



UNDP Regional Energy Programme for Poverty Reduction Asia-Pacific

**- Consultative Meeting –
REP-PoR Gap Analysis on Access to Energy for the Poor**

27-28 March 2006

Meeting Report

The UNDP Regional Energy Programme for Poverty Reduction (REP-PoR)

UNDP had launched the Regional Energy Programme for Poverty Reduction (REP-PoR) for the Asia-Pacific region in 2005 with the objective to promote the equitable and affordable access to energy and to address the need for reorienting conventional approaches for promotion of energy systems based on efficient fossil fuel technologies and renewable energy.

As a first step, the programme focused on a national-level rapid assessment and a gap analysis of poverty-energy linkages for the Asia-Pacific countries (15 Asia country reports and one report covering 15 Pacific Island Countries). The process was initiated through planning workshops in Bangkok/Thailand and Apia/Samoa involving key experts, UNDP Regional Centre Bangkok (RCB) staff, UNDP Country Office (CO) energy focal points, and national consultants to arrive at a common framework and process for the gap analysis. The regional process was followed by country-level stakeholder consultations with both government and civil society to determine specific energy-poverty linkages and related gaps and to suggest mechanisms and modalities that addresses these. This activity took stock of the baseline scenarios, critically assessed the thematic areas covering existing institutional frameworks, capacities, current regulatory regimes and knowledge repositories, and analysed the gaps in them that hinder better linkages between poverty eradication and better access to energy services. A draft national gap analysis report was prepared for each country in the Asia sub-region, whereas for the Pacific sub-region, a draft assessment report covering all the 15 Pacific Island Countries (PICs) was prepared.

REP-PoR Second consultative workshop, 27-28 March 2006

As follow-up to its first two planning meetings, REP-PoR hosted a second consultative workshop on 'Gap Analysis on Access to Energy for the Poor', from 27-28 March, 2006 in Bangkok. The workshop participants included all participating UNDP CO Energy Focal points from Asia and the Pacific, two lead REP-PoR UNDP consultants/Facilitators on gap analysis (Mr. Hafeez Rehman) and gender aspects (Ms. Soma Dutta) as well as the UNDP RCB REP-PoR Team. *(For a complete list of participants please refer to the participants list).*

Workshop objectives

The overall programme and main objectives of the two-day consultative workshop were:

- (1) to review the status of the national reports on gap analysis, and to discuss and agree upon the further development and use of the national reports;
- (2) to review and discuss the findings of the two synthesis reports, based on 15+1 Country Reports, and to identify further gaps that need to be dealt with in the framework of REP-PoR;
- (3) to finalize the criteria for selection of good practices/lessons learnt and to select good practices and knowledge products for further advocacy work; and
- (4) to develop a national outreach/advocacy strategy.

Workshop Overview

The meeting was officially opened by Elizabeth Fong, Regional Manager, UNDP RCB. Nandita Mongia, Regional Energy Programme for Poverty Reduction (REP-PoR) Chief, introduced the overall programme and main objectives of the two-day consultative workshop and gave a brief overview about the current status of the programme.

The two UNDP REP-PoR lead consultants presented the major findings of their draft synthesis reports on joint cross-cutting challenges and possible actions and strategies, based on a cross-analysis of 15 +1 national reports. Both presentations were followed by discussions, which helped clarifying questions with respect to identified gaps in national reports and identified further topics for analysis and assessment for REP-PoR. The two synthesis report presentations were complemented by six selected individual country presentations, which served to shed light on common problems that were encountered during the preparation of the national reports, and addressed future strategies and work agendas on how to push forward the REP-PoR agenda at national level. As closing session, a short overview was provided regarding the status and preliminary findings on REP-PoR's three policy studies, an action research-oriented complementary component of the REP-PoR.

The second workshop day was dedicated to the discussion and selection of Good Practices to be used as concrete case study examples for further advocacy work at national level. The workshop concluded with an interactive training session on how to develop a basic advocacy strategy, moderated by Cherie Hart, Principal Communication Officer, UNDP RCB.

Welcome

In her welcome address, Elizabeth Fong, Regional Manager, UNDP RCB, drew attention to the current international situation of sustained high energy prices and highlighted the timeliness of the agenda of REP-PoR in this context. She challenged all participants to reflect on its implications for current national energy policies and stressed UNDP's special role as 'communicator and advocator' to shed light on the inherent problems and consequences deriving from such high energy price developments in particular for the poorer sections of societies. She concluded her remarks with an expression of continuous support for REP-PoR.

I. Use of National Reports

Nandita Mongia, REP-PoR Chief, provided a brief overview about the current status of all national reports. The majority of national reports in the Asia sub-region are currently being finalized (with the exception of three reports), which was acknowledged as an overall very positive and timely output of REP-PoR. With regard to the Pacific sub-region, it was noted that a final draft rapid assessment and gap analysis report is available. The next steps how to best make use of the national reports at national and international level were discussed and publishing requirements agreed upon.

a. National reports as advocacy tools

- *National level:* It was agreed that the finalized reports are an excellent advocacy tool for UNDP COs to further promote pro-poor energy policies as well as advocate best practices at national level. Most reports have identified more than one best energy practice and COs were encouraged to choose which best practices they consider as most appropriate and useful for further promotion and perhaps up-scaling at a later stage. The RCB REP-PoR Team will provide further advisory services in this respect, if required.

- *Global level:* It was further agreed upon that the national reports as well as the synthesis report, respectively, reflect such a wealth of knowledge and information that it will be systematically integrated and fed back into upcoming UN and UNDP events and knowledge products on energy. Such events include in particular:
 - The upcoming intergovernmental negotiations on energy issues at the UN Commission for Sustainable Development (CSD 14), to be held in May 2006 in New York UN HQ;
 - The UNDP Human Development Report 2007 on Energy;
- *Regional level:* It was announced that the UNDP RCB considers the organization of an “Energy Fair”, as part of a broader Knowledge Fair, which would feature selected best practices. The Energy Fair would be modeled according to a previous first ‘[Knowledge Fair](#)’, held in 2005 at RCB.

b. Publishing National Reports

The following publishing procedures, standards and official requirements were agreed upon:

- No official government approval needed for publishing – endorsement by UNDP CO is sufficient.
- Official acknowledgments for involved resource persons can/have to be inserted according to regular UNDP publishing standards.
- The publication should be advocated for and promoted as part of the overall MDG policy framework.

II. Major findings of draft synthesis reports on the Gap Analysis and Gender and selected national reports

The findings of the two synthesis studies were intended to assist countries in identifying country specific as well as regional interventions that mitigate the energy-poverty gaps and take forward the agenda of meeting the MDGs. A cross-review of a selected number of country reports (China, Malaysia, Cambodia, Lao PDR, Viet Nam, and Maldives) helped identifying major problems encountered during the preparation of the national gap reports and strategies adopted to meet the gaps and challenges. The country reports and the two synthesis documents will feed into the action plan for taking activities forward under REP-PoR.

a. Access to Energy Poverty Reduction in Asia Pacific: Assessment and Gap Analysis – Challenges and Way Forward

Hafeez Rehman, Lead Consultant for the Gap Analysis, discussed the main findings of the draft synthesis report, based on a cross-analysis of all 15+1 gap analysis reports. The presentation included a short overview of the methodology developed by TERI to systematically cross-analyze all country reports and focused largely on the cross-cutting challenges and possible actions for countries to follow-up upon to address the identified gaps.

Methodology for cross-country analysis

In order to assist countries in identifying country specific as well as regional interventions, a detailed matrix was developed to group countries according to their needs for access to modern energy services and the extent of linkages of energy with the development process.

