A Regional Cooperation Mechanism
for
facilitating renewable energy cooperation
in the
Asia Pacific Region

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Submitted to

Asia and Pacific Center for Transfer of Technology
New Delhi, India

March 2011

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I Introduction

II.1 Background and Objectives

Business-as-usual way of consuming energy is obviously not an option for future generations, as this would lead to serious consequences for the environment, economy and human society. The two options available to address this issue are energy efficiency measures and renewable energies, which can play important roles in the future world energy use. Taking into consideration the recent global financial and economic crisis, scenario studies indicate that investment in innovative energy efficiency and renewable energy technologies will contribute to economic growth, creation of jobs, and help reduce the costs of global energy supply, and around 2050, renewable energy can provide more than half of the world's energy needs (Krewit et al, 2010).

This is all the more true to the Asia Pacific region, which is heavily dependent on imported energy and coal for its growth. To have a low carbon green growth requires well timed and targeted policy interventions and at the same time encouraging competitiveness. Low carbon green growth could be a win-win strategy, which requires a fundamental transformation in the way the economy and the society operates. Nationally appropriate mitigation policies should be consistent with continued economic growth and rising living standards. The private sector is an important actor in promoting the move towards low carbon green Asia. This can lead to eco-innovations by which technologies are developed that can cut emissions, preserve the local environment, and increases resource efficiency. Mechanisms for transferring technologies to Asian countries will therefore be crucial to ensure that they have a range of appropriate options for low carbon development at their perusal.

Managing the transition towards a green world economy is truly a global public good which needs strengthening of global governance system to design, monitor and finance the regional actions. However, current global governance structure is dominated by OECD and so, while working to reform global systems, emerging developing economies of Asia could launch parallel efforts to establish regional cooperative efforts. There are pathways that eliminate possible impediments to successful coordination on different levels, including cooperation among governments and private sector operators and international institutions, which all have important roles in promoting such cooperative networks.

Among the various opportunities available to promote low carbon green growth, application of renewable energy technologies is by far the most important sustainable option in the long term. In this context, promotion of renewables in Asian developing countries becomes highly imperative. Regional cooperation to enhance the use of renewables attains utmost importance, and this report is aimed to consider the options and mechanisms to promote renewable energy cooperation. First, the need to present the status and measures of how to increase the renewable energy use in the region is presented. This is followed by a discussion of the existing mechanisms and initiatives in the region aimed to promote renewable energy uptake through regional cooperation efforts. Finally, suggestions on possible regional cooperation mechanism in the Asia Pacific region are made.

I.2 Role of renewables

A solution to help protect the health of our planet is by using environmentally friendly energy sources that do not emit harmful green house gases that contribute to global warming and air pollution. However, an analysis of the world's primary energy consumption in recent years clearly indicates the (almost total) dependence on fossil fuels, though the world's primary energy consumption fell by 1.1% in 2009, which is the first decline since 1982 and the largest decline (in percentage terms) since 1980. The energy consumption declined in all regions except Asia Pacific and the Middle East (BP, 2010).

At the same time, it is important to take note of the resource (and reserves) of fossil fuels worldwide and region wise. The reserves to production ratio at the end of 2009 of oil, natural gas and coal are of the order of 30, 60 and 120 years respectively on a world wide basis. This necessitates the need to accelerate efforts towards a new energy evolution era considering different options, since considerable lead time may be needed to shift from a carbon (high) society. Moreover, countries would need to take note of the energy security issues due to the availability of resources, and take measures to provide adequate supply of energy (sustainably) to its citizens – present and future.

The third factor that needs urgent attention is the influence of fossil fuel use on green house gas emissions, and thus on climate change. The carbon di oxide concentration in the earth's atmosphere has been steadily increasing since the industrial revolution (from about 280 ppm_v in the 1750s to about 386 ppm_v in recent years), and what is more alarming is the current rate of increase, estimated at about 2 ppm_v per year.

Addressing all these issues clearly shows the need to follow the low carbon pathway – use of renewables and improving energy and resource efficiency in all sectors of the economy. The IEA projections for 2030 clearly illustrate the role of zero carbon fuels (renewables) in the case of a 450 ppm scenario (see figure 1).

