



Case Studies on Low Emission Development

Nepal's District Climate and Energy Plans

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Nepal sees the interlinkages between economy, society, and environment as the key pillars of green growth and sustainable development. These three pillars are being mainstreamed into the development process through formulation of supportive national policies and by embedding this philosophy in climate change-related initiatives. The most prominent example of this has been the national government support provided to local governments to create District Climate and Energy Plans (DCEPs) in all 75 districts of Nepal. The main goal of a DCEP is to articulate a district-level renewable energy plan that accounts for the changing climate as well as economic and social dimensions, ultimately contributing to local and national sustainable development goals. The DCEP systematically addresses opportunities where renewable energy can contribute to climate change mitigation and adaptation, and at the same increases the competitiveness of women and oppressed social groups by engaging them in productive energy use activities.

A Supportive National Policy Environment

Nepal's *Climate Change Policy* (2011) adopts a low-carbon emission, socio-economic development path. Policy objectives include promoting the use of clean energy, green technology, and increased energy efficiency; and enhancing the capacity of local communities for efficient management of natural resources. In addition, preparation of Nepal's *Low Carbon Economic Development Strategy* (LCEDS) is underway and will be completed by December 2013. The Ministry of Science, Technology and Environment and the National Planning Commission are leading preparation of the LCEDS, and the Alternative Energy Promotion Centre (AEPCC), an apex body to promote renewable energy technologies (RETs), is designated to manage the work of LCEDS formulation. The LCEDS will identify the key approaches and interventions to drive Nepal toward a low carbon growth path that fosters optimum economic development, and is expected to enable Nepal to access additional finance for responding to climate change.

Factors for Success

- District-level plans consider and account for local contexts, and can be structured to advance both local and national development objectives.
- Linking renewable energy planning with other sectoral and development plans and programs ensures a consistent approach.
- Involving diverse local stakeholders in planning and implementation is important to facilitate a coordinated approach to achieve targets.
- Having localized data is essential for energy assessment and planning.

Renewable energy benefits for climate change mitigation and adaptation



District Climate and Energy Plans: Piloting the DCEP

Nepal piloted the DCEP process in three districts – Ilam, Makwanpur, and Mustang – resulting in concrete implementation plans to spur renewable energy adoption that is appropriate to each locale.

For example, in Ilam, the district assembled a multi-stakeholder task force to lead the DCEP process. The task force was comprised of senior local government officials such as a Local Development Officer, Planning Officer, and representatives from the District Energy and Environment Unit, District Chief of Women Development Office, nongovernmental organizations, renewable energy service providers, and other private sector actors such as financial institutions.

The task force collected and reviewed secondary and primary data to compile initial assessment findings on economic, social, and environmental conditions in Ilam to support energy planning. Energy scenario development and demand projections showed that in a business as usual case, energy demand in Ilam would increase by 3 percent by 2020, compared to 2010. The residential sector is and will likely continue to be the primary energy consumer, followed by a growing industrial sector, and a negligible commercial sector.

Through scenario analysis, the task force explored a range of possible outcomes through various RET interventions. Ilam primarily focused on the residential sector, the largest energy consumer, and recommended the following RETs in its DCEP:

- Improved cook stoves
- Biogas units
- Solar home systems
- Micro and pico hydro
- Improved water mills

Initial Assessment Findings: Ilam District

Climate Change: Vulnerability of biomass energy resources, the primary energy source in Ilam, is likely to grow with climate variability.

Energy Demand: In 2010, residential sector energy demand totaled 2,627,000 gigajoules (GJ), industrial sector demand totaled 948,000 GJ, and commercial sector demand was 2,100 GJ. The residential electrification rate was 35 percent in rural areas and 95 percent in urban areas.

Renewable Energy Resources: There is significant potential for hydroelectricity, solar, and biogas. Ilam's solar energy potential is among the best in Nepal.

Technology: Solar is ranked as least vulnerable to climate change and water mills as most vulnerable due to variable water flows. The estimated greenhouse gas (GHG) mitigation potential for solar is 0.076 MTCO₂e per 5 Watt-peak, 4.88 MTCO₂e for a 6m³ biogas plant, and 1.94 MTCO₂e per 1 kW of micro hydro, using standard emission factors.