The matrix was developed based on a country-specific combined energy-poverty indicator, which had been conceptualized by TERI according to a collation of three parameters. The selected parameters, ranked according to weight/importance, included:

1. The Human Development Index (HDI) of a country;

2. The incidence of poverty in the country (the ratio of population living below the poverty line); and,
3. Access to energy (the ratio of population with access to electricity).

The HDI variation, the electrification rates and the incidence of poverty rates across different countries were used to define a *country-specific energy-poverty indicator (EPI)*. This country specific EPI served as basis to classify the energy needs and energy-poverty linkages for each country in the synthesis report analysis.

On the basis of the matrix, countries were grouped into five clusters. Cluster I includes China, classified as country with low needs and a high value of EPI, while Cluster II pairs countries with a less developed energy sector and relatively less robust energy-poverty linkages, such as Viet Nam, Iran, Malaysia and Philippines. Cluster III comprises Sri Lanka, Maldives, Nepal, Bangladesh and Pakistan where needs related to the development of the energy poverty linkages in general and the energy sector in particular were higher than for Cluster II countries. The state of energy as well as the development levels was found to be the lowest in case of Cluster IV countries comprising Afghanistan, Lao PDR, Cambodia, Timor-Leste and Mongolia. The countries of the Pacific region with equally levels of development and modern energy provision were grouped together in a separate Cluster V.

Cross-cutting challenges of the Energy-Poverty agenda

- Poverty Reduction Strategy Papers (or similar) across the majority of countries assessed under REP-PoR do not incorporate energy as a key instrument for poverty reduction;
- Institutional arrangements for energy service delivery are either split across several sectors and/or narrowly aligned to focus only on energy without macro-level institutional arrangements;
- Local institutions are not part of mainstream energy service delivery provision;
- Lack of modern energy access are both a cause and consequence of poverty - regulatory frameworks do not address concerns related to 'enablers' of energy access;
- Mismatch between existing consumption patterns (largely driven by biomass use) and official policy focus (electrification-focused or supply-driven). Despite heavy emphasis on electrification lower income groups still dependent on biomass energy and inefficient technologies;
- ICs, gasification and Renewable Energy Technologies are disseminated mainly through pilots - no substantive up scaling so far has taken place;
- Critical resources for socio-economic development get locked – private sector participation in energy sector is either non-existent or unorganized;
- Energy provision entrepreneurship are restricted by limited option/avenues for financing, inefficient technologies and ad hoc & weak regulatory processes;
- SMEs/Micro-enterprises are limited by inefficient options/credit constraints for modern energy usage;
- Finance for modern energy options faces constraints related to short term loans, high interest rates, and collaterals;
- Micro-finance has not found its way to facilitating dissemination of energy efficient options; and
- Countries have yet to develop effective skills for M&E of energy poverty concerns or solutions.

Follow-up actions for countries to meet the challenges

Institutional challenges

- ▶ **Action:** Working closely with national governments to identify a central planning and coordinating authority to coordinate energy poverty linkages.
- ▶ **Action:** Formulation of an integrated energy-poverty policy and assist apex energy institutions to lead the formulation of an integrated energy sector programme (IESP) that takes the energy agenda beyond grid electrification.
- ▶ **Action:** Organization of workshops to facilitate development of enabling regulatory mechanisms for incorporating affordability concerns of the poor.
- ▶ **Action:** Developing Cluster level strategies for introduction of lifeline tariffs for facilitating access to modern energy for the poor.
- ▶ **Action:** Formulation of frameworks and mechanisms related to IPP contracting or power purchase agreements (PPAs).
- ▶ **Action:** The decentralized public-supported community-led institutional model promoted by REDP Nepal has proven successful and offers a viable institutional option as administrative and fiscal autonomy for local institutions that can complement the existing centralized approach.
- ▶ **Action:** For countries in Clusters III and IV, the focus should be on identifying and formulating key pilot projects where lessons and experiences gained from REDP can be adapted.

Promotion of renewables

- ▶ **Action:** Identification of one renewable energy technology in member countries and develop a pilot for 'alternative delivery pathways' to meet poverty reduction concerns of remote and deprived communities through provision of modular, efficient and decentralized options for energy service delivery.
- ▶ **Action:** Advocating for an Inter-country Forum for Renewable Energy Development (IFRED).
- ▶ **Action:** IFRED could act as the nodal mechanism to share experiences from pilots.
- ▶ **Action:** Initiation of development of a biofuel programme for a selected country in the Pacific region on a pilot basis. Findings and experience from the said programme could be documented for further replication of the initiative.
- ▶ **Action:** For Cluster III and IV countries, initiate development of pilot projects based on the Multi-functional Platform model of Mali for integrating energy and poverty reduction concerns.

Financing challenges

- ▶ **Action:** Facilitation/organization of cluster level workshops for building capacities of key stakeholders for formulation of CDM initiatives for meeting energy concerns of the poor.
- ▶ **Action:** Facilitation of setting up of a Micro-Finance facility at cluster level to act as revolving seed money for leveraging and enhancing credit for energy-poverty initiatives.
- ▶ **Action:** Facilitation of capacity building including awareness raising towards an energy-poverty agenda of major financial institutions with regard to energy poverty linkages.

Discussions & Recommendations

The discussion on the synthesis report findings focused on clarifications with regard to the composition, explanatory power and further use of the EPI.

- **It was recommended to use and consider the EPI as a strategic advocacy and guidance tool for COs , as how to prioritize on-going or future efforts to advise on national energy policies and help directing attention of Governments and other stakeholders to selected critical energy issues.**

b. Gender and Energy in REP-PoR Country Reports – Mainstreaming the Way forward

Soma Dutta, Lead UNDP Consultant on gender-energy-aspects, presented her synthesis report findings on gender, energy and poverty linkages, addressing and discussing commonalities & challenges as well as pointing out strategies how to address them.

Gender, energy and poverty linkages – commonalities & challenges

She reported that the cross-country analysis showed a clear picture of an on-going neglect and ignorance towards gender-specific poverty-energy needs and demands, ranging from lack of data and analysis to lack of political interest to tackle such 'hidden gender-poverty costs' of national energy politics. The cross-analysis further revealed that a lack of gender mainstreaming efforts into energy planning processes exists throughout the region, which shows a clear demand for further discussion about the role of e.g. women in the provision of energy services, from household energy needs to business and commerce.

The *commonalities and challenges* identified in the country reports showed in particular a common neglect of gender-specific data gathering and statistical analysis; a too narrow focus on gender and cooking energy linkages as well as incomplete cost-assessments for different energy sources:

- Neither poverty nor energy statistics are usually disaggregated by gender.
- High dependence on biomass fuels for cooking, e.g. women's drudgery in fuelwood collection in rural areas emphasized; but gender issues usually examined within the confines of cooking energy.
- Large MFI programmes, but financing for energy restricted to financing access costs of electrification and SPV.

Gender, energy and poverty linkages – strategies to address the challenges

- *Strategy 1:* Development of a systematic approach to integrate poverty-gender sensitive perspectives into project planning and M&E protocols.
- *Strategy 2:* Addressing the lack of capacities and support capacities-building on gender mainstreaming at national and local levels.
- *Strategy 3:* Further provision of technical assistance to COs and project partners to engender energy projects.
- *Strategy 4:* Promotion of alternative institutional models through networking.
- *Strategy 5:* Necessity for more policy advocacy for creating enabling conditions for women enterprises to better document and tap this 'unknown area'.

Discussion

The Gender synthesis report findings triggered a lively debate on various aspects, ranging from a discussion on current cooperative arrangements and capacities in COs to integrate gender aspects into policy & project planning to recurrent problems with stereotypical assumptions on gender mainstreaming in multiple work environments to substantive lack of data and information on several gender aspects.

