants can sign an agreement with an AEPC-qualified company for the installation of the solar system. Subsequently, if they wish to obtain loan (interest subsidised), they can approach CREF Partner Bank. The company then submits necessary documents to AEPC for subsidy approval. AEPC, after the subsidy approval, transfers the subsidy amount to the bank account of the applicant.

---

<sup>10</sup> There is a suggestion that it should not be named, at least, as "Central".

The AEPC publishes public notice for inviting applications for solar installation from religious establishments each year and selects them for the subsidy based on set eligibility criteria. The eligible applicants then can select the company qualified by the AEPC for the installation. Upon receipt of the necessary documents from the installation company after the installation, AEPC recommends for the subsidy payment. The same procedure of subsidy approval and delivery is applicable to the Solar Street Light, Urban Institutional Solar, Solar Pump for Irrigation, and Light for Education programmes.

The subsidy delivery process for the relief and rehabilitation programmes follows the identification of affected areas and victims, selection of company for supply, installation by the company, monitoring and payment to the company based on Public Procurement Act and Regulation.

Sahlesh-Lumbini Clean Energy Programme is implemented in 15-selected Terai districts. This is the targeted programme for the poor, dis-advantaged and marginalised groups. The subsidy delivery process is similar to earthquake relief programme where AEPC, district level outreach centres, and district offices play major roles.

The subsidy delivery mechanisms for biogas are grouped into three categories: (i) Household and Urban Biogas Plant (ii) Large Commercial Biogas Plant, and (iii) Biogas from Municipal Waste.

The delivery of the subsidy for the household and urban biogas plant is based on the recommendation of National Technical Service Provider, for the plants that are installed by AEPC-qualified companies following the approved design criteria.

All large biogas plants (institutional community, commercial, and municipal) are required to undergo feasibility study from consulting company, for which AEPC provides financial support. The selection of the company can be done by the concerned beneficiary organisation or through AEPC following Public Procurement Act and Regulation or according to the agreement signed with the concerned development partner.

The developer organisation interested to install large biogas plant submits an application to AEPC with its registration certificate. AEPC after scrutinising the applications requests the applicant developer to prepare feasibility report from the consultant enlisted in AEPC. AEPC based on the recommendation of its Technical Committee issues approval letter to the developer for the construction of the plant. A tripartite agreement is then signed among the developer, Installation Company selected by the developer, and the AEPC. AEPC can release 40% of the estimated subsidy amount to the Company or Developer as an advance against the bank guarantee.

The Municipality, which is interested to implement biogas plant from the municipal waste through private investor, submits application to AEPC. Then the concerned municipality and AEPC sign a memorandum of understanding (MoU). The MoU must have clearly mentioned the source of investment and responsibilities of each organisation. The AEPC can request the municipality to select the competent consultant to carry out feasibility study based on the procedures approved by it. AEPC or the municipality can select the consultant following the Public Procurement

Act and Regulation. Based on the feasibility study report and assessment of the AEPC Technical Committee, the municipality ask for Request for Proposal from shortlisted private developers who fulfil the required qualification. A tripartite agreement is signed among the successful private developer, municipality and the AEPC. AEPC can release 40% of the estimated subsidy amount to the Company or Developer as an advance against the bank guarantee.

AEPC has tried different modalities and approaches on these different programmes. Some programmes are targeted to specific groups such as earthquake victims and ultra-poor. Some programmes are addressing to market areas and can have commercial operation, such as urban solar and streetlight, irrigation, etc. Subsequently, some of these programmes can be executed without subsidy at all or a little subsidy based on innovative financing provisions. For some programmes, specially targeting to the special groups such as ultra-poor and remotely located settlements, traditional subsidy may still not be completed ruled out.

### **Other Government Led Initiatives**

Apart from these energy programmes explained above, AEPC is executing two major programmes: (i) SACEC –funded by ADB, and (ii) SREP-funded by the World Bank, whose financial flow mechanisms are based on the bilateral agreement between the Government of Nepal and respective funding organization – not entirely based on subsidy policies.

AEPC has received a grant from Asian Development Bank (ADB) to implement the South Asia Sub-regional Economic Cooperation (SASEC), Power System Expansion Project. The off-grid component of SASEC intends to increase the access to renewable energy for improving the livelihoods of people and creates employment opportunities especially in rural areas. The project is consistent with the ADB Country Partnership Strategy.

For the project there is provision of (i) a credit line of \$ 5 million from ADB's Special Funds to user communities/developers for mini-hydro power plants and (ii) \$11.2 million grant from the Strategic Climate Fund (SCF) administered by ADB.

The Scaling-up Renewable Energy Programme (SREP) is supporting Extended Biogas Project, which is funded by the World Bank and is implemented by AEPC. It aims to promote large off-grid biogas energy generation in Nepal through technical assistance and financing of investments (partial capital cost buy-down of biogas sub-projects though subsidy payment).

Though AEPC promotes a single programme modality as a part of NRREP on its programme execution, there still exist multiple programme modalities and financial flows.

In such context, development partners have viewed for a flexible framework which can accommodate all development partners and government money flow mechanisms. In the view of development partner (i.e. ADB), the development partner cannot go away from their procurement and specific programme support practices. The single programme modality approach based on which NRREP was designed is restricting multiple approaches and practices of the development partners.



## Support Modality of Development Partner

AEPC has experienced different support modalities of the development assistance from the development partners. Some of these are given below.

- Danida and Norway, based on bilateral cooperation: The past supports from Danida and Norway are based on government to government agreement. The Government of Nepal signs joint funding agreement with respective development partners. Funds from the development partners are channeled through the government treasury. The funds are, then, allocated and disbursed based on annual endorsed workplan activities from the programme steering committee.
- ADB, WB and KfW, based on comprehensive agreement: The support in this case is guided by separate but comprehensive document, such as project administration manual (PAM), which consists of own project cycle standards. There are either (i) fund replenish, or (ii) reimbursement mechanism for fund transfer from the development partner to the project implementation entity (i.e., AEPC).
- UNDP, UNCDF, GIZ, based on TA support: This is guided by implementation agreement, where the funds are spent directly by the project unit based on their own guidelines and reporting to AEPC and Ministry of Finance.

## Lessons Learned

Research on lessons learned on RE financing in Nepal is, rather, limited. Recently *RE Financing Paper (2018)* has been prepared as a part of DFID support to AEPC and CREF. The paper primarily aims to reveal: (i) impacts of subsidies on small scale RE sector and (iii) potential solutions to improve RE financing in Nepal. This paper has revealed several perceived positive impacts of the subsidy on RE. Among the positive impacts are related to (i) uptake of RETs (ii) expansion of RE sector and (iii) improvement in quality consciousness of both products and services.

An array of negative impacts are also revealed in the paper. The subsidy could not reach to the poorest and the most vulnerable. Contrary to the improved quality consciousness, low quality systems are prevalent. The subsidy has prevented entering best available technologies in the Nepalese market. Subsidy administration is complex and is not free from malpractice.

The subsidy has increased its dependency and has not been able to attract credit financing. The paper further suggested measures to improve RE financing in Nepal. One of them is making the subsidy SMART. Further, the paper has suggested to improve institutional systems and enabling environment, adopt approaches that can lead targeted and market based delivery models and select financial instruments that can increase participation of bank and finance institutions and the private sector. The paper has also made a reference on Challenge Fund which are, as the paper says, increasingly being used in developing countries by various development partners.

The lessons learned as a part of this study is also not different than the finding of the paper. The main lessons learned are the followings:

- The RE Policies are successful in attracting financial resources from the government and development partners which contributed RE sector expansion in Nepal. The existing policies and financing framework, however, could not encourage mobilizing capital from banks and financial institutions.
- Despite the subsidy policy's equal thrust on credit and subsidy, funds for subsidies are adequately available from different sources (regular subsidy, additional subsidy, special programme subsidy, and also topping up from local level) compared to the fund for providing credit.
- Subsidy delivery mechanism is a comprehensive document. The delivery mechanism also comprises credit delivery mechanism/provisions. But its comprehensiveness lies on products or service delivery. The delivery mechanism lacks different business models of service delivery suitable for different technologies and market segments.
- Effectiveness of the CREF framework can be attributed to its legal mandate, composition of Investment Committee and clarity on the institutional and functional linkages with AEPC.
- AEPC has tried different modalities and approaches for RE programme execution. A good set of best models can be identified out of the learning from the existing approaches.
- A flexible framework is needed which can accommodate/guide all development partners' and government's money flow mechanisms and is compatible to procurement practices.