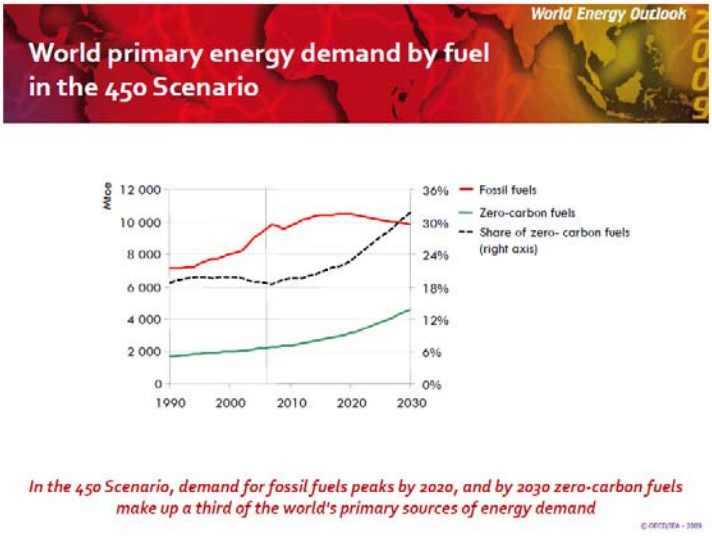

Figure 1: Projected world primary energy demand until 2030 (IEA, 2009)

Currently, renewable energy supplies about 19 % of global final energy consumption (figure 2), counting traditional biomass, large hydropower, and “new” renewables (small hydro, modern biomass, wind, solar, geothermal, and biofuels). Renewables can provide energy services in the form of electricity, motive power, heat and cold for human needs. This can be generated and provided by PV, wind, biomass, geothermal and micro hydro systems.

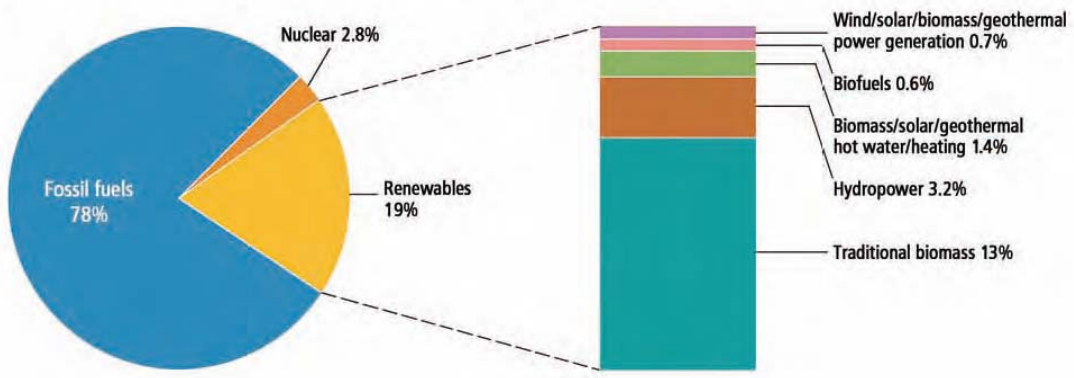

Figure 2: Share of renewable energy in the overall primary energy supply. Source: REN21, 2010

However, their contribution, as compared to the conventional fossil fuels, has not been significant, though it is important to note that global renewable energy capacity grew at rates of 10–60% annually for many technologies during the five year period from the end of 2004 through 2009 (see figure 3).