A brief internal stocktaking on existing arrangements and cooperation between CO Energy & Environment teams and Gender focal points revealed a mixed picture – with much space for further improvement. While some COs acknowledged that they do not have a special gender focal point at all, others indicated that only pro-active consultations with the respective gender focal point would ensure better integration of a gender perspective, with no automatic or mandatory consultation procedures in place. One CO reported regular meetings with the gender focal point, which had helped to ensure a better consistency of gender mainstreaming.

Several other practical problems, which were discussed with regard to the slow integration of gender aspects into project and policy planning, are widespread stereotypical assumptions about division of labor and responsibilities, which are difficult to overcome and still present substantial mental barriers for analysis and implementation. It was further pointed out that there is still such a considerable lack of data

and information about gender aspects, and many components are still so unknown, that gender aspects are often ignored due to a lack of understanding and perception. Nepal, Bangladesh and Mali were cited as positive examples to look at as countries which have been able to produce solid gender-sensitive aggregated data. Two of the mentioned challenges caught particular attention: The lack of inclusion of small-scale female rural entrepreneurs into national accounts was underscored as important issue to deal with, as well as the overall lack of data on women as workforce. Another pertinent problem with gender-sensitive data was emphasized with regard to gender data in Muslim countries, which tend to not reflect any social-political dimension of the status of women in those countries and which would require special advocacy. Furthermore the need to apply the definition of gender in a way so that it encompasses not only women, but girls, boys and men as well was raised as very important.

Recommendations

- **It was emphasized that the gender synthesis report provides strategic guidance to COs to identify the most pressing gender-poverty-energy issues in their respective countries, offering some further ideas & tools how to communicate and advocate them.**
- **It was taken into account that the usual 'no-solution fits all' lesson learnt also applies to the synthesis findings, as some countries do not have any particular problematic gender-poverty-energy issues at hand. It was agreed that only those countries with obvious problematic situations should reflect on further steps how to advocate for more gender-sensitive pro-poor energy policies.**
- **The idea of more focused strategic networking to enhance information dissemination on gender-specific energy policies was well received and it was agreed that the REP-PoR programme will help identifying consolidated examples of best practices for further promotion across the region.**
- **It was recommended to expand the current thinking about the role of women in energy provision and to expand the list of strategies by including ideas about the better involvement of women into the *management* of energy supply.**
- **The origins and quality of some of the synthesis report data was briefly discussed, as the problem of adequate and up-to-date national data affects also all policy and research levels. Data-sets from the Asian Development Bank, World Bank and UNDP were incorporated, with data mainly from 2002. It was recommended to look into designing a mechanism to gather more recent gender-relevant data.**
- **The significance of the cross-country analysis for the further development of strategies and actions within REP-PoR relates in particular to the question of further empowerment of women in the energy sector. It was recommended that the REP-PoR should reflect on the following questions in particular:**
 - **How to enable women to choose options that best meet their needs and fit their circumstances;**
 - **Help clarifying the role energy plays in addressing women's needs; and,**
 - **How women can access appropriate technologies and use them.**

c. Selected Country Reports on Gap Analysis

A selected number of countries (China, Malaysia, Cambodia, Lao PDR, Viet Nam, and Maldives) discussed the major findings of their national gap analysis reports (*for a detailed presentation, please see Annex 1*).

This cross-review looked at process and methods adopted for the reports, which helped to identify the major problems that were generally encountered during the preparatory process and also highlighted some of the country-specific challenges. The presentations focused further on selected strategies & approaches chosen by UNDP COs on how to address these challenges with the objective to showcase possible strategic options.

Process & methods – challenges and problems

- *Consultation process:* The consultation processes were largely organized in a similar fashion across countries, which included consultation processes with several government institutions (ministries, agencies), complemented with academic and research organizations, and in some countries, with NGOs, private sector and/or additional bi- and multilateral and UN organizations. Some countries (Vietnam, Cambodia) reported the organization of a larger national stakeholder workshop in support of the overall consultation process. A major challenge has been the short timeframe available for organizing stakeholder consultations, which tend to be time-intense in terms of preparation and follow-up.
- *Data sources:* Official statistics and reports, publications and research papers were used as major data source. The majority of country offices reported that one common problem encountered regarded the low quality and quantity of available data (and databases), largely described as inadequate and insufficient. All reports were prepared on the basis of secondary data, few countries highlighted the organization of additional field visits for original data collection.
- *National expertise:* Another major constraint in most countries turned out to be the lack of national experts with sufficient and credible expertise and understanding *of both* poverty and energy linkages and a serious lack of expertise here in general, which was seen as an indicator for the general negligence of this complex topic across the region. While most countries relied on national experts to prepare the reports, two countries (Cambodia & Maldives) were not able to recruit national experts – due to the above mentioned reasons – and had to rely on international/external experts. The recruited national experts in most countries were mainly from academic and research-oriented institutions.

Selected strategies & approaches adopted by Country offices

- *Policy & programme frameworks:* The main strategies identified by countries to influence policy & programme frameworks included: lobbying for a national integrated energy-poverty programme and decentralized energy development planning; the development of integrated rural energy initiatives; the promotion of demand-side management approaches; the development and strengthening of country-specific energy-poverty frameworks for monitoring and evaluation; the promotion of nationwide energy information management systems; a strong emphasis on improving national energy data collection & analysis capacities and the promotion of R & D; and improved awareness and info dissemination and knowledge management through the collection of lessons learnt (databases) on relevant energy-poverty topics.
- *Institutional organization:* The main approaches identified by countries to mitigate the typical fragmentation of the energy sector included lobbying for the establishment of interagency committees on energy-poverty topics at federal/national level; the facilitation of multi-stakeholder workshops, including like-minded donor groups for joint programming; the promotion of decentralization of project coordination to local authorities to ensure greater community service and involvement.
- *Financing energy services:* Most countries reported that they will dedicate efforts to the exploration of financing models and investment systems for rural energy services (i.e. off-grid electrification solutions) and the development of a rural energy industry.

Discussion

The country presentations raised a number of questions about possible follow-up approaches. One concern among COs was the obvious gap of priorities of official government energy policies and the findings of the national gap analysis reports, which led to a questioning whether: (1) UNDP COs are adequately positioned (in terms of human resources, financial resources and overall leverage) to deal with such enormous priority gaps in some countries to make a difference, and 2) how to successfully sensitize governments. Another concern expressed by some COs covering least developed countries was the perceived weakness of some national governments and the lack of any clear national energy policies at all in the respective countries, which would require a long-term advisory role for UNDP. Strong demand for further assistance and guidance by the REP-PoR as well as a clarification regarding its future role in this process was expressed by several COs. The lack of and further need for accessible and systematically compiled best practices was highlighted.

Recommendations

- **It was clarified and agreed that the REP-PoR Team will offer certain advisory services, such as support with the identification of interesting and innovative good practices and help with formulating concrete advocacy strategies. Several interesting case studies – with and without UNDP support – were recommended, such as the [Mali Multi-functional platform](#) (as example for a multifunctional, decentralized village-level energy system for household & productive use); improved cooking stoves in [Kenya](#) (as example for an energy efficient domestic cooking appliance); and the rural electrification programmes in [Bangladesh](#) and [Nepal](#) (as examples for successful rural energy planning & policy).**

III. Status of REP-PoR policy studies

As part of the REP-PoR overall work programme, three independent policy studies had been launched which explore energy security issues in the Asia-Pacific region. The three key studies under preparation are: a) *Impact of Rising Oil Prices on the Poor and Implications for the Achievement of the MDGs*; b) *Cross Border Energy Trade and Its Impact on the Poor*; and c) and a *Regional mapping of options to promote private investments on alternative energy sources*. The primary aim of these studies is to provide policy advice to governments and development partners and to be a complementary advocacy tool for COs.