## Challenges on RE Financing

Nepalese RE sector has the following challenges:

- Phasing out subsidy and replacing it by credit
- Attracting BFIs in RE market
- Balancing the role of central vis decentralized RE financing
- Institutionalizing CREF with clear mandates and legal framework in the changed context
- Bankability of decentralized RE projects (type, or location)
- Role of RE on overall energy financing



## 5.0 OPPORTUNITIES, AND EXPERIENCE WITH CHALLENGE FUND

---

### Opportunity of RE Financing in New Changed Context

Still about one in third population live in the dark and more than two in third population use traditional means for cooking in Nepal. These are mostly located in remote and rural areas. Nepal has now entered into the federal setup. National Renewable Energy Framework has been prepared to increase RE access. Though, Nepal has no energy strategy, the government's white paper provides road map for energy sector development including the RE. There is, however, biomass energy strategy which is important because biomass still supplies major share in total energy consumption.

The following section describes the opportunities of RE financing in the new changed context in Nepal.

### Federal Setup

The Constitution was enacted in 2015 (2072 AD)-- restructured Nepal into a federal republic. There are three levels of government: (i) Federal (ii) Provincial, and (iii) Local. There are seven provinces with 753 Local Governments. The Constitution has given prominence to Renewable Energy (RE) as an important development priority. According to the Constitution (Article 51.g.3), ensuring reliable supply of energy in an affordable and easy manner, and making proper use of energy by generating and developing renewable energy has been kept under the obligations and guiding principles of the State. Likewise, small hydropower projects<sup>11</sup> and alternative energy are kept in the list of local level power (Schedule-8). Electricity is, however, a common subject for all three governments.

Chapter 6 of the Local Government Execution Act, 2074 (LGEA) details out the roles, responsibilities and authorities of the local government. Regarding alternative energy, it has the following provisions:

- Local level policies, legislation, standards, project formulation, implementation, monitoring and regulation for hydropower projects up to 1 MW
- Policies, legislation, standards, project formulation, implementation and regulation at the local level for alternative energy
- Management, implementation, monitoring and regulation of local level electricity distribution system and service.
- Alternative energy technology development and transfer, capacity enhancement and promotion at the local level
- Other works related to small hydropower and alternative energy

According to LGEA, local government can enact policies and legislation for collecting and distributing royalty from natural resources (including from water mills). Local

---

<sup>11</sup> Up to 1 MW, according to Local Government Execution Act, 2016.

government receives grants from the federal government through transfer from central treasury to local government treasury. There will be no ministry wise fund transfer as was the case in the past. The central level grants to local government can be of four types: (i) fiscal equalisation grant (ii) conditional grant (iii) complementary grant, and (iv) special grant.

Another revenue source for local governments is the funding by international institutions to the federal government for nationally prioritized projects in the particular local government's jurisdiction.

The Act reinforces the local governments' authority to formulate short, medium and long-term plans and strategies for areas under their jurisdiction. However, the Act qualifies this by stating that they should be aligned to that of the federal and provincial governments.

The Act stipulates that all non-government organizations at the local level need to coordinate their activities with the local government. However, international non-governmental organizations should coordinate with local government only with the approval of the federal government.

As per the Local Level Budget Preparation & Implementation Guideline 2074 (2017) of Ministry of Finance, the treasury of the local level governments should maintain various funds including grants received from the federal government, provincial government, revenue generated at the local level as well as funds transferred from thematic federal level institutions for the pre-defined purposes (section 5.1). However, as per section 2.1 local level budgets should be based upon grants received from federal and provincial governments, local revenue, shared revenue as per inter-government finance bill and loan taken against federal government's guarantee.

As per the federal setup, local government, now, can attract/raise funds for implementing various development activities including the RE.

On the annual budget of fiscal year 2075/76, the federal government has allocated funds to each provincial and local government for providing subsidies for various RE technologies.

### **National Renewable Energy Framework**

Renewable energy is seen as a means to increase energy access in Nepal. Increasing access of clean and affordable energy services remains a major concern for Nepal. AEPC Board has approved National Renewable Energy framework (NREF) in November 2017. As per the NREF, RE refers to hydropower (up to 10 MW and including improved water mills), solar (both photo voltaic and thermal), wind energy and bioenergy systems that are used in households, communities and institutions/enterprises for cooking and heating or generating electricity.

NREF aims to continue the integrated approach and coordinate the activities in the RE sector across all stakeholders. The NREF envisions operating in a flexible and phased manner, building on the success from other initiatives, in particular NRREP, to create shared ownership and mutual accountability in the context of federal Nepal.

The NREF recognises some challenges on RE sector facing in Nepal. There is limited awareness on energy and financing options. Additionally, significant

economic barriers persist in RE financing. The subsidy delivery model, despite its positive impacts, has shortcomings and transition to a market-enabled model has been slow. Further, the RE market is not significantly benefiting from innovative approaches, best available technologies, and global best practices and free and fair competition in the private sector is yet to be achieved. Nevertheless, access to finance, and bankable RE projects are inadequate.

The NREF is an umbrella mechanism for AEPC to coordinate policies and programmes in the RE sector. The Government and development partners jointly own it. It helps mobilise finance. It, further, aims to accelerate the process of transition from a subsidy centred to a credit-focused model, together with smart subsidy provisions. Financing has been considered as one of the strong areas of the theory of change in NREF formulation.

The NREF is implemented by aligning all the stakeholders including development partners, civil society organisations, private sector and financial institutions under the leadership of AEPC at the federal government level. Local and Provincial Governments are also encouraged to align the framework considering it as a guiding tool for RE planning in the new federal structure. It is fully aligned to and supportive of the Constitution and the relevant legal and policy regime for the RE sector.

The new DFID Nepal Renewable Energy Programme will have a role in supporting the Government led NREF. DFID has a total of £18 million available for activities in the small-scale renewable energy sector, on which up to £10 million may be allocated to the CREF. The fund could be used for example to provide concessionary lending in the renewable energy sector. The NREF, now, needs to expand further so that it can also serve as a framework that supports local government in executing RE programmes including making provision for RE financing.

### White Paper – Roadmap for Future

The Ministry of Energy Water Resources and Irrigation (MoEWRI) has issued a White Paper in 2075. It aims to develop a roadmap for fulfilling the national energy demand and achieving energy security. It further aims at increasing access of electricity and other renewable and alternative energies that are sustainable, reliable, affordable, quality and clean.

As a part of “Harek Basti Urja Basti (Every Settlement Energy Settlement) programme, as envisioned in the White Paper, the Federal Government provides 50 per cent of the cost required to install 100 kW to 500 kW solar in all 753 Local Governments through the establishment of **Challenge Fund**. Doing so, these installations will generate at least 200 MW. The Local Government can make provisions to utilise these electricity for community uses such as, irrigation, drinking water, street light and sell to grid the remaining unutilised. Further, The white paper envisions making Renewable Energy Fund effective to mobilise and manage the funds that are received from the national and international sources.

### Biomass Energy Strategy

The Government has approved Biomass Energy Strategy in 2017. About 77% of energy consumption of Nepal is supplied by traditional biomass energy, which includes firewood, cattle dung and agriculture residues. The strategy envisages to contribute in appropriate energy mix by developing modern biomass energy, such as

supporting the management of municipal waste by generating energy from the waste, encouraging the energy supply services, and reducing existing regional imbalances prevailing in the supply and demand of biomass energy. Availability of modern biomass technologies in affordable price for many people is challenging due to their low purchasing power.

The strategy aims to provide financial and technical assistance and easy loan for the production and utilisation of modern, affordable and efficient technologies. The strategy encourages the private sector for production, and marketing of improved and modern biomass energy technologies (e.g. biogas, ICS, gasifier, briquettes/pellets, cogeneration, waste to energy, etc.).