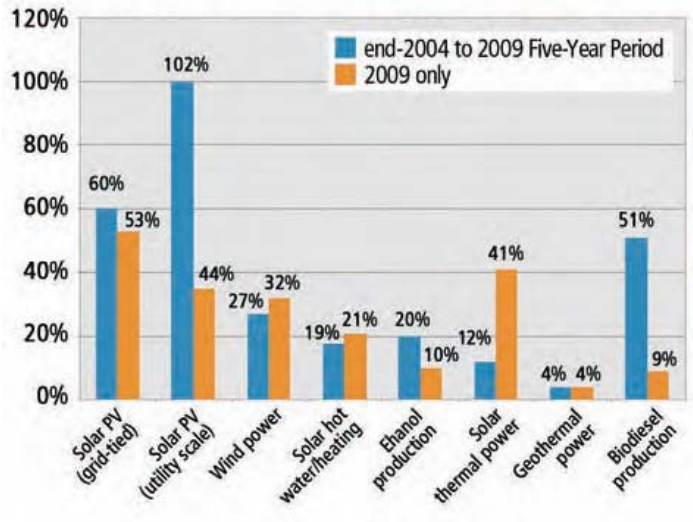

Figure 3: Average annual growth rates of renewable energy capacity (2004 – 2009) Source: REN21, 2010

The worldwide renewable energy resources exceed current energy demand several times, but the availability of renewable energy sources offers considerably between world regions. For example, the potential for energy crops strongly depends on food supply patterns and assumptions on agricultural production. Results for global biomass potentials from energy crops in 2050 range from 97 EJ in a business-as-usual scenario to only 6EJ in a scenario which assumes no forest clearing, reduced use of fallow areas for agriculture, and expanded ecological protection areas.

In 2007, the total primary energy supply (TPES) in Asian and Pacific countries (figure 4) was a little over 5.4 billion tons of oil equivalent (TOE). For the entire region, the largest consumption was in the industry sector.

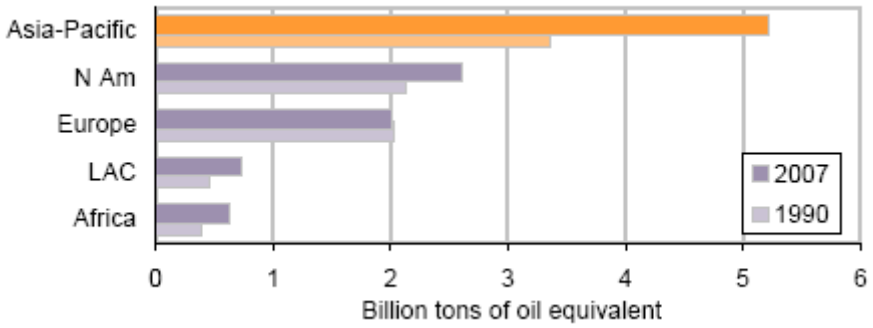

Figure 4: Regionwise total primary energy consumption. Source: Statistical Yearbook of the Asia and the Pacific, 2009.

According to EIA, 2010, world net electricity generation is expected to increase by 87 percent from 18.8 trillion kWh in 2007 to 25.0 trillion kWh in 2020 and 35.2 trillion kWh in 2035. The total net generation in non-OECD countries increases by 3.3 percent per year on average, as compared with 1.1 percent per year in OECD nations. The increase in world energy prices from 2003 to 2008, combined with concerns about the environmental consequences of greenhouse gas emissions, has led to renewed interest in renewable resources. From 2007 to 2035, world renewable energy use for electricity generation could grow by an average of 3.0 percent per year (Figure 5), and the renewable share of world electricity generation increase from 18 percent in 2007 to 23 percent in 2035.

