Government of Nepal

Ministry of Science, Technology and Environment

Alternative Energy Promotions Centre

URBAN SOLAR ENERGY SYSTEM & SOFT LOAN OPERATION MANUAL

2072 JESTHA

Background

In the same context GoN has approved the recently **"URBAN SOLAR ENERGY SYSTEM SUBSIDY AND LOAN MOBILIZATION DIRECTIVES -2072".**The main objective of this program is to address acute shortage of energy and inefficient consumption of electricity, which has caused great discomfort in everyday life of urban areas and hugely hindered the development of country. In conjunction, it also aims to promote Renewable Energy Technologies (RETs) and energy efficient technologies in electrified areas.

Provisions of Urban Solar programme

- This programme will be implemented in electrified area by NEA.
- This programme is categories in to two groups:
  - i) House hold solar System [Capacity 100Wp-1500Wp]
  - ii) Commercial solar system (School, hospital, company, industry, factory, business complex and offices etc.) [Capacity ≥ 1500Wp used for commercial purpose]
- All Solar PQ-Companies qualified for solar Photovoltaic applications are eligible for installations of urban solar system .
- Under this programme, the system to be eligible for subsidy and credit, the system must fall in either one of following category:
  - **For household solar system:**
    - **System Type 1:** The system will be complete new set (PV Module, Battery, Charge Controller, Inverter & Accessories) and the source of charging will be fully solar PV array.
    - **System Type 2:** The system will be complete new set (PV Module, Battery, Charge Controller, Inverter & Accessories) but the source of charging will be hybrid i.e. both solar PV array and NEA supply.
    - **System Type 3:** The system will already have inverter and battery installed at beneficiary household and under subsidy programme the charging source will completely be replaced by solar PV array.
  - **For commercial solar system**: The target of this system is to replace the existing generators or reduce diesel or fuel consumptions. Commercial solar system will also be one of the type explained above. However, in case of commercial solar power system, the system must be designed to use day time load directly from solar PV to reduce the size of battery bank.
- The system can be also installed without or minimum battery back-up size provided the system supports direct operation of electrical appliances from solar PV during day time.

Net metering concept:

- In first phase the objective is to replace or reduce the existing charging source from NEA supply to solar PV system.

- In second phase after discussion and agreement with NEA, the net metering will be implemented in close coordination with NEA. Under this provision, user will be able to sell the excess energy to national grid at the agreed tariff rate.

Loan and subsidy in installation charge:

Sn.	Category of System	System Capacity(Wp) cash	Subsidy for system capacity ≥500 Wp	Subsidy in interest bank	Interest rate in credit
1	Domestic Purpose	100-1500	Nrs.15000	75%	Maximum 9%
2	Commercial Purpose	≥1500	Nrs.15000	50%	

- The credit facility will be channeled through CREF listed banks.
- The interest rate on credit will be maximum 5% if GoN provides the fund for the loan and the interest rate on credit will be maximum 9% if banks use their own fund for loan.
- CREF partner banks must provide soft loan using the PV system itself as collateral.
- The subsidy in interest will be provided through CREF to the banks in monthly basis. And the interest rate will be not greater than as defined by CREF.

Major Stakeholders of the urban solar programme and their role and responsibilities:

