

FINANCING FOR GREEN AND INCLUSIVE ENERGY IN NEPAL

In Nepal, approximately 25 per cent of the population (7.4 million) mainly in rural areas has no access to electricity and about 74 per cent people are dependent predominantly on solid biomass

fuels for cooking applications. Lack of adequate investment in energy infrastructures and services at different level of energy market system is a major barrier towards poor energy access.

Adequate investment in energy infrastructures and technologies is a must for alleviating energy poverty and achieving energy access targets as per the SDG-7 and SEforALL commitments.

Policy Recommendations

- 1** There is need to move away from the subsidy-based model to a private sector finance model for promotion of RETs. For this, it is essential to design innovative financing instruments which would effectively address the barriers and risks, and in which the public finance would effectively leverage the private sectors' financing.
- 2** The policy needs to be formulated and operationalised to address the financing barriers and project risks through innovative financing instruments such as senior debt, renewable energy bonds (assets-backed securities), result based financing, credit guarantee facilities, and well-targeted micro financing.
- 3** The government should involve the private sectors as per the financial and economic viability of the project and define business models for them accordingly. Financially viable projects should be totally left for private sectors. But there should be public-private partnership in economically viable projects having high positive externalities.
- 4** Energy Service Company (ESCO) model should be promoted where the government provides one-time capital subsidy to the ESCO in return for guaranteed electrification of agreed reliability to households in certain communities. The capital subsidy should be determined on competitive basis. The company asking for the lowest capital subsidy should be awarded the contract and provided requested capital subsidy as the incentives for private sector.
- 5** Loan guarantee mechanism should be designed and implemented in order to carry out proper due diligence and pursue loan recovery effectively through the provision of rigorous financial analysis including tariff analysis.
- 6** Optimum utilisation of produced electricity should be done through promotion of productive uses of energy in addition to residential connections.
- 7** There must be coordinated effort of public, private and civil society organisations for building capacity and delivering energy services to the last mile.
- 8** Women's cooperatives need to be encouraged for engaging in market system of energy technologies, energy system operation and management.
- 9** Loan for women entrepreneurs should be provided without collateral, based on their business plans and group/ personal guarantees. Network of financial institutions should be expanded to all over the country for easy access to finance by all.

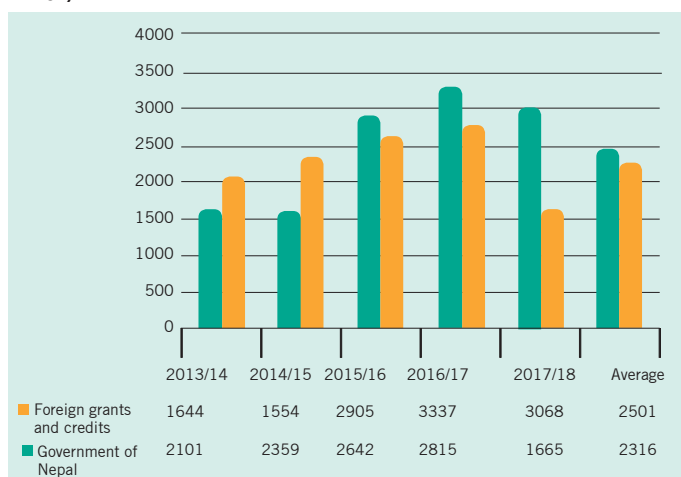
Study Methodology

The study is primarily based on literature review and interviews with policy makers and representatives from RETs promoting and implementing organisations, financing institutions, AEPC, WB, ADB, NMHDA, RECON, NACEUN and NEA. Similarly, close consultations were held with the GIE project consortium members during the study. Additionally, Focus Group Discussion (FGDs) and in-depth interviews were conducted in MHP and CREE sites from 11 sampled districts. Also, household survey was administered in randomly sampled 139 households from the sampled 11 districts. A national level workshop was organised in January 2018 in Kathmandu, Nepal to share the draft report to the key stakeholders and get their feedback.

Public Sector Investment

Public sector investment has been a significant source of finance for decentralised renewable energy technologies as well as in the large hydropower sector in Nepal. The public sector finance consists of Nepal government's own source and the grants and credits from multilateral development banks and bilateral sources.

Figure 1: Public Investment in decentralised RETs (2013/14-2017/18) (NPR in million)

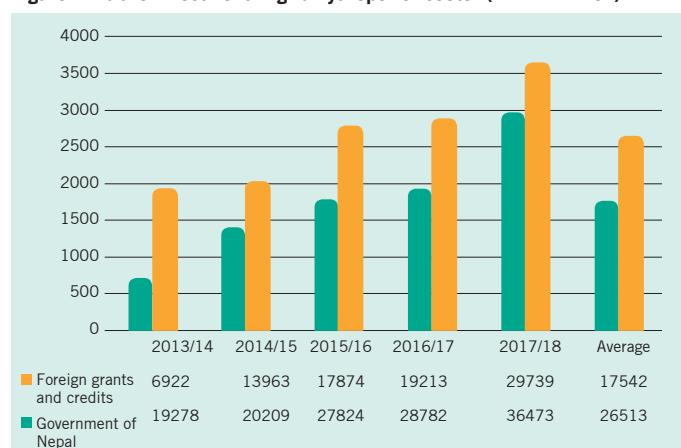


Source: Government of Nepal Red Books of FY 2013/14- FY 2017/18, MoF, 2017/18

The annual growth of the government budget allocation in the decentralised renewable energy systems has fluctuated widely in some years decreasing by up to 23 per cent. A review of past trends of public finance in energy sector shows that over the period of FY 2013/14 to FY 2017/18, the total budget allocation has increased in an average by 8.5 per cent, increasing from NPR 3,745 million in 2013/14 to NPR 4,733 million in 2017/18. Compared to the decentralised

renewable energy technologies, the public sector investment in large grid hydropower and associated transmission and distribution is significantly higher.