The interim report findings of these studies were reviewed and discussed by the REP-PoR Review Committee at a two-day workshop on 23-24 March 2006. A brief overview about status & preliminary findings of two of these studies was given by Nandita Mongia, REP-PoR Chief. It was announced that revised versions will be presented and made available likely in June 2006.

a. Policy Study: Regional mapping of options to Promote Private Investments in Alternative Energy Sources

The overall objectives of this study included the characterization of major renewable energy policies, programmes and initiatives in the region against global oil price trends, revived energy security concerns, and socio-economic development and environmental goals with specific emphasis on achieving MDGs. The Interim Report has covered to date: 1) a *global assessment* of developments and trends at international level based on secondary data and live consultations with energy experts; 2) a *regional assessment* including: sub-regional reviews of policy incentives; barriers and investment climate regarding policies to promote renewable energy; strategies to enhance access to energy; and factors favouring renewable energy development in the region/sub-region, based on secondary data and live consultations with energy experts; and 3) *national assessments* at macro level based on secondary

data, combined with micro level survey of 75 households in three villages Nepal as well as additional micro case studies in Bangladesh, Cambodia, Indonesia, Solomon Islands, and Philippines (2 case studies per country except Bangladesh).

b. Policy Study on Impacts of Rising Oil Prices on the Poor and Implications for the MDGs

The overall objectives of this study included the assessment of overall economic and social impacts of oil price increases on developing countries of the region, and their specific impacts on the poor's access to modern energy services. The interim report includes so far: 1) a global assessment of overall macro-economic impacts at international level based on secondary data; 2) a regional assessment accounting for sub-regional diversities, based on secondary data; and 3) a national assessment at macro level based on secondary data, combined with micro level survey of poor communities in 2 villages in India. Still outstanding are national assessments at macro level based on secondary data, combined with micro level survey of poor communities in China, Indonesia and Lao.

Key findings of the Global Assessment so far include that recent trends of rises in oil prices, though persistent, have been relatively gradual in comparison to some previous spikes and are due to a combination of strong demand (concentrated in Asian developing countries and US) against tight supply and rising marginal costs. Major factors underlying oil price increases are informed to be: substantial growth in world oil demand; declining excess supply capacity; oil companies' rationalization and cost-cutting efforts; concentration of excess capacity in a few countries; unstable Middle-East situation and oil supply insecurity elsewhere; and low levels of investment in exploration. The potential macro-economic impacts will include a rise in cost of production of goods and services and increasing trade deficits due to higher cost of exports and higher general price levels/inflation. Reasons for a lack of dramatic impacts to date are that: oil price rise coincides with economic revival and low inflation; rapid economic growth in some developing countries, notably China and India; and a weakening of the US\$ since 2002.

Key Findings of Regional Assessment show so far that the Asian sub-regions did not suffer from major macroeconomic impacts due to economic revival in OECD economies, which in turn has spurred demand for Asian exports. In terms of inflation, no significant inflationary impact has been detected in South-East Asia, with average inflation rates in North-East Asia and Mekong, moderate increase in South and West Asia since 2000. Only the Pacific Island Countries report increases in inflation, particularly transportation costs. Foreign exchange reserves did increase in all sub-regions since 2001 due to capital inflows into the region and the trade balance does not show major adverse impact in Asia sub-regions, however, significant negative impact in the Pacific Island Countries.

IV. Selection of Good Practices

a. Criteria for a Good Practice

A short introductory session by UNDP's Lead consultant Hafeez Rehman recapitulated the definition of a best practice within the context of the REP-PoR. A short discussion round led to the addition of several additional criteria, such as the need to look at the social dimension of best practices as well as the importance of the economic and financial viability of best practices – with the exemption that depending on the specific country context, different strict interpretations of financial and economic viability may be applicable. A common understanding was reached that a good practice will only in some rare cases be a 100% success story and that 'grey zones' are acceptable and by any means a more realistic feature of good practices. In addition, picking a good practice as part of a larger 'failed practice example' was considered acceptable as well.

The following set of criteria was agreed to encompass a best practice

- A sustainable initiative;
- A catalyst to secure rural livelihoods;

- A multi-stakeholder initiative;
- Scalable/commercializable;
- Up-to-date;
- Socially-sensitive; and,
- Economically and financially viable (*depending on country-context*)

b. Selection and Identification of Good Practices

Based on the agreed criteria for good practices, COs (grouped in several Clusters a 4-5 people) discussed and identified potential good practices, either identified in their respective country reports or looking at other national examples (with or without UNDP involvement) (*for a comprehensive documentation of these good practices, please see Annex II*). The potential good practices encompassed several examples on institutional arrangements and programme frameworks as well as various examples on technology and fuel options, and only few examples on financing modalities for energy services and entrepreneurship innovations:

Financing for energy services:

- Malaysia: Electricity Supply Industry Trust Fund (*GoM*)

Institutional arrangements and programme framework:

- China: Renewable Energy Law, Energy Efficiency Law (*GoC/UNDP*)
- Nepal: Rural Energy Development Programme (*UNDP*)
- Maldives: Design of the "Renewable Energy Technology Development and Application Project (RET-DAP)" (*Multiple donor project*)
- Kiribati: Electrification in the outer islands - The renewable energy service company (RESCO)

Entrepreneurship:

- Vanuatu: Using Coconut Oil as a biofuel (*individual initiation*)

Technology & fuel options:

RET

- Bangladesh: Conversion of vehicle into CNG (*GoB & UNDP*)
- Vietnam: Replacing coal burning kiln with LPG kiln in villages (*UNDP GEF SGP*)
- Lao: Solar Home Systems (*Worldbank GEF*)
- Bangladesh: Solar Home Systems (*Worldbank GEF*)
- Mongolia: Utilization of renewable energy in rural areas (*GTZ*)
- Philippines: Renewable Energy Based Village Power Systems (*JICA/ UNDP GEF*)

Improved Cooking Stoves

- Sri Lanka: Efficient stove using biomass for village households (*NORAD/SIDA; UNDP GEF SGP*)
- Cambodia: Improved Cook stoves (*Wood Energy Network of Cambodia*)

V. Developing an Advocacy Strategy

a. Basics

An interactive training session on how to develop a basic advocacy strategy, moderated by Cherie Hart, Principal Communication Officer, UNDP RCB, complemented the discussions on the further use of the national reports on gap analysis at national level.

A basic advocacy strategy will always be based upon and guided by three central questions:

1. **What is your goal?** - Goals of an advocacy strategy could be: advocacy and PR; raising funds; raising awareness; changing behaviors; change policies etc.
2. **Who is your audience?** – The audience can consist of academia, NGOs, Government representatives; private sector; donors etc. It is important to be clear about the right target group – often, strategies tend to be too broadly conceived and loose track of the tight audience.
3. **What is your central message?** – A message should be kept in simple language and can effectively be supported by expressive and powerful photos/pics.

Key recommendations for the launch of a national energy gap analysis report:

- **Figure out who your key audience will be.**
- **How will you reach your audience - Ways include special events; field visits (i.e. press trips); websites; private or public meetings; through speeches; champions and more.**
- **Identify the message from the report that you want to emphasize/bring across – do not confuse message with goals/objective.**

How to effectively promote a publication? It was recommended that the launch of a report could be accompanied by leaflets, campaign slogans, short film bites; press conferences etc.

b. Interactive training session

A brief and informal interactive training session, based on the key recommendations, was conducted with a number of countries, which were asked to identify a main message (based on the gap analysis report) they would like to advocate in their respective countries; to select their principal target groups and to pick strategies how to transfer the main message. This informal training session showed that identifying a *clear and eye-catching message* requires some exercise, as in most cases, formulating a message was initially confused with describing policy objectives. The exercise proved to be very useful as this distinction could be clarified.