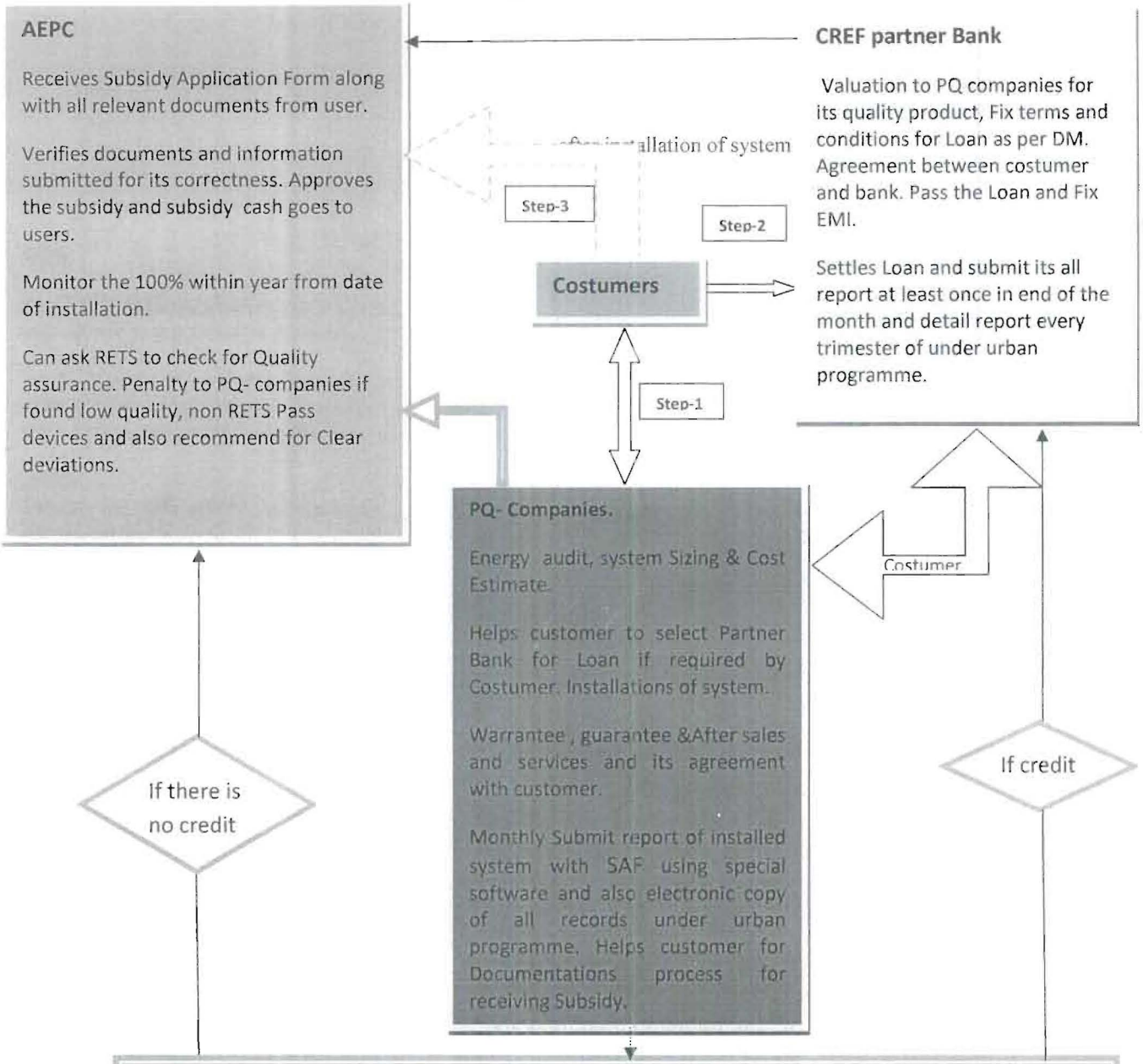
1. Beneficiary
2. Installer company
3. AEPC
4. Bank