Figure 2: Public investment in grid hydropower sector (NPR In Million)



Source: Government of Nepal Red Books of FY 2013/14- FY 2017/18, MoF, 2017/18

Almost 58 per cent of the total finance in electricity sector is from domestic sources, both public and private sector finance. The energy sector investment as a percentage of GDP was 1.9 per cent in 2013/14, 1.8 per cent in 2014/15 and 3 per cent in 2015/16.

Private sector investment

Private sector investment is largely concentrated in small and large scale hydropower development. The present private sector investment is largely led by domestic capital. Foreign investment is yet to be materialised at a significant scale because of insufficient policy and regulatory set up, high risks for the investors. In the rural energy space, the private investment on energy provision is largely concentrated in stand-alone, household level installations such as solar home system, improved cookstoves and biogas. The private sector investment in the energy sector, particularly in the grid hydropower is quite erratic, as shown in Table 1. Private sector investment is largely dependent on access to finance, government's investment plan and other enabling environment. There is about 40 per cent of the total investment from private sectors in the renewable energy sector as equity and credit from the banks.

Table 1: Approximate private sector investment in energy sector (NPR in Million)

FY	2013/14	2014/15	2015/16	2016/17
Decentralised Renewable Energy	1,498	1,565	2,219	2,461
Grid based hydropower	5,513	-	15,136	25,653
Total	7,011	1,565	17,355	28,114

Source: Government of Nepal Red books, MoF; NEA Year in Review of 2012/13- 2016/17, Annual reports

LEGAL AND POLICY ENVIRONMENT TO INVEST IN ENERGY SECTOR

The existing legal and policy environment are supportive for promoting increased investment in the RETs. Particularly, the policy is focused on leveraging private sector investment by providing subsidy, tax rebate and other support in the promotion of renewable energy sector. The monetary policy has provided

support for the sector by requiring the commercial banks and financial institutions to mandatorily invest in renewable energy.

Investment Requirement

The tentative investment requirement to achieve SEforALL energy access target in Nepal is as outlined in Table 2 below:

Table 2: Investment requirements for achieving SEforALL goals (million NPR)

Technology Costs	2015	2020	2025	2030
Biogas Production technology	3,217	3,729	4,291	17,141
Mini/micro-hydro plants, off-grid	1,526	3,256	6,634	-
Pico hydro plants, isolated	199	476	1,038	1,038
Grid connected hydro power plant	463,542	614,121	886,592	1,182,246
Grid connected solar PV power plant		27,053	88,363	289,421
SHS, isolated	7,745	16,523	35,249	79,382
Total supply investment	762,338	1,064,770	1,636,261	2,511,983
End use demand technology costs	9,476	17,548	26,285	40,675

Source: SEforALL, 2013, NPC, 2013

Investment Gaps

In business as usual scenario, there seems to be a significant investment gap (of USD 10 billion) in energy sector to achieve the SEforALL goals (Table 3). Achieving investment of this scale from the private

sector (both local and foreign) is a serious challenge unless there is a significant effort in improving the investment environment in the country by putting in place necessary mechanism to mitigate the risks perceived by the private sector investors (especially the foreign investors) to invest in the energy sector.

Table 3: Projection of investment requirement (million NPR)

Sources of Financing	2020	2025	2030
GON owned Source-Alternative Energy	2,679	5,799	12,550
GON owned Source-Grid connected hydropower	60,608	198,551	650,451
Foreign Grants and Credits-Alternative Energy	3,294	7,129	15,428
Foreign Grants and Credits-Grid connected hydropower	74,331	243,509	797,734
Total	140,912	454,988	1,476,163
Investment requirement as per SEforAll RAGA:	1,064,770	1,636,261	2,511,983
Additional investment requirement (investment gap)	923,858	1,181,273	1,035,820

Sources: SEforALL RAGA, 2013 & calculation based on Red Books of FY 2013/14-17/18



Barriers to Private Sectors' Investment

The Renewable Energy Subsidy Policy 2073 (AEPC, 2016) attempts to encourage private sector participation in ownership, operation and management of RETs by making the private sector eligible to apply for government subsidy. The policy also includes a strategy of encouraging public-private partnership in the promotion of RETs. But investment from private sectors is very low compared to the need due to various barriers and risks as outlined below:

- Small scale of operation, high risks and not attractive investment for the financing institutions.
- Insufficient preparation of projects leading to uncertain development cost and high risks.
- Consumer non-repayment and difficulty in recovering the investment as a result of low volume of revenue.
- Complicated procedure for loan application, high interest rate and low valuation of land in the rural area as collateral.
- There are high perceived project risks such as:
 - Low level of demand and productive end use opportunities
 - Low ability to pay of users
 - Not enough financing instruments to address the financing barriers

About Practical Action:

Practical Action is an international charity working to reduce poverty through the wider use of appropriate technologies in the developing world. With its head office in the UK, Practical Action works in more than 45 countries, through its country and regional offices in Bangladesh, India, Nepal, Peru, Bolivia, Kenya, Malawi, Senegal, Sudan and Zimbabwe. We are focused on leveraging large scale change to contribute to poverty reduction, technology justice and sustainable wellbeing for all through working in the four expertise areas: energy; agriculture and markets; water and sanitation; and disaster risk reduction.

This policy brief is based on a research carried out by Practical Action under Green and Inclusive Energy (GIE) project implemented by Hivos ENERGIA and funded by The Netherlands Ministry of Foreign Affairs.