Acronyms

CDM	Clean Development Mechanism
CNG	Compressed natural gas
CSD	United Nations Commission for Sustainable Development
EPI	Energy-Poverty Indicator
GEF	Global Environment Facility
GTZ	Gesellschaft fuer Technische Zusammenarbeit
HDR	Human Development Report
IESP	Integrated Energy Sector Programme
IFRED	Inter-country Forum for Renewable Energy Development
JICA	Japanese International Cooperation Agency
MESITA	Malaysian Electricity Supply Industry Trust Fund
M&E	Monitoring & Evaluation
NORAD	Norwegian Agency for Development
PESCOs	Provincial-level Electricity Supply Companies
PPA	Power purchase agreement
PRSP	Poverty Reduction Strategy Paper
R&D	Research & Development
REDP	Rural Energy Development Programme (Nepal)
REP-PoR	Regional Energy Programme for Poverty Reduction
RESCO	Renewable Energy Service company
RET	Renewable Energy Technologies
SGP	UNDP Small Grants Programme
SHS	Solar home system
SVP	Solar voltaic panels
SIDA	Swedish International Development Agency
UNDP	United Nations Development Programme
UN ESCAP	United Nations Economic and Social Commission for Asia Pacific
USAID	United States Agency for International Development

Annex I. Country presentations on national gap reports

China

Challenges: While the overall poverty rate in China has declined from 250 million (1978) to 30 million (2000), and the average annual income has leapt from US\$280 (1985) to US\$1,290 (2005), there are still 150 million poor with less than 1 US\$ per day and estimated 7 million households/29,000 villages not equipped with electricity supply. So far, China is largely driven by economic development and a focus on energy supply, the energy-poverty linkage is not well incorporated into official energy politics. This is obvious in particular with regard to consumption of inefficient sources of energy for residential heating and cooking in rural households. In 2004, straw and fuel wood together still had a 54 % share in rural residential energy use, while LP Gas had only a toehold at 1 %.

Meeting the Challenges: In response to these challenges, UNDP China's agenda will:

(1) at the institutional level, on influencing policy frameworks to address energy-poverty issues and strengthening the M&E framework for energy-poverty concerns. The country office will concentrate its future efforts here on the following measures: In order to influence programme frameworks, China will make use of targeted knowledge-sharing and examine lessons learnt from international partners experienced with developing effective rural energy programme frameworks with the objective to share it with province and counties. In addition to that, UNDP China also plans to promote a nation-wide information management system for the energy sector to improve the overall information management. It is furthermore planned to set-up a country-specific energy-poverty framework for monitoring and evaluation by identifying energy-poverty indicators and enhancing existing monitoring standard and criteria. With regard to technological developments, UNDP China will pay greater attention to improved rural energy technologies for reduced indoor air pollution, in particular focusing on energy efficiency saving models.

(2) The country office will further address the development of rural entrepreneurship in particular with regard to access to information and technologies to facilitate access to energy for lower income levels and the poor. This will be dealt with by exploring financing models and how a diversified financing and invest system for rural China could be put in place to provide incentives to rural areas. Another focus will be on identifying and promoting training and capacity-building.

(3) A third focus will be a strong commitment to pay special attention to the situation of women in rural areas and enhancing related policies. It is already planned to involve the country's Women's Federation at various levels for information dissemination notably on indoor air pollution.

Malaysia

Challenges: Malaysia, as one of the economically most developed countries in the region, has been overall very successful in achieving the MDG Goal of virtually eradicating extreme poverty, and the electrification rate in the country is high at 93%. However, poverty pockets still exist, predominantly in rural areas (especially in the states of Sabah, Sarawak, Kelantan, Kedah, Perlis and Terengganu), which are served insufficiently with access to energy sources. The current major policy challenges in Malaysia were identified as an overly concentration on energy technologies as well as a predominant top-down approach in implementing policies without sufficient community needs assessments and participation, and here in particular a policy negligence of serving rural domestic energy needs (cooking); its current policy on renewable energies has been so far mostly commercially implemented and has not yielded much benefit for rural areas and lacks a focus on small-scale RET (<1MW). Institutional challenges in Malaysian energy politics further consist of an overly sectoralized system, with suffers from poor cross-sectoral communication as well as a centralized policy process that does not favor decentralized and demand-side management policy formulation; also, the overly technocratic tendency of the energy sector has not led

to the inclusion of energy-poverty concerns yet. Regarding financial and fiscal challenges, Malaysia so far has not been able to develop sufficient incentives for rural energy development and supply, including the promotion of rural energy entrepreneurs. In terms of knowledge & information challenges, the country still witnesses poor capacities for maintenance of RET as well as a lack of awareness of potential business opportunities also for small-scale RET.

Meeting the Challenges: In response to this challenges, UNDP Malaysia's future efforts will be targeted at (1) influencing the institutional landscape and mitigating the fragmentation of the energy sector by, inter alia, lobbying for an interagency committee on energy-poverty at federal level as well as establishing/enhancing an energy poverty one-stop center; in addition, the Country office will seek to promote demand-side management approaches and the decentralization of project coordination to local authorities to ensure greater community service and involvement;

(2) another focus will be on rural areas and in particular the development of rural RET industry, which will include the promotion of financial models & incentives for rural energy developers focusing on small scale RET & communities; complemented by the promotion of selected best practices (i.e. establishment of rural Malaysian Electricity Supply Industry Trust Account), small-scale projects (i.e. Microhydro) among unserved communities and training to encourage more community-based projects in energy;

(3) Gender aspects will be examined in relationship to current use of fuel types.

Cambodia

Challenges: Cambodia ranks 130 out of 173 in the UNDP Human Development Index, with a population rate considered poor at 34.7 %. 85 % of the total population is living in rural areas, whereby 45, 6 % are classified as poor. The country has an extremely low electrification rate, only 9 % rural population has grid connection. In rural areas, 82 % of the energy consumption is based on traditional biomass (wood fuel) and only 0,87 % from electricity. The most urgent challenges – among the many major challenges in the energy sector in Cambodia – include the provision of affordable and sustainable provision of energy services in rural areas, in particular for schools and hospitals. The reduction of household indoor air pollution is another related challenge. Current existing rural energy policies are characterized by over-proportional high costs, such as high interest rates for rural electricity; high tax rates for RET equipment (48%) and short licences.

Meeting the challenges: In response to these challenges, UNDP Cambodia, with its current limited staff capacities, will focus its efforts on:

(1) improving the national energy data collection & analysis capacities and

(2) the promotion of rural energy planning and provision of affordable energy services, in particular through awareness-raising efforts on energy alternatives and energy efficiency, including training of local NGOs.

Lao PDR

Challenges: Lao PDR is a country with a high rate of rural population, 80 % of its 5.9 million people live in rural areas. The poverty level is at 38.6 % of the population living with less than US\$ 1 per day. In addition, the country has one of the lowest household electrification rates in South-east Asia, with approximately only 43% electrified households and biomass as primary energy source (67 %). At the institutional level, the main challenges include narrow institutional alignments and energy policies that do not incorporate any poverty concerns, in particular with regard to energy service delivery, as there are no provisions for rural energy household needs (cooking) and gender concerns. Existing regulatory frameworks that do not promote at all energy entrepreneurship or related enabling policies and there is little understanding among policy-makers of the linkages between energy efficiency and conservation and

overall socio-economic costs. Obvious is a lack of E&M capacities to examine energy and poverty developments. In terms of finance for energy, there is only very limited financing available for rural poor communities.