Beneficiary-Domestic house hold	**Pre Installation Activities:** • The beneficiary is Nepalese citizen • Identifies its requirement. Beneficiary can take use of Nepal Solar Calculator (free mobile application) for calculation of tentative size and price of the solar system as well as to find the list of installer in its nearby location. • Beneficiary contacts various installer company and approaches the selected installer company and based on their requirement agrees on design and system cost, warranty/guarantee and after sales service terms and conditions. • Signs agreement between installer company and beneficiary • Approaches bank for soft loan • Agree on loan amount, EMI and interest payment schedule • Asks the installer company to install the system. **Post Installation Activities:** • Fills the subsidy application form as prescribed by AEPC. • Gets the necessary information regarding system from installer company • Manages all the required documents i.e. copy of citizenship, copy of NEA electricity bill, copy of agreement between of installer company and beneficiary, photograph of systems. • Makes payment to installer company • Applies for subsidy in AEPC with necessary information. • Pays regular EMI and interest as agreed with bank.
Installer company	• Based on the requirement of beneficiary designs best suitable system, provides details of the system and financial proposal for the system. • Conducts site survey and decides appropriate places for installation of system in consultation with beneficiary. • Installation of the system with quality components (NEPQA certified) • Fills in the subsidy application form as prescribed by AEPC • Provide warranty, guarantee cards, final Invoice to users • Provides necessary after sales service as and when required. • Provides required documents and information to AEPC
AEPC	**Related to Beneficiary Subsidy** • AEPC receives subsidy application form from the beneficiary. • Checks the subsidy application form for its correctness. Verifies the general information provided, checks the RETS certification of product and information as required. • Approves subsidy for the system and recommends to bank for payment of subsidy. **Related to Bank:** • Collects business plan from all the bank and analyzes them.

	• Based business plan of bank, plans for disbursement of fund among banks • Receives monthly report from bank on disbursement of loan and collection of EMI and Interest. • Makes necessary payment for 75% subsidy on interest. **Related to Quality Assurance:** • Conducts monitoring of 100% system within one year of installation. • Conducts detail technical monitoring and study of the system in support of various organizations like Renewable Energy Test Station (RETS), Engineering Colleges and other relevant stakeholders. **Related to promotion:** • Dissemination of information through print and audio video media. • Distribution of brochures and leaflets for dissemination of information. • Organize workshop, interaction programme for discussion, feedback and improvement of modality.
Bank	**Related to Subsidy:** • Based on the approval and recommendation of subsidy application form from AEPC, releases the subsidy amount to beneficiary. The payment will be bank to bank transfer. **Related to Credit:** • Receives the loan application from beneficiary along with documents like proposal from Installer Company and agreement between Installer Company and beneficiary. • Evaluates the proposal from installer company as well as capacity of the installer company • Agrees on terms and condition regarding amount of loan, EMI and interest schedule. • Approves loan taking the solar power system as collateral. • Receives the completion report along with copy of final invoice from the beneficiary and releases the loan to beneficiary. • Regularly collects EMI and interest from beneficiary and subsidy on interest from AEPC. • Submits regular report as well as report asked by AEPC as and when required. **Interest Collection:** • Interest will have two elements of payment i.e. 75% of the interest will be paid by AEPC on behalf of beneficiary to bank and 25% of the interest will be paid by beneficiary.

	Model 1 of interest Collection: • AEPC will create an account at bank where AEPC will park certain amount for interest subsidy based on the business plan submitted by bank. • At the end of agreed time i.e. at the end of one month, bank will draw 75% of interest subsidy amount from AEPC interest subsidy amount and will collect 25% of interest subsidy amount from beneficiary. • This process will continue till the time all the loan is paid by beneficiary • In case the user fails to honor the schedule of EMI and interest payment, bank will follow its regular process of recovery of the loan amount and AEPC in coordination with NEA will facilitate the process of disconnecting the NEA electricity supply to the house of such defaulter. **Model 2 of interest collection:** • Under this model, Bank will first collect total amount of interest from the beneficiary. • At the end of agreed time frame, bank will request for the 75% interest subsidy amount to AEPC and reimburse that amount to the beneficiary account.