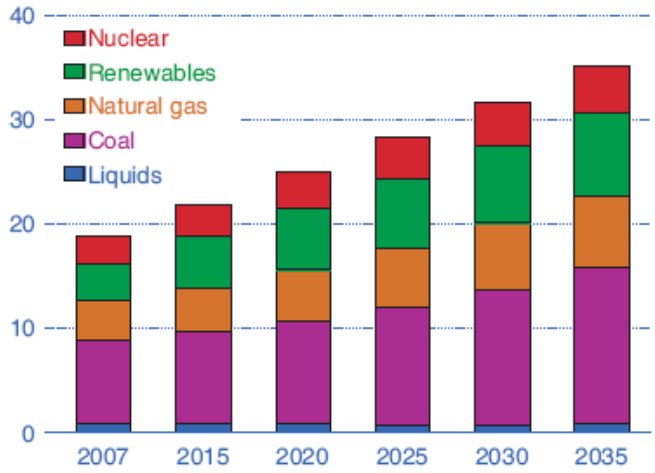

Figure 5: World electricity production by fuel (billion kWh). Source: EIA, 2010

Of the 4.5 trillion kilowatthours of increased renewable generation over the projection period, 2.4 trillion kilowatthours (54 percent) is attributed to hydroelectric power and 1.2 trillion kilowatthours (26 percent) to wind. Typically, government incentives or policies provide the primary support for construction of renewable generation facilities. Although they remain a small part of total renewable generation, renewables other than hydroelectricity and wind — including solar, geothermal, biomass, waste, and tidal/wave/oceanic energy — are expected to increase during the period to 2035 (figure 6).

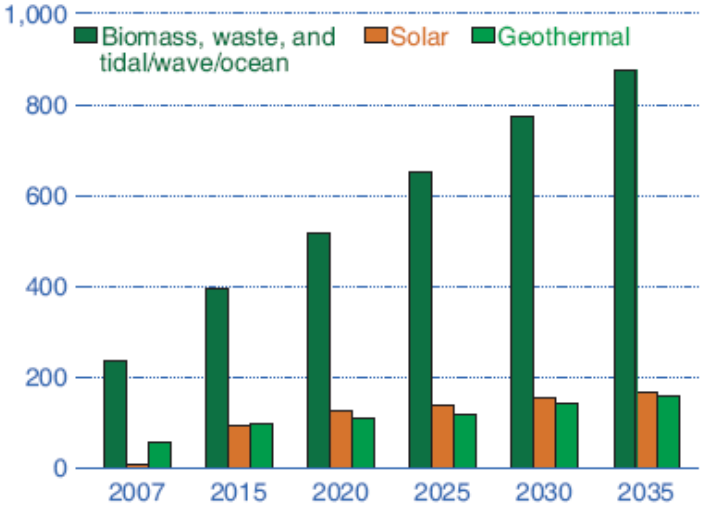

Figure 6: World renewable electricity generation (excluding wind and hydropower) (billion kWh). Source: EIA, 2010

I.3 Barriers for renewable energy promotion

As noted earlier, renewables constitute only about 19% of the global primary energy supply, and some of the major issues hindering the large scale exploitation and promotion of renewables are:

- **Technology status, its applications and efficiency:** The related issues include the availability of technology, the acceptance of the technology and its reliability of its working through demonstrations, are not yet adequate and widespread in developing Asia. This greatly hinders the deployment of renewables.

- **Cost:** Though renewables tend to be relatively expensive as compared to fossil fuel based systems (atleast the first cost), there has been a trend of declining costs in recent years, though it has not been always substantial. Therefore, renewables are often considered to be expensive though this can be very specific to the location and application. Moreover, there are specific niche markets for renewables due to its size, location specificity, etc, wherein the cost of the system can make it attractive.

  There are also a number of financing arrangements that has been introduced, such as, micro credit lending for poor customers, incentives and subsidies for installing renewable energy based systems, tax incentives, etc. However, these are not always very well translated into greater dissemination and installation of renewable energy based systems.

- **Policies**: Governments showcase their intention to promote renewable energy by setting national targets. A list of such government targets in selected Asian countries is given in Table 1. To attain these targets, government policies such as feed-in tariffs, renewable portfolio standards, net metering, etc are essential and they are aimed to promote renewable energy deployment. For example, in the electricity generation sector, more than 83 countries have some type of policy to promote renewable energy. Feed-in tariffs are the most common and renewable portfolio standard (RPS) policies,

also called renewable obligations or quotas (requiring a certain percentage of renewable power shares) with targets extending to 2020 and beyond are also in use.

Though this has helped renewable energy promotion in recent years (see figure 3), much more needs to be done to promote renewable energy deployment in Asia. This is illustrated by the fact that 1,230 Gigawatts (GW) of renewable power generating capacity was in place at the end of 2009 (over 25 percent of total generating capacity worldwide). This is over three times the nuclear generating capacity and roughly 8 percent of the capacity of fossil fuel-burning power plants worldwide (figure 7).