Meeting the challenges: In response to these challenges, one of UNDP Lao's major focus will lay on (1) improving the overall energy data availability, evaluation and monitoring capacities as well as awareness in the country, in cooperation with the National Statistic Centre. It is planned to use an improved LaoInfo system for further advocacy and data dissemination. Another goal includes the establishment of a national research centre for energy studies to generate and disseminate information and exploring innovative public awareness programmes on energy conservation and efficiency. Another area of work would be the promotion of R & D on improved and more efficient use of traditional energy sources and the promotion of developing more off-grid solutions to meet rural energy needs for production and income generation.

(2) At the programme level, the Country office plans to invest time into lobbying for a national integrated energy development and poverty reduction programme, which ideally, to overcome also current narrow institutional alignments, would involve various institutions.

(3) Tackling the major problem of underfunding for rural energy services, UNDP Laos sees resource mobilization as another major focus, which will be directed at donors in the first place and will be targeting the development of off-grid electrification solutions. At domestic level, the country office aims at promoting affordable access to energy through the promotion of differentiated pro-poor tariffs.

(4) The consideration of gender aspects is high on the agenda of the UNDP Laos Country Office and a UNDP CO gender strategy is currently being finalized, which will incorporate energy-gender aspects. Another in-house activity includes the 'energizing' of the CO MDG advocacy work.

Viet Nam

Challenges: Viet Nam's current poverty rate encompasses 24% of the population, 70% thereof are living in rural areas, with some rates as high as 90% in some remote communities. The current national energy pattern consists of oil, hydropower, coal, and traditional biomass, whereby traditional biomass includes 50% of the energy consumption, despite an electrification rate at >90%. The poor are still highly reliant on traditional biomass (~ 90%) and lack affordable and accessible energy services. The national energy politics is characterized by a heavy focus on electrification and supply side management, which has limited so far opportunities for financing access to off-grid energy services and is generally negligent of rural energy services. Viet Nam has currently only a fragmented national energy strategy and lacks a well formulated integrated energy policy. Sectoral-wide planning exists, but excludes traditional biomass. A strong centralized government control limits opportunities for more partnerships with non-state entities. Lack of information is another challenge within Vietnam, impacting on many levels which otherwise would present a big potential for energy efficiency: i.e. SMEs growth in number and present a major job creator in the Vietnamese Society, but lack of awareness and access to financing prevent the application of energy efficiency and conservation.

Meeting the challenges: In response to these challenges, UNDP Vietnam will concentrate its policy efforts in particular on governance issues, information and knowledge sharing, and financing access to energy services in rural areas:

(1) At the institutional and programme level, the Country Office plans to facilitate national workshops to enhance multi stakeholder and cross-sectoral programming in energy planning and development, including like-minded donor groups. A particular focus will be better advocacy for the introduction of energy – poverty monitoring and evaluation mechanism to improve informed decision-making.

(2) Other goals include awareness-raising for and mobilization of support for decentralized energy development planning and the development of integrated rural energy initiatives. This will include the development of databases of best practices.

(3) Another focus will be the exploration of financing mechanisms (micro credit, loan guarantee, decentralization of energy investment) and advocacy for R&D investment.

Maldives

Challenges: The Maldives face a typical small island problem: enormous high fuel costs, as virtually 100% of the fuel has to be imported. The electrification rate is high with access to electricity for almost all households; 197 of the 199 inhabited islands receive electricity for at least five hours, and thereof 82 receiving it 24-hours a day. Diesel is the primary fuel used in the transport and industrial sectors, and has near-total dominance in electricity generation (83 % of energy mix); while renewable energy sources have failed to penetrate the energy mix. From a governance and programming perspective, the Maldives energy sector so far has traditionally been a fragmented quasi-sector without a cohesive approach towards stabilizing developmental imbalances. Current priorities of both Government and NGO/multilateral agencies focus more on overall governance issues and regulatory frameworks than on energy-poverty linkages.

At the governance level, institutional linkages and coordination between Central and Island energy agencies are fragmented. Inadequate human resources (understaffed) for effective intervention in energy sector have proved to be major challenge. With respect to the programming level, the Maldives lack so far any clear policies and incentives on RET based programs and projects, exacerbated by limited R&D capacities and limited technical knowledge on RE/RETs. Public-private partnerships in energy utilization are limited to supply and distribution only. A central challenge presents the current situation of large state-owned monopolies (i.e. STELCO), which undermines the emergence of a private energy sector with discriminatory policies on funding/support of private sector; and also proves to be an obstacle to enhance decentralisation of energy services provision and electricity access to the 117 islands (out of 199 inhabited islands). The lack of and access to information and documentation of best practices/Lessons learnt has so far prevented any systematic knowledge-sharing on alternative energy services to outer islands/local communicates.

Meeting the challenges: In response to these challenges, UNDP Maldives has developed a comprehensive work programme including timelines and identification of partnerships to advocate and promote pro-poor energy policies:

- (1) At policy level, UNDP Maldives will facilitate numerous rapid assessments and inventories, ranging from a stocktaking of human resources in the energy sector to research capabilities and RET capacities.
- (2) The development of guidelines/procedures on RE financing modalities will be another focus.
- (3) The country office will actively engage in the promotion of scaling- up the multi-donor RETDAP programme into a Renewable Energy Development Programme.
- (4) It is furthermore planned to reach inclusion of RE into the next 7th National Development Plan (2006 – 2010) and to help the Government finalizing the National Energy Policy and Sustainable Energy Action Plans in order to anchor long-term RE policy planning. A specific undertaking is planned by developing a RE Island model ('RE Reliant Island').
- (5) Improved awareness and info dissemination and knowledge management is considered another major focus on UNDP Maldives engagement. The Country office plans several initiatives, including the facilitation of a nation-wide documentation of Best Practices/Lessons Learnt"; encouraging exhibitions, seminars and workshops on renewable and energy efficient products and services; the establishing of an Energy Information & Resource Centre; the strengthening of networks among national, regional and international stakeholders; the collaboration with regional research and dissemination programs and the initiation of Energy Sector information exchange and networking efforts.

Annex II. Good Practices

Cluster I: China, Iran, Malaysia, Philippines, Viet_Nnam

Case Study Malaysia: Malaysian Electricity Supply Industry Trust Fund (MESITA) (GoM)

The Malaysian Electricity Supply Industry Trust Fund (MESITA), launched in 1997, was designed to provide additional financing for energy services. Contributors are the power generating companies, who contribute 1% of their electricity sales on a voluntary basis (average: US\$ 20 mio. annually). The Trust Fund is used to fund five different programme types:

- Rural Electrification Programme (55%);
- R&D Programmes and New and Renewable sources of energy projects (3,5%);
- Human resource development programmes for the industry (1,7%);
- Energy efficiency projects (8%);
- Development and promotion of the electricity supply industry (33%);

The Rural Electrification programme component, which can be considered a good practice, includes the following projects:

- Extension of Grid lines to villages which have high population and available public amenities such as schools, clinics and religious centers;
- Generator Sets are provided to locations if there's (a) easy access to the site; (b) grid extensions are >10 km away; (c) not grid line extensions planned in the next five years;
- Solar Home Systems are financed if: (a) no proper road is leading to the area; (b)) not grid line extensions planned in the next five years; (c) no potential for other RET such as mini/micro-hydro; (d) for housing unit, maximum output is 100-150 W capacity → So far more than 10,000 Solar Home System installations have been made as for residential areas, religious centers, schools, clinics and lamp posts, street lighting with nearly 1MW capacity in total.
- Solar-Hybrid systems are provided if: (a) nearest 11kV overhead line is more than 10 km away; (b) No plan for grid connection in the next 3 years; (c) depending on locations where project cost is cheaper than grid extension; (d) clustered housing units with at least 20 homes will be given priority; (e) maximum output shall be 50kW capacity;

→ **Success factors** of the Rural Electrification programme, and in particular its SHSs, here have been comprehensive multi-stakeholder participation and direct benefits to rural poor areas.