Implementations flow chart for Users:



Customer need to submit the following document:

Submit fully filled subsidy applications form (SAF) with following document:

1. Attested Photocopy of Citizenship Document by owner.
2. Photocopy of payment of receipt of electric bill of previous month.
3. Photo of owners, technician and clear photo of installed system on roof and one photo of internal system i.e. battery and charge controller.
4. Tax invoice photocopy.
5. Copy of Agreement between company and consumer for after sales service.
6. Duly filled subsidy application form *(Note: subsidy application form can be downloaded from AEPC website)*

Provisions for BANK:

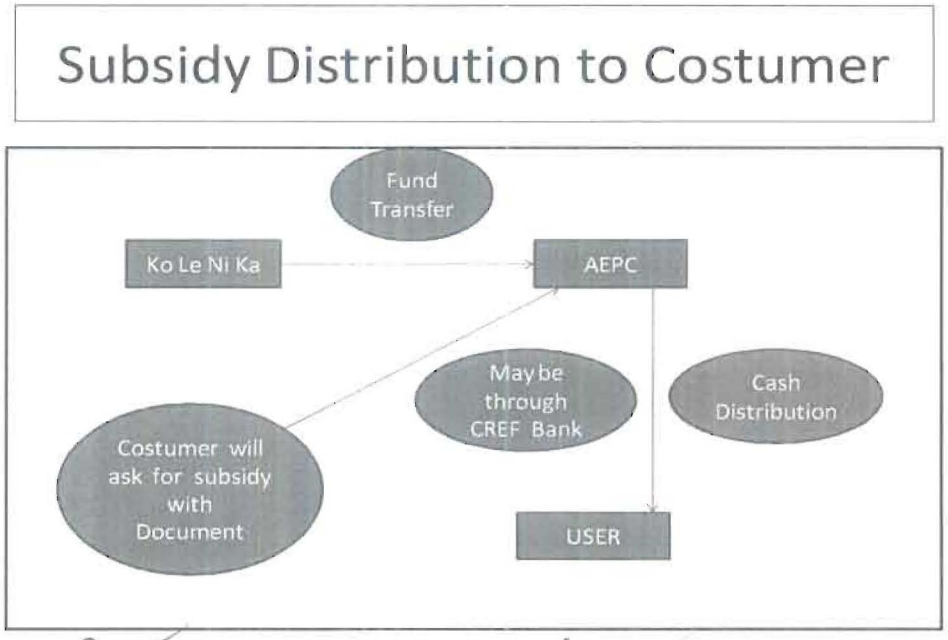
CREF Handling Bank, Global IME Bank Ltd. and seven Partner Banks as under:

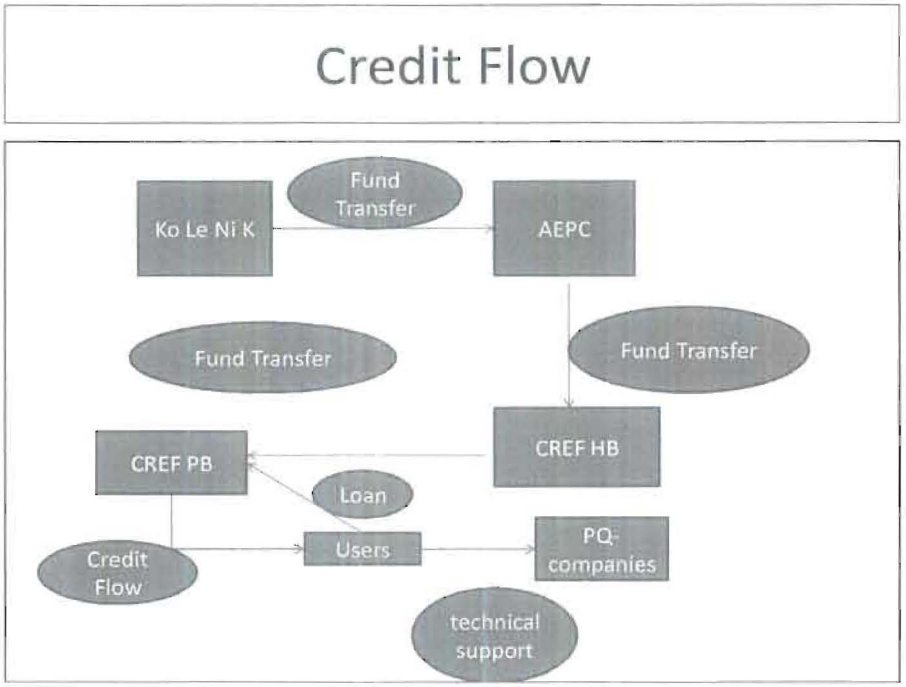
1. Bank of Kathmandu Limited
2. Clean Energy Development Bank Limited
3. Civil Bank Limited
4. Himalayan Bank Limited
5. Nepal Investment Bank Limited
6. Siddhartha Bank Limited
7. Tourism Development Bank Limited