Table 1: Government renewable energy targets in selected Asia – Pacific countries. Source: ESCAP, 2010

Country	Target
Australia	9.5 TWh of additional electricity from renewable energy per year by 2010. About 30 TWh each year from low-emission sources by 2020—about 15 per cent of Australia's energy consumption
Bangladesh	5 per cent of demand met by clean energy by 2010 and 10 per cent by 2020[a]
China	10 per cent of electric power capacity and 5 per cent of primary energy by 2010; 15 per cent of primary energy by 2020[b]
Fiji	Fiji Electricity Authority to become a renewable energy utility by 2013
India	10 per cent of added electric power capacity during the period 2003-12; full use of cogeneration in the sugar industry;15 per cent of power capacity; 10 per cent of oil consumption
Indonesia	> 5 per cent biofuels; >10 per cent other new and renewable energy by 2010[c]
Japan	1.35 per cent of total electricity by 2010; 3 per cent of total energy consumption by 2010
Republic of Korea	5 per cent of total primary energy by 2011
Malaysia	Add 350 MW renewable energy generation capacity by 2010[d]
Pakistan	5 per cent of power generation by 2030
Philippines	100 per cent increase in renewable energy power capacity by 2011
Singapore	50,000 M^2 solar thermal systems by 2012
Sri Lanka	7.5 per cent and 10 per cent of grid electricity using renewable energy by 2010 and 2015 respectively
Thailand	8 per cent of total primary energy by 2011
Viet Nam	2 per cent of total primary energy by 2010 and 3 percent by 2020

- **Institutional arrangements:** Almost all countries have energy agencies at the national or regional levels, and some of them have also set up agencies focused to promote energy efficiency and renewable energy. However, these agencies/institutions, usually address issues such as energy, environmental protection, and poverty separately, and it is clear that these policies need to be integrated as the overall issues are related closely to each other. At the same time,

the institutions lack capacity, skills and knowledge regarding available policies and technologies.

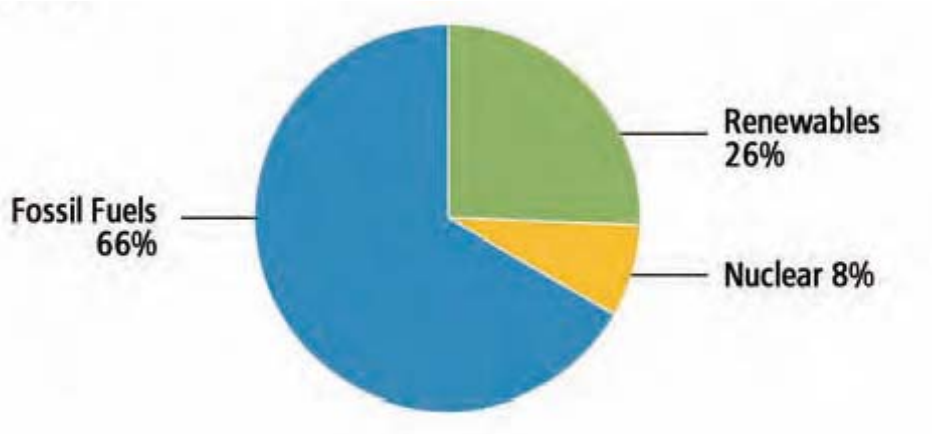

Figure 7: World electricity generation capacity by source at end 2009. Source: REN21, 2010.

Even at regional and sub regional level, there is a number of organizations involved working on broader energy issues, including renewable energy. In the 16th SAARC Summit held at Thimphu, Bhutan with the theme "Towards a Green and Happy South Asia", the declaration recognizes "…the need to enhance cooperation in the energy sector to facilitate energy trade, development of efficient conventional and renewable energy sources including hydropower. They emphasized the need to undertake studies to develop regional energy projects, promote regional power trade, efficiency, conservation and development of labeling and standardization of appliances, and sharing of knowledge and technologies..".