→ **Challenges** so far include the slow extension; the sole focus on electricity provision but no domestic energy and in particular that funds are not sustainable.

Case Study Philippines: Renewable Energy Based Village Power Systems (JICA/ UNDP GEF)

The Renewable Energy Based Village Power Systems was conceptualized as an add-on of a bigger GEF project, which was started in February 2004 and completed in May 2005. It targeted the provision of electricity for 200 of the estimated 413 households of a village, with revenues from operating the power plant. The project design included a strong participatory element as it was community-led. In addition, multi-stakeholders such as academia, private sector, national and local government were included in implementing various project elements. The project so far has proved to be a catalyst to securing rural livelihoods, empowered the village community and supported gender-poverty mainstreaming:

- Residents are able to continue their small business in the evening (e.g. restaurants, karaoke)
- Women lead operation of the power plant;
- Residents were trained by experts from JICA, the government and academia;

- Children are able to extend study hours;

→ **Success factors** of the project include strong community ownership and coordinated and concerted effort of many stakeholders.

Case Study China: Renewable Energy Law, Energy Efficiency Law (GoC/UNDP)

China's National People's Congress passed a new *Renewable Energy Law* February 2005, in effect since January 2006. The first renewable energy law in China aims at promoting the development and utilization of renewable energy, improving the energy structure, diversifying energy supply, safeguarding energy security, protecting the environment, and accelerating the sustainable development of the economy and society. The new law provides a host of practices to ensure that renewable energy can be produced, marketed and used:

- It orders power grid operators to purchase "in full amounts" resources from registered renewable energy producers within their domains.
- It encourages oil distribution companies to sell biological liquid fuel on the sidelines.
- According to the law, power grid operators should buy renewable-source-generated power at directed prices calculated by the government. The extra costs incurred by this will be shared throughout the overall power network.
- The law also offers financial incentives, such as a national fund to foster renewable energy development, and discounted lending and tax preferences for renewable energy projects.

Case Study Vietnam: Replacing coal burning kiln with LPG kiln in villages (UNDP GEF SGP)

In Vietnam, used coal burning kilns tend to be highly inefficient as low-quality coal is used with high sulfur content, leading to intense air pollution. The government of Viet Nam issued a decree that all traditional brick kilns in cities must be phased out by 2005 and in rural areas by 2010. This UNDP GEF SGP project aimed at replacing coal burning kiln with LPG kiln in ceramic villages.

→ **Success factors** so far included:

- Scalability (a GEF full size project will be developed) and replicability (resulted in wide-spread application in other areas);
- Technology transfer and building- knowledge for community (local production and modification of kiln);
- Reduction of CO2 emissions and air pollution;
- Financially viability (project phased out with financial self-reliance of local producers);
- Economically sound (increase productivity and product quality and reduction of energy cost);

Cluster II: Nepal, Sri Lanka, Maldives, Bangladesh, Pakistan

Case Study Nepal: Rural Energy Development Programme (REDP) (UNDP)

The vast majority of Nepal's population lives in rural areas and primarily depends on biomass-based energy resources. The level of energy consumption as well as access to modern energy services is extremely low. The Rural Energy Development Programme (REDP), started in 1996, and supported by UNDP, has shown a workable example for extending sustainable energy services into the remote and isolated areas of Nepal through the promotion of microhydro, biogas, solar energy and improved cooking stoves. The holistic development approach comprises above all extensive community participation and empowerment, and socio-economic inclusion, ownership building, promotion of energy technology

packages and capacity building at different levels; these are the key elements for validating it as a best practice of rural energy development.

The coherence of the programme from the grass-roots to the central level is one of the foremost achievements. The changes encompass to date increased income from off-farm and non-farm activities; improved health due to a reduction in drudgery, labor and smoke inhalation, and improved sanitation; better education of children due to the availability of brighter light at night to do their homework (extension of study hours); increased awareness among the rural people about global activities via telecommunications and computers (thereby helping to reduce the digital divide); and an increased capital base from savings and credit operations and the establishment of infrastructures like microhydro, schooling, potable drinking water and micro-enterprises. Moreover, an impact study of the REDP shows improvement in the Human Development Index (HDI) of REDP villages compared to the average district level HDI. The REDP has managed to become a best practice, inter alia, by introducing a decentralized mode of energy service delivery & community approach of managing rural energy system. The creation of a decentralized structure from 15 pilot district to 25 in partnership with the World Bank helped to develop community ownership and mainstreaming of energy into overall local development planning as well as improved communication and mainstreaming of energy into overall local development planning as well as improved communication between fellow local bodies. The programme is currently being expanded to other districts. (The on-going political instability is a major constraint for its replicability).

Case Study Bangladesh: Conversion of vehicle into CNG (GoB & UNDP)

Bangladesh's capital Dhaka was a highly polluted city. In 1998, a capacity building and pilot demonstration for CNG conversion was launched jointly by UNDP and the Government. The project aimed at changing the petrol/octane operated vehicles into lean natural gas operated vehicles with the goal to reduce air pollution.

Success factors of this project to date encompass in particular its financial and economic viability:

- Demonstration of a successful business model, which led to comprehensive private sector engagement - key players now
- More than 20 CNG conversion workshops have been established by private sector
- Expansion and replicability: More than 240 CNG filling stations in Dhaka city and another 150 CNG filling stations in other cities
- Saved huge amount of foreign currency for importing fuels
- Job creation: Creating new jobs for around 10,000 people
- Makes transportation affordable to people
- Significant improvement of air quality
- Steps taken to convert/replace diesel operated vehicles

Case Study Bangladesh : Solar Home Systems (WorldBank GEF)

The Bangladesh Solar Home System programme, funded by World Bank GEF and other donors and implemented by national NGOs and non-profit private institutions, has so far installed more than 70,000 solar home systems during the last 3-4 years. The Grameen Shakti' is the key implementer of the programme. The SHS are distributed on a 20% grant and 80% loan basis, which to date has proved to be a sustainable approach in terms of financial viability. Positive has also been the Good after sales services. While electricity is reaching remote areas of the country, the poorest are still not served through SHS, which remains a challenge.

WB GEF summary: Bangladesh: Rural Electrification and Renewable Energy Development Project (Multiple Off-Grid Electrification Initiatives): This project promotes solar energy in rural areas implemented by successful and well established Bangladeshi institutions. These include, rural electricity

cooperatives, community-based organizations, NGOs, microfinance institutions and the private sector. The project provides a package of interventions to support these institutions in overcoming key market barriers: a) increasing awareness of SHS among consumers and providers; b) building technical and management capacity to design, implement and evaluate SHS programs; c) providing technical and business development support to implementing institutions; d) introducing standards and programs for testing and certification, e) financing grants to buy-down capital costs and increase affordability of SHS; f) promoting electricity as a means for income generation and social wellness; and g) identifying mechanisms to promote sustainability and replicability. Multiple approaches to SHS delivery are being proposed, including a “fee-for-service” program through rural electricity cooperatives, purchase supported by micro-credit through NGOs and microfinance lenders, and hire-purchase/direct sale programs by private dealers and NGOs. [\[Project document\]](#)

Case Study Maldives: Design of the “Renewable Energy Technology Development and Application Project (RETDAP)” (multiple donor project)

RETDAP is a multiple donor-funded project (including GEF, UNOPS and UNDP Energy TTF, with co-funding of SARI-USAID, UN ESCAP and ADEME), which provides financial assistance for micro-finance facilities and technical assistance to promote and encourage renewable energy systems. Some achievements so far include pilot demonstrations, and publishing awareness materials on renewable energy to remote and outer islands, benefiting communities. Most micro-finance for renewable energy development in the Maldives is provided through RETDAP, although one major challenge is so far that the credit is not sufficient to meet the initial hardware costs of most renewable energy systems. It is expected that RETDAP could have a significant impact on poverty reduction in the less developed outer islands, which do not receive sufficient electricity and have limited power generation capacities of their own to meet both domestic and small industry needs. However, given the limited engagement of the Government for energy services for the poor so far, the RETDAP project design in itself could be considered a best practice/success, as it combines multiple partners/strengthens partnerships (reduces duplication and creates synergies) and has created opportunities to carry out a holistic approach in introducing RE in the Maldives for the first time.