- Above banks are eligible for Loan lending and subsidy can be process through HB.
- The bank will fully responsible and accountable for lending and settle loan. Banks need to report detail all the data of Loan to AEPC every trimester under urban programme.

Funds Flow Diagram:

The follow chart for fund disseminations

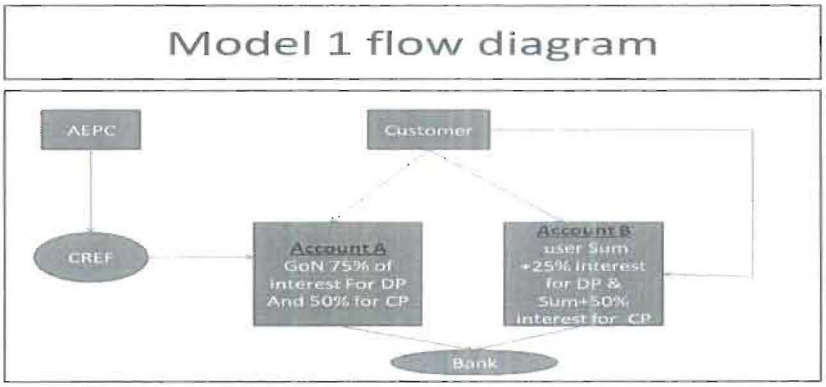




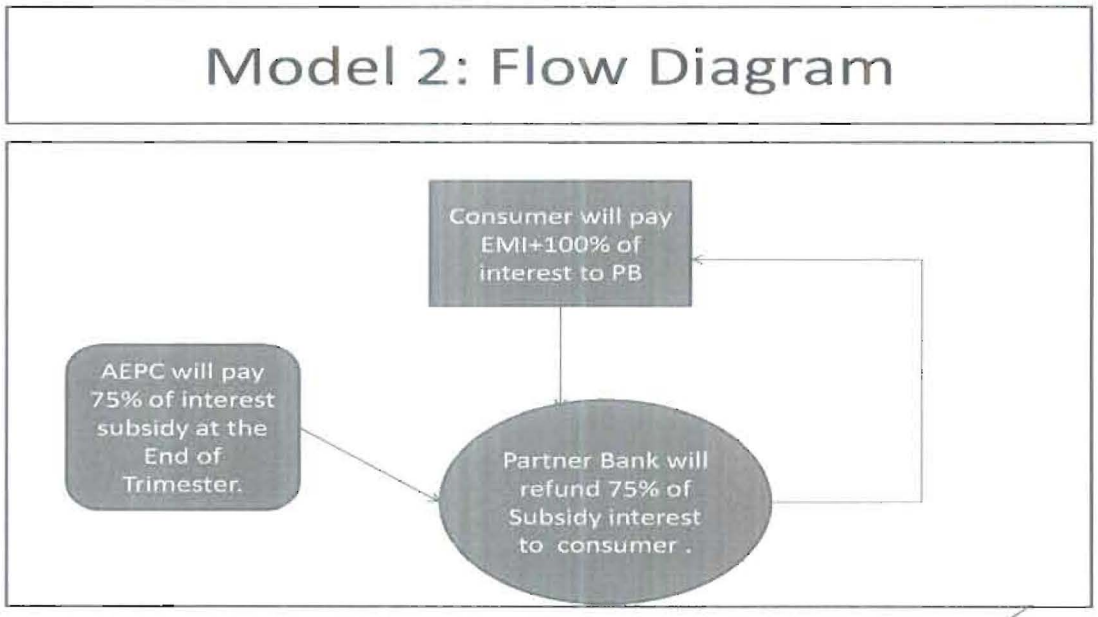
Subsidy and interest flow mechanism in case of loan:

AEPC asks for business plane with partner bank (PB) and PB will give their plan for a year. AEPC will analyze the business plan and based on the relevancy of the business plan, AEPC will allocate fund for banks to be used as subsidy on interest rate.