Technology	Mitigation Potential
Mini and Micro Hydro	Significant reduction in emissions; replaces kerosene lamp, diesel mill
Improved Water Mill	Significant reduction in emission; replaces kerosene lamp if electricity generation unit added, replaces diesel mill
Household Improved Cook Stove	Reduction in GHG emission; protection of the forest resources and environment
Household Biogas Plant	Reduction in GHG emission; saving of fuel wood, kerosene use
Briquette/ Charcoal	Replaces fuel wood and diesel; utilizes biomass residues
Solar Home System	Significant reduction in emission; replaces diesel or gas motors
Small Scale Wind Power System	Significant reduction in emission; consumes no fuel
Bio-diesel	Reduction in GHG emission; replaces petro-diesel

Source: District Development Committee Ilam, *District Climate and Energy Plan: Ilam District*, April 2011.

Factors considered in prioritization included energy needs, energy demand growth, availability of resources, technology life-cycle cost, greenhouse gas mitigation potential, and anticipated social and economic benefits. The task force considered national government programs offering subsidies for various RETs, technical assistance and local capacity building activities, as well as local government and stakeholder support in determining financing options and feasibility of adopting the selected RETs.

Ilam is now operationalizing its three-year DCEP implementation plan (2011-2012 to 2013-2014) to fund, install, and monitor benefits of these RET interventions, and is working towards the district’s 10-year targets.

Additionally, the task force compiled specific recommendations to improve on the process of preparing and implementing a DCEP in Ilam, while also suggesting supplementary actions that government and non-governmental stakeholders can take to enable long-term success and achieve the greatest benefit from the DCEP process.

A Model for Other Districts

As an outcome of the pilots in the three districts, the AEPC has synthesized best practices and lessons learned into a guidebook entitled the “DCEP Preparation Guideline”. The guidelines offer a systematic, step-by-step process and tools to help other districts to engage stakeholders, undertake assessments, and complete planning necessary to promote RET deployment in a way suited to district energy demand and resources.

Nine-stage DCEP preparation process

Stage	Activities
Preparatory phase	<ul style="list-style-type: none"> Collect initial information via a desk study and district-level secondary data collection
Mobilization at district level	<ul style="list-style-type: none"> Form a district-led DCEP task force Hold an orientation workshop with all renewable energy stakeholders
Data collection	<ul style="list-style-type: none"> Identify data sources Collect data needed to complete district-level assessments related to climate change vulnerability, gender and social inclusion, energy needs, energy resources, institutional arrangements and capacity, and technologies (e.g., mitigation potential, cost)
Data analysis	<ul style="list-style-type: none"> Establish a baseline and develop scenarios where RETs are adopted Identify priority technologies in relation to energy demand, cost, and other factors
Findings report and plan design	<ul style="list-style-type: none"> Hold planning workshop with task force and stakeholders to present and discuss initial findings, and gather stakeholder input for developing scenarios Agree on priority activities and action plan for implementation, financing, and monitoring and evaluation Outline capacity development needs
DCEP finalization	<ul style="list-style-type: none"> Hold stakeholder consultation workshops to finalize all aspects of the DCEP, including a detailed three-year implementation plan, with clear roles and responsibilities of stakeholders
Endorsement of DCEP	<ul style="list-style-type: none"> District Development Committee (DDC) endorses the DCEP and integrates DCEP into the district’s annual development plan
Plan implementation	<ul style="list-style-type: none"> Hold kick-off implementation workshop Carry out plan as presented in final report
Monitoring and evaluation	<ul style="list-style-type: none"> DDC, supported by AEPC, coordinates and carries out this process on an annual basis

Implications

DCEP provides a framework for decentralized energy planning that is customized to local contexts and needs. At the district level, DCEP can align with other sectoral plans and programs, as well as broader development planning to promote a more consistent and comprehensive strategy. DCEP can also be placed within a broader framework that encapsulates national plans, moving Nepal towards a low-carbon emission, socio-economic development pathway. With successful outputs from three pilot initiatives, AEPC plans to support formulation of DCEPs in the remaining 72 districts in Nepal. DCEPs will play an important role in providing inputs to national renewable energy planning, following a bottom-up approach.

For more information on Nepal's renewable energy initiatives, visit: <http://www.aepc.gov.np>



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