Case Study – Sri Lanka: Efficient stove using biomass for village households (NORAD/SIDA; UNDP GEF SGP)

Sri Lanka's efficient stove programme (Anagi I) was first initiated by NORAD & SIDA in 1999, introducing 100,000 stoves. The Integrated Development Association (IDEA), in cooperation with UNDP GEF/SGP funding and ITDG Sri Lanka later developed an improved and adjusted version which is now on the market ([Anagi II](#)). The improved model has two pot stoves, with only one in need of firewood, which marks a 30% combustion efficiency improvement. The additional introduction of chimneys has reduced the indoor pollution considerably. The stove is widely affordable at SL Rupees 200 and currently 25,000 units are sold per month. Handbooks in the two local languages are freely available which include manufacturing, installation and up keeping and village potters have been trained and continued to be trained in manufacturing, which had positive impacts on maintenance.

Cluster III: Cambodia, Indonesia, Mongolia, Lao PDR, Timor-Leste

Case Study Lao PDR: Solar Home Systems (Worldbank GEF)

Under the World Bank/GEF supported Southern Provinces Rural Electrification ([SPRE1](#)) project, the Lao Ministry of Industry and Handicrafts has been piloting a programme for village off-grid electrification using Solar Home Systems and other village-scale generating sets and has installed some 4 500 PV solar home systems (SHS) since 2002. Delivery is achieved via private sector provincial-level Electricity Supply Companies (PESCOs), who have established a network of Village Electricity Managers (VEMs) to install and maintain systems and collect payments. Customers have a choice of solar home systems with varying repayments options. The fee, paid monthly over 5 or 10 years, is typically equivalent to what would have been spent on kerosene and batteries. Users are responsible for buying and replacing components other than the PV module, mount and battery charge controller. The programme has received a World Bank Best Practice Award. Constraints so far consist of limited expansion due to lack of funds and the risk that the private companies might get monopolized. Benefits included income generating activities, irrigation, SME, women empowerment.

Case Study Mongolia: Utilisation of renewable energy in rural areas (GTZ)

This long-running GTZ programme has so far managed to install combined wind/solar plants generating electricity for 17 villages, and solar PV systems supply power to over 500 individual households, relying on robust adjusted local/Chinese technologies. The benefits of these systems can be seen on many levels. The small renewable power industry itself is stimulating the local economy, and the availability of electricity is stimulating other small-scale enterprises such as restaurants, shops, and craft businesses, and is available for rural households, schools, hospitals. Challenges include that the programme needs to be duplicated more widely and it requires additional financing.

A success factor has been its reliance on simpler but robust technologies which proved to be reliable and kept maintenance issues low.

Case Study Cambodia: Improved Cookstoves (ICS) – (Wood Energy Network of Cambodia)

In response to a shortage of information and communication about wood energy issues, the Cambodia Fuelwood Savings Project (CFSP), in collaboration with the Centre d'Etude et de Développement Agricole Cambodgien (CEDAC) established in January 2000 the Wood Energy Network of Cambodia (WENetCam). WENetCam is hosted by CEDAC and financially supported by ARECOP (Asia Regional Cookstoves Program) and the European Union through GERES (Renewable Energy and Environment Group, French NGO). One of its activities has been the dissemination of over 18.000 Improved Cookstoves (ICS) through WENetCam and its members. The ICS programme has reached a market share of 20% and its major achievements include energy savings estimated at 22%, 100.535 ton CO₂ saved and reduced indoor air pollution. 15 local producers are currently producing those cookstoves that are well adjusted and easy to maintain. Constraints so far include the scale of production in relation to the high demand; and its yet limited distribution focus in mainly urban and pre-urban areas. Solutions envisioned include training centres and owner-build stove/energy plantations.

Case Study Timor-Leste (*no best practice example*)

In Timor-Leste, Kerosene is a major energy source for cooking/lighting, but still so expensive (1\$ per litre) that 70 % of the population in rural area can not afford it and relies on woodfuel/traditional biomass. Alternative energy sources/service models are in high demand but due to its recent political development/independence, new alternative energy initiatives are just about to get started. While many bi-and multilateral organisations are working in TL now (NGO's, ADB, UNDP), best practice programmes so far have not materialized yet. Promising projects include i.e. a hydro-project by JICA/NORAD. Potential/high demand is seen for improved cookstove programmes and the general knowledge sharing and dissemination of sustainable practices. Lack of access to finance is a major constraint (only 3 foreign banks).

Cluster IV: PICs – Fiji, Papua New Guinea, Samoa

Case Study Kiribati: Electrification in the outer islands - The renewable energy service company (RESCO) concept

The renewable energy service company (RESCO) [concept](#) employed in Kiribati has been adopted after many trial and errors and has proved so far as working model with scalable potential. Its core programme is rural electrification with PV. To date, the achievement include the installation of 1,700 solar home systems & 96 PV systems for community halls (maneaba) and 30% electrified households in rural Kiribati (2.000 families with on 18 islands of Kiribati group that will benefit from basic electricity services), provided by a commercially viable service company.

Success factors include:

- The company focuses on selling energy services, not systems, which made the SHSs affordable
- Solar home systems are owned by the Solar Energy Company;
- No financial burden for users - only monthly user fees which cover costs for maintenance; replacement; operation of the company.

Case Study Vanuatu: Using Coconut Oil as a biofuel (*individual initiation*)

In Vanuatu, the use of coconut oil has been championed for several years by Tony Deamer, an Australian *civic entrepreneur* (vehicle supplier). He tested various proportions of coconut oil with diesel or kerosene and developed a proprietary filtration process involving gravity and no chemical additives. This innovative and simple filtration process has made it possible to run vehicles using 100 % coconut oil treated in this way without a heat exchanger. He proved that automotive diesel engines, with very little modification, can run safely on coconut oil and runs today five of his own fleet of hire vehicles on coconut oil. The fuel made by this process is sold under the name of Island Fuel in Vanuatu. In late 2002, about 200 minibuses were also running on a coconut / diesel oil mixture, though the drivers usually prefer to blend this fuel with 20 or 40 % diesel, especially in cooler weather. A change in government excise duty has resulted in a price increase on fuel mixtures and Tony Deamer together with another local coconut oil producer has been negotiating with the government for a reduction of duty on coconut oil-based mixtures. He also works with the Government of Vanuatu to explore alternatives, such as mixing coconut oil with alcohol or converting more vehicles to run on the pure stuff.

Success factors include:

- Privately initiated biofuel (coconut-diesel) programme for transportation
- Rural development impact: 200 vehicles running on biofuel
- Government procurement started

Case Study Papua New Guinea: Mini-Hydro Community initiative for rural electrification

- Community initiative for rural electrification
- Government supported