## Challenge Funds in Global Context

Challenge Funds have been used as an innovative financing mechanism by development agencies since the early 1990s and mainly by bilateral development agencies such as DfID, Swedish International Development Agency (SIDA), United States Agency for International Development (USAID), Australian Aid (AusAID) etc. Recently more institutions such as development banks, UN Agencies and foundations have also started using challenge fund mechanisms for development challenges and Bill & Melinda Gates Foundation, United Nations Capital Development Fund (UNCDF), Asian Development Bank (ADB) have been some of the pioneers in the use of challenge funds.

### Historical development of challenge funds;

Prize funds are the pre-cursor to challenge funds and a challenge fund like methodology was used in the 1700s, when the British government offered a reward of £20,000 to anyone who could develop a way of measuring a ship's longitude<sup>12</sup>. Challenge funds were also used in the UK by the government to encourage partnership initiatives in disadvantaged areas and a significant initiative was the City Challenge (1992-98) and the Single Regeneration Budget (1994-2006) were challenge funds where public-private partnerships could be formed at the local level and competitively bid for resources<sup>13</sup>. About £6 billion were distributed to PPPs targeting urban regeneration in inner city areas through these challenge funds.

The use of Challenge Funds in international development was pioneered by DfID as an approach to working in partnership with the private sector. The main objective of these initiatives was to leverage the range of skills available outside the development community and with the private sector to support development initiatives. A secondary but an important objective was to leverage additional financial resources from the private sector to support development efforts. Initial challenge funds like the Financial Deepening Challenge Fund (FDCF) and The Business Linkages Challenge Fund (BLCF) were used in the late 90s as an open, transparent and competitive means to provide grants to the private sector. However the scope and

---

<sup>12</sup> Brain, Adam et al (2014), Meeting the challenge: How can enterprise challenge funds be made to work better, UK Aid

<sup>13</sup> OECD (2014), Compact City Policies: Korea: Towards Sustainable and Inclusive Growth, OECD Publishing

coverage of the mechanism has evolved over the years to include the civil society, non-grant instruments and through provision of various levels of risk tolerance, geographical and sectoral foci, management and governance structures etc.

### Definition and understanding on challenge funds

As mentioned, the role and scope of the challenge funds have evolved and in particular the focus on private enterprises and grant instruments have been diluted. A traditional definition of challenge funds used by DfID and CIDA are – “A competitive mechanism to allocate financial support to innovative projects, to improve market outcomes with social returns that are higher/more assured than private benefits, but with the potential for commercial viability”<sup>14</sup>. A comprehensive definition of challenge funds is one that has been used by SIDA which is “A challenge fund is a financing mechanism to allocate donor funds for specific purposes using competition among organisations as the lead principle. A challenge fund invites proposals from companies, organisations and institutions working in a targeted field to submit project proposals. Challenge funds are always set up to meet specific objectives such as: extending financial services to poor people; finding solutions to a specific health problem in developing countries; as a means of triggering investment to certain high-risk markets; to stimulate innovation for effective use of water resources, etc. The scope of using challenge funds for creative problem-solving in development is very wide. Proposals are assessed against transparent and pre-determined criteria. Successful applicants must usually match a certain percentage of the grant with own financing. The challenge fund awards grants to those projects that best meet the objectives of the fund and fulfill various pre-established eligibility criteria.”<sup>15</sup>

So based on the theory and history and from the perspective of decentralised renewable energy in Nepal, there are a number of key factors that characterise a challenge fund:

- **Financing:** A challenge fund is always a mechanism to allocate financial resources using a number of types of financial instruments. Note that a challenge fund need not be limited to grants and can involve loans, equity etc.
- **Competition:** The financing is provided on a competitive basis from among a large number of prospective recipients. All organisations competing for the resources have an equal chance to win the financing;
- **Innovation and creativity:** Challenge funds encourage innovative approaches to address problems, barriers, challenges or risks and support creative problem-solving;
- **Matching and co-financing:** Matching or providing the same amount or more co-financing is expected in challenge fund mechanisms. In other words challenge fund financing is always 50% or less of the financing needs;

---

<sup>14</sup> Pompa, Claudia (2013), Understanding challenge funds, ODI

<sup>15</sup> SIDA (2012), “Guidelines: Challenge Funds. A guide based on SIDA’s and other actors’ work using challenge funds in development assistance/as a method for development

- **Pre-determined criteria:** the criteria against which the proposals to access financing from challenge funds is determined prior to the competition. Often eligibility criteria are also specified for applicants to make proposals. Both eligibility and evaluation/assessment criteria are pre-determined and announced during the launch of the competition;
- **Specific objectives:** Each challenge or competition addresses specific development objectives for which different approaches may be proposed. The approaches to address the objective may vary and is encouraged to be innovative;
- **Institutional coverage:** Challenge funds can target a range of institutions – private sector, civil society, public sector as well as partnerships between different stakeholders. While the initial challenge funds had a focus on private enterprises the mechanism has been successfully targeted at other stakeholders from civil society and public sector.

### Global Challenge Funds relevant to Nepal

Some of the global challenge funds that a relevance to the objectives of the current assignment is described below:

#### Financial Deepening Challenge Fund (FDCF)

The FDCF was a pioneer in the use of challenge fund mechanism and was financed by DfID and the first challenge fund targeting developing countries. The objective of FDCF was Improved access to financial services for poor and previously excluded groups in Africa and South Asia and the challenge was conducted during 2000-2009. The total budget for the FDCF was £17.86 million. The aim of FDCF was to encourage UK and local financial service providers to widen and deepen the range of financial services available in Africa and South Asia. FDCF offered it offered organizations in 15 countries (12 in sub-Saharan Africa, plus India, Pakistan, and the UK) a chance to win grants of between £50,000 and £1 million.

The experience with FDCF resulted in challenge funds becoming an important instrument for DfID and has been adopted by numerous donor agencies such as SIDA, USAID, development banks, foundations etc. The FDCF funded a diverse portfolio of 28 projects for innovative pro-poor financial products and services<sup>16</sup>. FDCF was able to leverage a commitment of approximately £58 million of applicant resources or a leverage ratio of over 1:3 with the average grant amount being £517,000<sup>17</sup>.

One of the major success stories of FDCF was the the creation of the first mobile banking platform, now known as 'M-Pesa'. M-Pesa has benefitted over 9.5 million

---

<sup>16</sup> Nathan Inc, Design of the Financial Deepening Challenge Fund <https://www.nathaninc.com/design-of-the-financial-deepening-challenge-fund/> (Accessed September 2018)

<sup>17</sup> Irwin Grayson Associates (2005), Financial Deepening Challenge Fund: Strategic Project Review



customers or over 40% of Kenya's adult population. By the end of 2010, funds around \$3.7 billion (equivalent to 10 percent of Kenya's GDP) had been transferred over the system since its launch.

The FDCF used an external fund manager to manage the challenge fund and the while a large number of concepts were submitted, only a short number of proposals were found to be of high quality. The FDCF provided the proof that the challenge fund mechanism can be effective in international development and highlighted the potential of private sector as a partner and co-financier for development projects.

The relevance of FDCF to Nepal and decentralised renewable energy under the NREF are that the FDCF aspects relating to independent management of challenge fund is similar to the handling bank mechanism of the CREF and has a track record in Nepal that can be further enhanced. Also the multi-country and regional approach of FDCF in Africa and South Asia and the lessons from this experience can be applied in the context of federalism in Nepal. It is interesting that the global manager for FDCF – Garry Whitby is currently involved in the management of Shakcham challenge fund (see next section) in Nepal.

### **Africa Enterprise Challenge Fund**

The Africa Enterprise Challenge Fund (AECF) is one of the largest challenge funds and was launched in 2008. The AECF funding partners include the DfID as well as Governments of Australia, Canada, Denmark, the Netherlands, Sweden as well as The Consultative Group to Assist the Poor (CGAP) and The International Fund for Agricultural Development (IFAD). The AECF is managed by a fund manager -KPMG and operates competitions in agribusiness and renewable energy. AECF has financed 266 enterprises spread over 25 countries and has deployed finances of over \$356 million, leveraging more than US \$658 million in matching finances with a leverage ratio of 1.84<sup>18</sup>. Of the total funds that AECF has deployed \$ 166 million has been in renewable energy.