- **Awareness and capacity (human):** Addressing the twin challenges of meeting growing energy demand and reducing GHG emissions at the same time would require unprecedented coordinated efforts by the global community to develop clean and energy efficient technologies in order to keep growth of energy consumption/emissions low; and develop alternative energy sources in order to reduce our dependence on fossil fuels. Development and deployment of clean and renewable energy technologies for large-scale reduction of GHG emissions would

require very large numbers of trained personnel and energy experts in the years to come. Trained manpower will also be needed for formulating, implementing and monitoring GHG reduction of projects. Though there are growing number of energy courses/programmes, it is not clear whether they will be able to keep pace with even faster growing demand for engineers and scientists needed to facilitate the forthcoming, if not on-going, energy transition.

I.4 Role of regional cooperation to promote renewables

To address these above challenges, regional cooperation is one vital mechanism for promoting renewables. This would help

- **Learning from others:** A number of initiatives has been undertaken to promote renewable energy in Asia by various donors. However, the promotion of renewables need to be accelerated if the world and Asia would plan for a low carbon – green growth. A number of initiatives exist already or in progress in technology, policies and implementation processes. Therefore, valuable lessons could be learnt from these experiences and applied so that upscaling of activities be done in an effective manner. Regional cooperation is an excellent vehicle to do this.

- **Sharing resources/expertise:** Resources in terms of technology suppliers and experts with experience in promoting renewable energy in Asia could be made use of in new circumstances and applications elsewhere through regional cooperation rather than individual one to one linkages.

- **Reduced cost:** Regional cooperation can also help immensely in carrying out joint research and development and dissemination. For example, a number of European Union initiatives in Asia needs partners from different countries, and a regional mechanism can greatly help in indentifying suitable and reliable partners to join such projects.

- **Expand markets:** Regional cooperation can also assist private sector forge collaborations and this help expand the renewable energy markets for a variety of energy services.
- **Trans-boundary issues:** A number of initiatives (and issues) span countries, which are best addressed through a common agreed regional mechanism.

Renewable energy applications, by its characteristics, is site specific, modular and service specific, and its large scale exploitation will require a number of stake holders (vertical and horizontal integrated) working together. A cooperation mechanism would, therefore, be essential to assist in moving forward the renewable energy agenda.

II Regional Cooperation Mechanisms and Networks

A number of trans-national challenges, such as, the financial crisis, climate change, regional infrastructure bottlenecks or regulatory frameworks for trade and investment currently dominate the global and regional agendas. Cooperation is needed to address these challenges, and by pooling resources, individual countries can also attain greater developmental gains than they would if they were to act on their own. In times of global crisis, there may be a need to provide region-specific pragmatic responses. There is a scarce availability of grant funding for middle-income countries which implies a need to develop innovative regional institutional and financial instruments. The catalyzing role of international and regional institutions, multilateral and regional financial institutions, by virtue of their global and regional reach, are in an unique position to support concerted policy approaches and actions at the regional level. They can act as honest brokers, produce cutting-edge policy research, develop innovative multi-country operational products and are able to mobilize resources for supporting region-wide development interventions.

The mechanisms and institutional frameworks currently (and have been formed) in place to promote renewable energy in the Asia Pacific region could be distinguished under broad classifications, each with its specific mandate, purpose and focus.

II.1 Types of RCM and Networks

The Asia-Pacific region has many energy-related initiatives and programmes at both the sub regional and regional levels, dealing with such issues as fossil fuel, electric power, renewable energy and energy efficiency. The various modalities of the regional cooperation could be classified as:

(a) Intergovernmental
(b) Partnerships
(c) Networks, and
(d) Programmes

A number of initiatives are under way under the above noted modalities in energy related areas, and many of them focusing on renewable energy cooperation. At present, there are at least 43 active initiatives, of which 17 are intergovernmental, 13 are programmes, nine are partnerships, and four are networks (ESCAP, 2010). Of the total, 30 deal with energy in general while 15 focus on fossil fuels, 16 on electric power, 12 on renewable energy and 16 on energy efficiency.