Model 1: Under this model, AEPC will create an account at bank where AEPC will park certain amount for interest subsidy based on the business plan submitted by bank. At the end of agreed time i.e. at the end of one month, bank will draw 75% of interest subsidy amount from AEPC interest subsidy account and will bank will collect 25% of interest subsidy amount from beneficiary. In case the user fails to honor the schedule of EMI and interest payment, bank will follow its regular process of recovery of the loan amount and AEPC in coordination with NEA will facilitate the process of disconnecting the NEA electricity supply to the house such defaulter.



Model 2: Under this model, Bank will first collect total amount of interest from the beneficiary i.e. 100% of the interest amount. At the end of agreed time frame, bank will request for the 75% interest subsidy amount to AEPC and reimburse that amount to the beneficiary account provided the beneficiary honors the schedule of EMI and interest payment. In case the user fails to honor the schedule of EMI and interest payment, bank will follow its regular process of recovery of the loan amount and AEPC in coordination with NEA will facilitate the process of disconnecting the NEA electricity supply to the house such defaulter. If the payment of 75% of interest subsidy to user and bank is different time then user must get interest of 75% subsidy interest by bank.



Technical Aspects:

I. **Pure Solar charging System:** The ratio of panel to battery must be Panel :Battery=**1:{0.3-0.4}]**

II. **Hybrid charging solar system: with the consideration that the source charging 50%:50% between solar PV system and NEA supply**, the ratio of Panel to battery must be [Panel: Battery=1:{0.6-1}]

Warrantee period:

S.n.	DEVICES/EQUIPMENT	PERIOD (year)
1	Solar Panel	20
2	Solar Battery	5
3	Charge Controller	2
4	Solar Inverter	2
5	Solar Bulb	2

Terms and conditions for Quality Assurances:

- Companies qualified in the category of solar PV applications are only eligible for installations of system.
- All components installed under this subsidy programme must be RETS certified according to Nepal Photovoltaic Quality Assurance (NEPQA) standard.
- The system must be installed by CTEVT certified Solar Technician Level II or technical staff having at least diploma in electrical or electronics overseer
- Net metering process and technical standards must be as per the guideline and standards set forth by AEPC and NEA. The details of this will be made public after the guidelines and standards are approved by GoN.
- As and when requested by AEPC, RETS will conduct detail technical analysis of the randomly selected samples for study of correctness of installation of system, components used and performance of components as claimed. Based on the report from RETS, AEPC will initiated the corrective measure for improvement of the system as well as process of levying compensation to company for not fulfilling the minimum standards if found any.
- Company must provide necessary after sales service as when required and requested by beneficiary. However, the company must visit customer at least two times to check the functionality and preventive maintenance of the system for one year from the date of installation. After that period, company and customer can negotiate the after sales service charge and terms and conditions.
- The system installed should be environment friendly

Provision for Penalty and Fine:

- If the devices and components used are not found to be RETS certified, then the installer company will be penalized for not adhering to the requirement of policy and the compensation will be sum equivalent to cost of system and also can be recommended for disqualified.
- If companies fails to provide after sales and services to the beneficiary and the system is found non functional because of that, then the company will be penalized for not adhering to the requirement of policy and the compensation will be sum equivalent to cost of the system and company will be disqualified.
- If system found not be installed at site while monitoring the company will penalties with equivalent to cost of system and also can be recommended for disqualified.
- If any customer does not pay the loan EMI in time then NEA supply will be disconnected.

Monitoring and Evaluations:

- AEPC will monitor the system within year from the date of installations and also can monitor according to needs.
- AEPC can hire third party consultant for monitoring of flow of credits and calculations of interest rate and can audit in all respects.