One of the success stories of SECF has been that in 2012, the AECF invested over US\$10m into a cluster of seven start-up companies including M-Kopa, Off-grid Electric etc. active in 'Pay-as-you-go' solutions for clean energy solar home products. Since the beginning of AECF funding during the start-up stages of these seven companies, over US\$120m in equity and debt financing has been leveraged and new players are now entering the market place. AECF projections estimate that a further US\$480m will be invested in this technology<sup>19</sup>.

AECF has evolved from a challenge fund focussing on agribusiness to a platform managing multiple competitions for multiple donors. It has also expanded its financial instruments from grants to include loans. The funding offered by AECF are performance milestone based and disbursements are only made post-performance. AECF's evaluation criteria are also clearly specified for each of the completions in a transparent manner. AECF also has strengthened their monitoring and results measurement capabilities and has also launched an investment support service –

---

<sup>18</sup> African Enterprise Challenge Fund (AECF) <https://www.aecfafrica.org> (accessed September 2018)

<sup>19</sup> AECF( 2014), Impact Report

AECF Connect for the most investment ready companies from the AECF portfolio. AECF Connect has been able to leverage \$ 36 million from other investors into these companies.

The relevance of AECF to Nepal and NREF would be the use of performance based financing which is relevant to the context in Nepal. Also relevant is the use of loans by AECF for financing and the open and transparent way in which the competitions are run and evaluation criteria pre-announced. Also relevant are the use of fund managers by AECF and the need to build a strong monitoring and results measurement system for challenge funds.

### **Beyond the Grid Fund for Zambia,**

Beyond the Grid Fund for Zambia (BGFZ) is a challenge fund which is a euro 20 million challenge fund established by SIDA and managed by REEEP focussing on Zambia. BGFZ is a multi-year program aiming to increase energy access for households, productive uses and public institutions in rural and peri-urban areas. The BGFZ aims to bring modern energy services to at least 167,000 households – or 1 million Zambians by 2021. BGFZ provides financing for Energy Service Subscriptions (ESS) by Energy Service Providers (ESPs). BGFZ identified through a competitive process 4 ESPs viz. Fenix International, Vitalite, Emerging Cooking Solutions and Standard Microgrid.

The ESS were specified using the energy service tiers specified by Sustainable Energy for All (SE4ALL) and supported decentralised renewable energy systems such as solar lanterns, solar home systems, cookstoves in the range of 20-200 W as well as renewable energy based Pay-as-You-Go and mini and micro-grid utility models in the range of 1-500 kW. BGFZ provided two types of funding - start-up and scale-up. The start up or incubation funding was for new ESPs who were not active in Zambia or new entrants who were active in Zambia for less than 9 months aimed at attracting new entrants and supporting them. However, the major funding was provided for ESS under the scale-up component for providing ESS in rural and peri-urban parts of Zambia. ESPs could either propose both start up and scale-up funding together or only scale-up funding. The evaluation criteria and weightage for the criteria were specified during the competition. Payments are made on the basis of monitoring and verification that ESS have been provided and are being operated and maintained. Implementation of the ESS is according to business plans submitted during the complete stage and payments follow self-reporting and verifications of the results by BGFZ.<sup>20</sup>

As of July 2018 more than 43000 ESS have been achieved by the challenge winners providing renewable energy access to over 223,000 people and leveraging over \$ 20 million in co-financing. BGFZ is expected to launch a second competition for additional ESS provision.<sup>21</sup>

The relevance of BGFZ to Nepal and NREF is the use of a challenge mechanism to engage private sector to provide energy services and making service payments on

---

<sup>20</sup> Beyond the Grid Fund for Zambia (2016): Invitation to tender

<sup>21</sup> Beyond the Grid Fund for Zambia <https://www.bgfz.org/impact/> (Accessed September 2018)



the basis of energy or energy systems supplied and maintained. A drawback with BGFZ to be noted and relevant in the context of Nepal was the limited engagement of local governments which needs to be ensured for success. Another drawback was the use of European Union (EU) procurement rules for the BGFZ which resulted in significant complexities and delays.

### **Renewable Energy Challenge Fund, Uganda**

The Renewable Energy Challenge Fund (RECF) is being managed in Uganda by United Nations Capital Development Fund (UNCDF) with SIDA Funding. The funding is targeted at renewable energy Small and Medium Enterprises (SMEs) and is expected to make 15 renewable energy investments which are expected to provide renewable energy access to 153,000 beneficiaries of which 50% will be women and 50% will be youth (both target beneficiaries can overlap). A total funding of US\$ 2.5 million is available for the challenge fund. The RECF will support biomass and Liquefied Petroleum Gas (LPG) fuels and stoves and solar energy systems from pico solar to micro-grids including hybrid systems<sup>22</sup>.

The financing is provided as performance based grants in the range of \$ 75,000 to \$ 250,000 and evaluation and eligibility criteria have been specified and the process is also detailed out. The performance indicators for the RECF has also been specified and includes energy, environmental and social indicators and monitoring will be carried out by the SMEs that win the challenge as well as by UNCDF. The RECF programme builds on the experience of the challenge funds operated by UNCDF – CleanStart and Mobile Money for the Poor (MM4P).

What is relevant to the Nepal and NREF is that the RECF is targeting non-energy social and environmental outcomes in the challenge fund and the framework for performance monitoring including the indicators and the systems. What is also relevant to Nepal is the use of the challenge fund on the performance based mode for cooking solutions and the inclusion of LPG and hybrid systems in the list of eligible technologies.

### **Initial Inferences and observations:**

From the international experience, some of the key observations and inferences to be taken on board and considered in the development and elaboration of the modalities for a challenge fund for decentralised renewable energy in Nepal are:

- The experience in the UK with urban renewal challenge funds as PPPs for local areas development is relevant to the federalisation and decentralisation that is underway in Nepal. There is an opportunity in the renewable energy sector to use challenge funds to support renewable energy PPPs in Nagarpalikas and Gavpalikas;

---

<sup>22</sup> Embassy of Sweden Uganda (2016), Renewable Energy Challenge Fund :Part of CleanStart in Uganda of the United Nations Capital Development

- Challenge funds can be used to offer both grant and non-grant financial instruments and there is existing track-record in energy related challenge funds such as AECF in the use of non-grant instruments;
- Challenge funds are being used to provide energy access in service provision mode where the ESPs are financed on the delivery of energy services than the delivery of energy conversion equipment. This is evident in BGFZ support to ESS through ESPs;
- Use of an external fund manager who brings the specialised skills for process management, financial management and results management has been a key factor of successful challenge funds like AECF, FDCF etc. This is considered to be a variation of the use of handling bank by CREF;
- While the focus of the energy sector and other challenge funds are on private enterprises, there is strong body of experience in targeting challenge fund mechanisms at public sector and civil society. This might be relevant in the context of institution building needs relating to energy for Nagarpalikas and Gaupalikas;
- Strong monitoring and results monitoring systems are needed to ensure the delivery of outcomes contracted by challenge funds both at the level of the fund manager and the winning institutions.
- A major benefit of challenge funds have been incubating and supporting paradigm shifting innovations such as M-Pesa by FDCF and Pay-As-You-Go Solar by AECF. We have the potential to encourage innovative thinking towards such transformative solutions in the renewable energy sector in Nepal through the proposed challenge fund.

## Challenge Funds Initiatives in Nepal

Challenge Fund concept is gradually evolving in Nepal. Experience of Challenge Fund in energy sector is rather limited in Nepal. There are, however, a few initiatives on CF in Nepal, which are presented in the following sections.

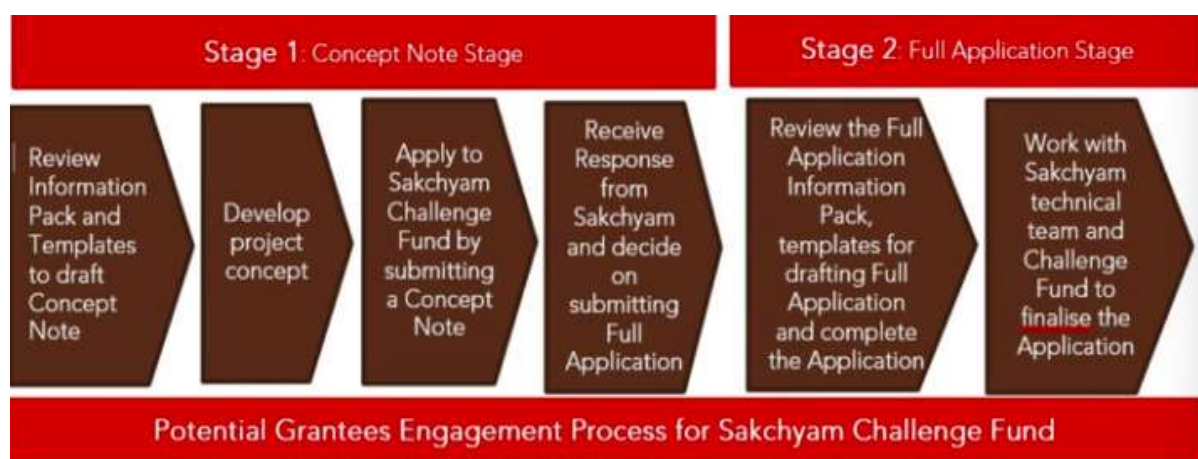
### Sakchyam- Access to Finance

“Sakchyam” --access to finance for the poor programme-- is an initiative funded by Ukaid as a part of an agreement between the Government of Nepal and UK. The 5-year programme, valued at £20.5 million, is working with the public and private sector to leverage access and facilitate financial sector development for small and medium enterprises and for the poor people. The planning and execution of the programme is guided by a set of principles: (i) making markets work for the poor (M4P) (ii) gender equality and social inclusion (iii) risk mitigation and management, and (iv) value for money for every intervention.

As a part of this programme, *Sakchyam Challenge Fund* has been established to attract and leverage private sector proposals that encourage innovative and new products and services aimed at poor and communities, which deliver socio-economic benefits to a large number of poor people, but on a commercially-sustainable basis. It aims to improve the access of poor and middle income groups to services such as

credit, savings, insurance, and investment capital. It offers to co-invest with organisations seeking to build upon existing and create new financial services. Sakchyam stakeholders consist of Nepal Rastra Bank, microfinance institutions, cooperatives and meso level organizations.

There is two stage bidding process in Sakchyam Challenge Fund (i) concept note stage, and (ii) full application stage. The concept note outlines the project idea and how the project will contribute to achievement of the objectives. The concept note is assessed by the Sakchyam team against the eligibility criteria. The bidders are advised and submit a full proposal, which is evaluated by an independent panel. Successful applicants are invited to sign a grant agreement to implement the project. The details of Sakchyam Challenge Fund process is shown below.



Source: sakchyam.com.np

Figure-3: Sakchyam Challenge Fund Process

According to Sakchyam Challenge Fund Manager, Sakchyam has, so far, received 202 concept notes, around 100 applications, on which 61 are under implementation among the 67 approved projects.

Jana Uthhan Samudayik Laghubitta Bikash Bank Limited (JUSLBB), a micro-finance bank, is implementing Urja Karja (Energy Loan) with the support from Sakchyam. The objective of the energy loan is to increase access of clean and affordable energy solutions to households, enterprises and other income generating activities. It provides credit to improved cooking stoves, biogas, solar light system, solar conduction drier, solar water pump, solar refrigerator, solar water pump, solar agriculture processing and electric three-wheeler. It provides individual loan up to NRs 200,000 (NRs 300,000 in case of electric three-wheeler) on group guarantee but it requires collateral if the loan amount exceeds NRs. 200,000. The maximum loan amount is NRs 700,000. The loan can be paid back in 3-5 years and interest rate is 16%. JUSLBB has signed an memorandum of understanding with Ajummary Bikash Foundation (ABF), a Kathmandu based private company which manufactures and also supply imported cookstoves to end users.

The Energy Urja has operational for six months and it takes some time to know the result of this initiative in details.

## **UNNATI Inclusive Growth Programme – Challenge Fund**

UNNATI-Inclusive Growth Programme in Nepal is supported by the Government of Denmark. The overall objective of the UNNATI programme is to promote sustainable and inclusive growth to reduce poverty and raise the living standards of the people. It is implemented by various partners. It has three components: (i) Value Chain Component (ii) Infrastructure Component, and (iii) Enabling Environment Component. It operates three challenge funds: (i) Advocacy Challenge Fund, (ii) UNNATI Challenge Fund, and (iii) Expanding Financial Frontiers Challenge Fund.

### Advocacy Challenge Fund (ACF)

International Labour Organization (ILO) is implementing Advocacy for Rights and Good Governance project within the enabling environment component. The project operates through a challenge fund and ILO is the Manager for Advocacy Challenge Fund- ACF ([www.advocacychallengefund.org](http://www.advocacychallengefund.org)).

The ACF is a means to support private sector organisations and other organisations interested in private sector development, of the four value chains (e.i. orthodox tea, ginger, dairy and cardamom), to conduct evidence based advocacy and lobbying activities. It is an open, competitive and demand-driven financing mechanism. The Fund makes its funding available through competition in a transparent manner. Private sector organisations are invited to apply the fund by submitting innovative concept notes. These concept notes have to comply with the rules and demonstrate contribution towards improving the enabling business environment for the value chain development, pursue responsible business initiatives or meet the UNNATI objectives.

The concept notes are selected based on assessment criteria and then ask to submit a detailed proposal. The Advocacy Fund supports the organisations relevant to the prioritized four value chain areas for (i) building capabilities for advocacy dialogue (ii) promoting sustainability, and (iii) promoting broad public awareness.

Fund is managed by International Labour Organization (ILO) in compliance to ILO and Danida Financial Management and Procurement guidelines. When an application is approved, the Fund Manager, disburses funds to the concerned organisation or business service provider. The Fund Manager monitors the funds utilized by the organization and Advocacy Board oversees the processes and results of the fund management.

The fund is implemented under three windows: (i) advocacy for policy dialogue (ii) sustainability, and (iii) public awareness.

According to the UNNATI Advocacy Challenge Fund information sheet, a total of 33 out of 80 concept notes were shortlisted and reviewed and recommended by independent assessment panel members for further process.

### UNNATI Challenge Fund (UCF)

Additionally, as a part of Sub-component 1.1 of UNNATI programme (<http://www.unnatiprogram.org/component/commercialization-of-value-chains>), support to the sub-component activities are provided through UNNATI Challenge

Fund (UCF). The UCF is jointly implemented by FCG/ORGUT and UNCDF. According to the information provided in the web site, the fund has two windows, namely: (i) value chain window (VCW), and (ii) market infrastructure window (MIW). The VCW is to support the ability of agribusiness to overcome the obstacles identified within the selected value chains and is a cost sharing facility designed to provide entrepreneurs, cooperatives and others to develop their own enterprise/organization and contribute to development of the value chains. The MIW is a similar funding mechanism to support public/ private actors to invest in agriculture related market infrastructure i.e. collections centres, storage facilities, market place facilities, small scale irrigations etc.

The total amount of the fund facility is US\$ 9.6 million. This facility provides competitive matching grants to agriculture value chain entrepreneurs, banks and financial institutions, private sector businesses and public sector actors, especially focusing on orthodox tea, ginger, large cardamom, and dairy value chains. The fund supports innovating and saleable new ideas and interventions. Each project shall be in the range between US\$ 15,000 to US\$ 500,000 in which applicants also need to share costs ranging from 30 per cent to 80 per cent.

#### Expanding Financial Frontiers Challenge Fund (EFFCF)

The UNNATI Access to Finance (A2F) programme is implemented by Nepal Rastra Bank with technical support from UNCDF. The objectives of the A2F interventions are to enable access to finance for an additional 250,000 clients, out of which 150,000 are small holders farmers and micro, small and medium enterprises, mainly in the eastern development region. It includes several interventions that focus on addressing obstacles to financial inclusion in Nepal. One of the interventions is the Expanding Financial Frontiers Challenge Fund (EFFCF).

The EFFCF is designed to provide incentives for financial institutions and non-bank licensed institutions to expand and broaden their financial products, services and delivery channels particularly in agricultural value chains identified by the project. It supports matching grants through an open competitive process with public solicitation of applications. Only the best proposals and applicants with the relevant skills and experience are selected. Grants are targeted towards new ideas, products, business models and concepts for which the (perceived) risks are relatively high.

It is composed of two windows: (1) Expanding financial services and (2) Innovation for financial access. The EFFCF acts as a co-investor, providing matching grants to give innovative ideas a chance to expand their business operations with financial returns at the same time achieve social returns for the poor and marginalized people, particularly those engaged in micro small and medium enterprises targeted by UNNATI.

The Challenge Fund finances a share of the project's cost (through a performance based grant) while the other part of the project's costs are to be financed by the applicants to ensure commercial viability of the project.

The EFFCF seeks to fund up to USD 1.8 million for 10 to 15 projects in Nepal. It will provide matching grants from USD 50,000 to USD 400,000. Applicants are required to contribute from 30% to 80% (depending on the innovation factor and risk level) towards the project's costs, thereby demonstrating the grantee's commitment to the project (with possibility to contribute a share in-kind).

### **Vendor Finance Challenge Fund on RE**

UNCDF has now established a *Vendor Finance Challenge Fund* with a total fund of US\$ 90,000 partnering with CREF and UNDP-RERL. UNCDF has allocated US\$ 30,000 on the fund while CREF and RERL have contributed US\$ 50,000 and US\$ 10,000 respectively. An operational guideline has been prepared, which is approved by CREF Investment Committee. The goal of the fund is to test, develop and scale up innovative business models for vendor finance in Nepal. CREF selected three grantees to pilot innovative financing projects through a competitive selection process (i) Project 1: Introduction of innovative dehydration technology and value addition on cash crops, by Aastha Engineering Solutions Pvt (Ltd), (ii) Project 2: Use of innovative consumer financing technology to provide solar products by Jeevan Bikash Urja, and (iii) Project 3: Off-grid bazar by Gham Power Private Limited.

AEPC is responsible for quality assurance.

### **Purnima – Post Earthquake Reconstruction**

Purnima is a five year programme (2017-2022) funded by the UK DFID and managed by Mott MacDonald. The Project Cost is £ 40 million. The objective of the programme is to bring a long-term positive change in the lives of people in earthquake affected regions of Nepal. The programme works in four of the worst affected districts (Gorkha, Nuwakot, Dhading, and Rasuwa).

The programme includes a Challenge Fund which funds interventions ensuring “no-one is left behind” in the reconstruction effort and to promote transformation change. The Fund works for women and girls through grants in three thematic areas – political, economic and social. The programme has, recently (August 2018), invited concept notes from interested organisations for up to four grants covering a total of 12 Gaupalikas for 2 years.

The programme targets the vulnerable groups from remote areas. The vulnerable groups include persons with disabilities, the elderly, vulnerable single women especially *Dalit*, internally displaced persons, and extremely poor and food insecure people. The programme supports activities proposed by the groups that improve access to services, contribute to skill development, increase employment opportunities, and improve food security and livelihoods.

### **Government Challenge Fund to Boost Innovative Business**

Ministry of Finance allocated NRs one billion as a Challenge Fund for startups in last year budget. The fund was meant for providing seed capital for selected industries promoted by young entrepreneurs for technological and market promotion. According to an article published on Business Age (2017), the Fund was not utilised last year because of lack of policy. The Ministry of Finance had, however, made a directory on how to utilize the fund but which is yet to turn it into a project.



According to this year Budget Speech (2018/2019), the Government has, also, mentioned establishing a Challenge Fund to provide startup capital for business initiated by entrepreneurs with innovative knowledge, skill and capital. It is said that arrangement will provide loan of up to NRs 700 thousand with a 5 per cent subsidy on interest against collateral of their academic certificates. To be eligible for any business for the fund, there should be compulsory credit guarantee and insurance of such businesses.

### **PLSDP Challenge Fund**

Local Governance and Community Development Programme (LGCDP) is a national programme with an over-arching goal to contribute towards poverty reduction through inclusive, responsive and accountable local governance and participatory community-led development. This is a national programme framework for improvement in local governance system and community development. Second phase of LGCDP was concluded in 2017 and third phase is under preparation. The third phase of the programme will be named as Provincial Level Governance Support Programme (PLGSP).

The PLGSP is planning to establish a Challenge Fund, which will be executed by the provincial governments. The challenge fund aims at supporting the local government. Based on the programme support criteria, the local government can apply with an innovative idea which should be service oriented and not for infrastructure development. The selection committee constituted at the provincial government level scrutinizes the proposal for the selection. It is expected that the challenge fund will mobilise around US\$ 100 million.

As the programme is presently on the development stage, the details on the challenge fund modality is yet to come.

### **Other RE Financing Initiatives in Nepal**

Different financing approaches are tried in RE sector financing focusing on selected energy technologies. These initiatives were, however, made some level of impacts, though, in small scale. To name some of these are Biogas Credit Fund, Urban Solar, financing solar through a joint effort of Winrock and Ace Development Bank, Crowd Funding of Sun Farmer, etc.

Energising Development (EnDev) Nepal is one of GIZ initiatives which has supported establishing Micro-hydro Debt Fund since 2009. UNCDF supported CleanStart is another.

### **Micro-hydro Debt Fund**

EnDev Nepal is working together with AEPC through a Micro-hydro Debt Fund (MHDF). The fund is administered by two competitively selected banks; NMB Bank and Himalayan Bank. By December 2017, a total of 26 micro-hydro projects have received loans. The banks adopt their own internal procedures and processes to deliver loans. The fund helps in subsidizing interest rate and sharing credit risk (50%) with the bank. The banks involve MFIs as field partners of the banks to reach closure to the communities. Apart from these, the fund helps in capacity building for partner banks, MFIs, and rural communities.

The repayment rate of the projects is, rather, not encouraging -35%. The main reasons of the low repayment period, as stated by the MHDF, are earthquake, poor project management of the community, cost over-run, and also insufficient tariff collection. Additionally, follow up from the banks is also stated to be inadequate.

### **Clean Start - UNCDF**

UNCDF Clean Start aims to invest US\$ 26 million over six year (2012-2018) in six countries in Asia and Africa to create a clean energy future for 2.5 million people. Clean Start is supporting partner financial institutions with technical assistance towards RE technologies lending in Nepal. Clean Start in Nepal has four objectives: (i) finance for clean energy (ii) technical assistance (iii) knowledge and learning, and (iv) advocacy and partnership. It has four partners: (i) Nepal Investment Bank Limited (NIBL) (ii) NMB Bank Limited (iii) Small Farmer Development Bank Limited (SFDB), and (iv) Jeevan Bikash Samaj (JBS).

Ace Bank provides wholesale lending to cooperatives for on-lending to the end users of renewable energy technologies. NMB works with Nirdhan Uttan Bank and NMB Microfinance Bank. Nirdhan Bank is now operating in almost all districts in Nepal. SFDB is one of the leading wholesale lending microfinance banks in Nepal. It works with small farmers' cooperative for RE lending. RE is one of the main lending portfolios of SFDB. JBS is a microfinance institution which provides loans to its RE clients.

Clean Start is supporting partner financial institutions with technical assistance towards RE lending. The partner banks and micro-finance institutions provide loans for solar home systems, biogas, and improved cooking stoves.

More than 140,000 RE technologies have been financed as of now (Prem Sagar Subedi, 2018) through its partner financial institutions. On which solar has the maximum (about 80%) share on the total lending portfolio. The loan installment is designed considering the cost of baseline fuel. Accordingly, loan period is 2 years for solar, 3 years for biogas and one year for improved cook stove. The CleanStart programme is considered to be successful with good repayment record. The success factor is attributed to its effort to mobilise MFIs member platform and training to loan officers working on the MFIs.

### **Box-2: Introducing Clean Cooking to the Last Mile**

Ms. Shyam Kumari Thapa is always looking for an opportunity. She is a Last Mile Distributor of clean energy solutions, trained by the UNCDF CleanStart programme. Use of solid biomass in cooking is still common in Nepal. As a distributor with Nirdhan Uttan Bank, Ms. Thapa is the link between clean cooking solutions and the remote communities. Her role as a last mile distributor began with a four-day entrepreneurs training provided by UNCDF CleanStart. Over the past year, she has been selling cookstoves, supplied by Ajummary Bikas Foundation. Also, when people show interest in a clean cookstove product but cannot afford it, she refers them to the MFI for financing.



Ms. Thapa is one of 20 last mile distributors of clean cooking solutions among the Nirdhan Bank clients trained by UNCDF CleanStart.

Source: CleanStart (2018)

### **Viability Gap Fund – Grid Connected Solar**

Nepal has received US\$ 20 million grant to encourage private sector investment in utility-scale solar power generation. This grant is financed by the Scaling Up Renewable Energy in Low Income Countries Programme (SREP) of the Climate Investment Funds (CIF) administered by the Asian Development Bank (ADB). The grant ensures installation of at least 25 MW of solar power. It provides a business model that can be replicated and scaled up elsewhere.

The grant is used to finance the difference between private sector cost of generating utility-scale solar power and the minimum price that the Nepal Electricity Authority is willing to pay for the power. This is the first time Nepal has ever used “viability gap” funding in power sector.

According to the arrangement, companies are able to bid to develop solar system through an international competitive bidding process, with power purchase agreement awarded on the basis of the best offtake prices. The funding under the grant will be payable on the first day of operation of the system, up to end of June 2022.

## 6.0 GOOD PRACTICES, CHALLENGES AND OPPORTUNITIES

### Potential RE Opportunities

AEPC has been promoting different RE solutions and services. Nepal has already tried different RE technologies and services. A list of potential RE technologies and applications is given in Table-3.

Table-3: Potential RE Opportunities

RE Technology/ Application	Sub-sector	Potential Investor/ Developer
1. Hydropower	1.1 Pico (up to 10 kW) 1.2 Micro (10 to 100 kW) 1.3 Mini (100 to 1000 kW)	Community, Private Community, private Community, Private
2. Solar PV	2.1 Home system 2.2 Urban	Individual Individual
3. Wind	3.1 Isolated 3.2 Grid connected	Still on testing phase
4. Mini-grid	4.1 Hydro 4.2 Solar 4.3 Wind 4.4 Hybrid	Community, Private Community, Private Community, Private Community, Private
5. Biogas	5.1 Household 5.2 Urban 5.3 Large commercial 5.4 Municipal waste	Individual Individual Private, cooperative Local government, cooperative
6. Biomass	6.1 Improved cook stoves 6.2 Gasifier 6.3 Briquettes/pellets 6.4 Cogeneration	Individual Individual, private Private Private
7. Institutional solar	7.1 School 7.2 Health post 7.3 Irrigation 7.4 Drinking water 7.5 Street light 7.6 Religious places	Public institution Public institution Community, cooperative Community Local government Public institution
8. Solar thermal	8.1 Dryer 8.2 Cookers 8.3 Water heating system	Individual, community, private
9. Electric cooking (conventional, induction, infrared, hotplate)	9.1 Household 9.2 Hotel/restaurant	Individual Private
10. Energy efficiency		Private
11. Improved water mill		Community
12. Distributed generation		Local government (possibly PPP)

13. Productive end use	Private
------------------------	---------

Source: Author's compilation

### Box-3: Interaction with Private Sector

An interaction consultation meeting was organised with private sector in September 26, 2018. The participants of the interaction meeting were from Nepal Biogas Promotion Association (NBPA), Nepal Micro-hydropower Development Association (NMHDA), Solar Electric Manufacturers Association Nepal (SEMAN), Solar Thermal Association Nepal (STAN), Water and Energy Consultants Association Nepal (WECAN), and Biogas Sector Partnership Nepal (BSP-N).

Challenge Fund concept is new to Nepalses private sector. The private sector has a major concern on how to reduce the duration of project cycle in project implementation. They expressed their dissatisfaction regarding the long time taken in the past to complete the project cycle which, as they said ,hampered their cash flow and financial performance. They feel there was lacking of enough focus on operation and maintenance after the system was installed resulting unsustainable operation.

They suggested for a strong capacity building and technical support components which would help private sector and community to prepare innovative project concept notes, detailed feasibility studies and implement the project activities effectively.

The private sector also suggested for the need of wider awareness regarding Challenge Fund, its operational modalities and on financial literacy.

Potential investors/developers for these technologies/applications can be (i) individual household (ii) private (iii) community (iv) cooperative, and local government. Different business models and subsequent delivery models can be built considering which group of developer will be interested for which type of specific RE technology or application.

### Good Practices on RE Financing

Nepal's RE programme, itself, is considered good practice considering mass scale dissemination of RE technologies and applications. However, most of these programmes are highly driven by subsidy. Nepal's CREF is a promising model, which can be further contextualized and developed for RE financing in general and Challenge Fund operation in particular.

As it was presented in the preceding sections, Challenge Funds have been tried in some of the programme activities in Nepal. Almost all these initiatives are rather recent activities. Because of that, it is still too early to draw meaningful experiences from these initiatives to learn their best practices.

### Key Success factors

Based on the discussions presented, the success of the Challenge Fund can be guided by the followings:

- **Innovative ideas:** It is crucial to have innovative idea on the proposals applying for Challenge Fund, for which a strong technical assistance is warranted. In the absence of strong technical assistance, good proposals or concepts can not be received.
- **Competition:** Decentralised RE has its own niche market and in the absence developed market structure, there may be complete or partial absence of competitive environment. A new way of competitive environment can be created; for example, competition among the local government and or competition among the technologies.
- **Associated Risks and marginal business opportunities:** Success of Challenge Fund may lie on identifying RE systems/projects which are financially “just or close” to viable. In such case, CF can share risks with the RE developer for the investment because CF can contribute to yield positive financial returns in a long run. It is beyond the scope of this study to identify RE systems which are “just or close” to financial viable across the different geographical and economical areas. Nevertheless, there are RE projects whose economic returns are high but the financial returns are rather low. In such case, CF can also address the social benefits of the project and can be made eligible for CF. In case of present federal setup, eligible recipient of the CF can be local level government along with the private sector entities and cooperatives.
- **Independent assessment:** The independent assessment criteria may be difficult to achieve if decision making authorities are not independent and largely represented by political or bureaucratic setup.
- **Challenge Fund is new in Nepal in general and RE sector in particular.** Therefore, a strong awareness programme at all level is pre-requisite.

## 7.0 WAY FORWARD

---

### Subsidy Handling

RE subsidy is now channeled and handled by the local government for which AEPC can provide technical assistance to local government in drafting subsidy policy and delivery mechanism. Furthermore, AEPC can also provide capacity building support to local government officials, as per the need.

### Challenge Fund Management

AEPC and (C)REF can institute a mechanism to handle Challenge Fund at the central level. The Challenge Fund should support innovative ideas, based on the proposals received from (i) private companies, (ii) partner bank and other MFIs, (iii) local level government based on PPP arrangement<sup>23</sup>, (iv) cooperatives, and (v) any other institutions such as school, health post, religious establishment, or community organisations for drinking water, irrigation, or other viable business enterprises.

---

<sup>23</sup> PPP Act is in the final stage of approval in the government.

There should be re-definition of handling bank and based on which, CF can be managed by competitively selected handling bank. There are benefits of handling Challenge Fund by handling bank. These benefits are (i) banks are transparent and regulated by central bank, (ii) bank has better reporting, monitoring, and auditing system, (iii) bank can better handle commercial financial products, and (iv) bank has wider presence in almost all local government units, except a few.

The Challenge Fund should address the need of the people, and contribute in enhancing institutional capacity, and help overall RE sector development.

## SOURCES CONSULTED

---

### References, bibliography

1. Constitution of Nepal, 2015.
2. Local Government Execution Act 2074 (2016).
3. Local Level Budget Preparation & Implementation Guideline 2074 (2017) of Ministry of Finance.
4. National Renewable Energy Framework, 2017.
5. RE Financing Paper: Summary Note, DFID Interim Support Team in collaboration with GON, December 2017.
6. Interim Support to Nepal RE Framework, DFID, February 2018.
7. Management and Implementation Mechanisms Paper: Interim Support to Nepal RE Framework, February 2018.
8. Governance and Donor Coordination Paper: Interim Support to Nepal RE Framework, February 2018.
9. Federalism and its implications for RE in Nepal Paper: Interim Support to Nepal RE Framework, February 2018.
10. CREF Strategy Paper: Interim Support to Nepal RE Framework, February 2018.
11. AEPC Strategy Paper: Interim Support to Nepal RE Framework, February 2018.
12. Rural Energy Policy 2006, Government of Nepal, Ministry of Environment, 2006.
13. Renewable Energy Subsidy Delivery Mechanism, 2073 (2016)
14. Work Execution and Subsidy Delivery Mechanism for Promoting Special RE Activities, 2073
15. White Paper – 2075, Ministry of Energy Water Resources and Irrigation, Government of Nepal.
16. Budget Speech of fiscal year 2018/19, Government of Nepal - Ministry of Finance, 2018.
17. Interim Support to Nepal RE Framework, February 2018.
18. Renewable Energy Subsidy Policy, 2073 (May 2016).
19. CREF Financial Intermediation Mechanism (Final Draft), AEPC/NRREP, March 2013.
20. Biomass Energy Strategy 2017, Government of Nepal, Ministry of Population and Environment, January 2017.
21. RE Financing Paper, Interim Support to Nepal RE Framework, February 2018.
22. Advocacy for Rights and Good Corporate Governance (UNNATI- Inclusive Growth Programme. International Labour Organisation (Date missing).
23. [advocacychallengefund.org](http://advocacychallengefund.org). Sept 12, 2018.

24. <http://www.unnatiprogram.org/component/commercialization-of-value-chains>, Sept 12, 2018.
25. <http://www.uncdf.org/cleanstart>, Sept 12, 2018
26. Challenge Fund: To Boost Innovative Business, New Business Age, 2017-09-13.
27. Budget Speech of Fiscal-Year 2018/2018, Government of Nepal, Ministry of Finance, 2018.
28. EnDev Nepal – Presentation of the Programme ([www.endev-nepal.org](http://www.endev-nepal.org)), 2018.
29. Access to Finance for the Poor Programme, Challenge Fund Concept Paper, UK-aid/Louis Berger, 2014
30. Vendor Finance Challenge Fund: Operational Manual, Central Renewable Energy Fund, 2017.
31. Vendor Finance Challenge Fund: Annexes and template, Central Renewable Energy Fund, 2017.
32. Financing inclusive low-carbon resilient development: The role of the Alternative Energy Promotion Centre, IIED, 2015
33. <https://www.adb.org/news/20-million-grant-spur-private-sector-solar-power-investment-nepal>, (09-18-2018)
34. Challenge Funds in International Development, Anne-Marie O’Riordan, James Copestake, Juliette Seibold, & David Smith; Triple Line Consulting/University of Bath, 2013.
35. Advocacy Challenge Fund ([www.advocacychallengefund.org](http://www.advocacychallengefund.org)).
36. UNNATI Nepal-Access to Finance Challenge Fund, Information note for applicants, January 2016.
37. A Year in Review (Annual Report), Nepal Electricity Authority, 2018.
38. Brain, Adam et al (2014), Meeting the challenge: How can enterprise challenge funds be made to work better, UK Aid
39. OECD (2014), Compact City Policies: Korea: Towards Sustainable and Inclusive Growth, OECD Publishing
40. Pompa, Claudia (2013), Understanding challenge funds, ODI
41. SIDA (2012), “Guidelines: Challenge Funds. A guide based on SIDA’s and other actors’ work using challenge funds in development assistance/as a method for development
42. Nathan Inc, Design of the Financial Deepening Challenge Fund <https://www.nathaninc.com/design-of-the-financial-deepening-challenge-fund/> (Accessed September 2018)
43. Irwin Grayson Associates (2005), Financial Deepening Challenge Fund: Strategic Project Review
44. Deloitte Emerging Markets Group (2004), Business Linkages Challenge Fund: Assessing Achievements and Future Directions
45. African Enterprise Challenge Fund (AECF) <https://www.aecfafrica.org> (accessed September 2018)
46. AECF( 2014), Impact Report
47. Beyond the Grid Fund for Zambia (2016): Invitation to tender



- 48.Embassy of Sweden Uganda (2016), Renewable Energy Challenge Fund  
:Part of CleanStart in Uganda of the United Nations Capital Development  
49.

## ANNEXES

### Annex-1: List of People Consulted/Interviewed

Name	Designation	Address
Prem Sagar Subedi	Clean Start Project Coordinator	United Nations Capital Development Fund, Central Business Park, Thapathali, Kathmandu.
Bimal Regmi	Deputy Manager,	Policy Institution Facility, Oasis Building, Lalitpur.
Purusottam Ghimire	Governance Advisor	Policy Institution Facility, Oasis Building, Lalitpur.
Mohan Das Manandhar	Political Economic Advisor	Policy Institution Facility, Oasis Building, Lalitpur.
Navraj Dhakal	Acting Executive Director	Alternative Energy Promotion Centre, Khumaltar, Lalitpur.
Rudra Khanal	Director	Alternative Energy Promotion Centre, Khumaltar, Lalitpur.
Satish Gautam	Project Manager	Rural Energy for Rural Livelihood, Alternative Energy Promotion Centre, Khumaltar, Lalitpur.
Manu Binod Aryal	CREF Management and Monitoring Specialist (Head of Secretariat)	CREF, NMB Bank, Babarmahal, Kathmandu.
Umesh Acharya	Energy Finance Expert	Rural Energy for Rural Livelihood, Alternative Energy Promotion Centre, Khumaltar, Lalitpur.
Dinesh Dulal	Head, Energy Department and Development Organisation	NMB Bank Limited, Babarmahal, Kathmandu.
Shasi Wagle	Challenge Fund Manager	Sakchyam- Access to Finance, Chundevi Marg, Maharajgunj, Kathmandu.
Garry Whitby	Director of Challenge Fund	Sakchyam- Access to Finance, Chundevi Marg, Maharajgunj, Kathmandu.

Pushkar Manandhar	Energy Specialist	Asian Development Bank, Uttar Dhoka, Kathmandu.
Manoj Khadka	Energy Advisor	DFID- Nepal.
Simon Lucas	Team Leader, Inclusive Growth and Resilience Team	DFID- Nepal.
Anika	Economic Advisor	DFID- Nepal.
Govind Nepal	Act. Chairperson	Institute for Strategic and Socio-Economic Research, Kathmandu.
Mukesh Ghimire	Senior Officer	Alternative Energy Promotion Centre, Khumaltar, Lalitpur.
Guna Raj Dhakal	Chairperson	Renewable Energy Confederation of Nepal, Kathmandu.
Baikuntha Aryal	Secretary	National Natural Resources and Fiscal Commission, Singh Durbar, Kathmandu.
Anita Bohara Thapa	Programme Coordinator	GIZ-Energising Development (EnDev) Nepal, Lalitpur.
Peter Foerster	Chief Technical Advisor	GIZ-Energising Development (EnDev) Nepal, Lalitpur.
Gyanendra Raj Sharma	Director	Ajummery Bikash Foundation, Lalitpur.
Subarna Kapali	Executive Director	Ajummery Bikash Foundation, Lalitpur.
Dr. Raghu Nath Shrestha	Senior Governance Expert	LGCDP, DP Cell, Kathmandu.
Saroj Nepal	National Programme Coordinator	UNCDF, UN House, Lalitpur.
Participants of the consultative meeting conducted on Sept 26, 2018 at Practical Action		
Bala Ram Shrestha	Executive Director	BSP-Nepal
Krishna Prasad Devkote	Chairperson	Nepal Micro-hydropower Development Association
Purna N. Ranjitkar		Solar Energy Manufacturer Association Nepal
Kalidas Neupane		Water and Energy Consulting

		Association Nepal
Sunil Dhakal		Solar Energy Manufacturer Association Nepal
K R Khanal		Solar Thermal Association Nepal
Kiran Gautam	President	Solar Energy Manufacturer Association Nepal
Basanta Raj Lamichhane		Nepal Micro-hydropower Development Association
Reesab Raj Acharya		Nepal Biogas Promotion Association/RECON