The global initiatives (11) deal with energy efficiency or renewable energy. Generally, they are partnerships or networks, which are also sponsored by national, international or development donors

Table 2: Few (renewable) energy cooperation initiatives

Intergovernmental	Partnership	Network	Programmes
ACE	REEEP	GNESD	CD4CDM
APEC	ECO-ASIA	ENERGIA	GVEP
SAARC	GVEP		CLASP
IRENA			

The multilateral international networks involving political cooperation includes the following:

Asia-Pacific Economic Cooperation (APEC): Accounting for around 60 percent of world energy demand, the APEC region is a net energy importer and its demand for energy is on the rise. These factors make energy cooperation an important agenda item for APEC. The Energy Working Group (EWG), launched in 1990, seeks to maximise the energy sector's contribution to the region's economic and social well-being, while mitigating the environmental effects of energy supply and use. The EWG is assisted by four Expert Groups (Clean Fossil Energy, Efficiency & Conservation, Energy Data & Analysis, New & Renewable Energy Technologies) and a Task Force on Biofuels.

ASEAN Centre for Energy (ACE): This has been initiated by the Governments of Brunei Darussalam, the Republic of Indonesia, the Lao People's Democratic Republic, Malaysia, the Union of Myanmar, the Republic of the Philippines, the Republic of Singapore, the Kingdom of Thailand and the Socialist Republic of Vietnam. The purpose of the Centre shall be to serve as a catalyst for the economic growth and development of the ASEAN region by initiating, coordinating and facilitating national as well as joint and collective activities on energy. ACE has been instrumental in preparing the ASEAN Plan of Action for Energy Cooperation 1999-2004, a plan that is assiduously implemented by ASEAN's specialist organizations in the field of energy. It facilitates and coordinates the work of these specialist organizations, including the Forum of Heads of ASEAN Power Utilities/Authorities, the ASEAN Council on Petroleum, the ASEAN Forum on Coal, the Energy Efficiency and Conservation Sub-sector Network and the New and Renewable Sources of Energy Subsector Network.

Asian and Pacific Center for Transfer of Technology (APCTT): APCTT is a regional institution of the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) servicing the Asia-Pacific region. It was established with the objective of facilitating technology transfer in the Asia-Pacific region, with a focus on small and medium enterprises (SMEs). It

- Aims at strengthening the technology transfer capabilities in the region and facilitates the transfer of environmentally sound technologies among member countries.
- Promotes technology-based cooperation in Asia and the Pacific, with a particular focus on SMEs.
- Offers consultancy services in various technology transfer related areas, including technology-based business cooperation.
- Implements projects funded by various international donors with the objective of strengthening the technology transfer environment in the Asia Pacific region.

The Global Network on Energy for Sustainable Development (GNESD): GNESD is a UNEP facilitated knowledge network of centres of Excellence and network partners

worldwide, renowned for their work on energy, development, and environment issues. It was initiated as a so-called Type II initiative at the 2002 World Summit on Sustainable Development (WSSD) held in Johannesburg. The main objective of GNESD is to work for reaching the Millennium development Goals (MDG).

Renewable Energy & Energy Efficiency Partnership (REEEP): REEP was established alongside the 2002 World Summit on Sustainable Development in Johannesburg. It is comprised of more than 350 partners including 45 governments as well as a range of private companies and international organ**isations.** It is an active, global partnership that works to reduce the barriers limiting the uptake of renewable energy and energy efficiency technologies, with a primary focus on emerging markets and developing countries, and **i**nitiates and funds clean energy projects to have an impact on the development of the market for renewable and efficient energy and innovation

International Renewable Energy Agency (IRENA): IRENA is the first international organisation to focus exclusively on renewable energies, addressing both industrialised and developing world's needs. IRENA's mission is to promote the widespread and increased adoption and sustainable use of all forms of renewable energy. IRENA's Member States pledge to advance renewables in their own national policies and programs, and to promote, both domestically and through international cooperation, the transition to a sustainable and secure energy supply. 125 delegations attended the Founding Conference and a total of 75 nations, developing and industrialised alike, signed the Agency's Statute.

Renewable Energy Technologies (RETs) in Asia: RETs in Asia was a regional research and dissemination programme sponsored by the Swedish International Development Cooperation Agency (Sida) and coordinated by the Asian Institute of Technology (AIT). Its aim was to promote mature or nearly mature renewable energy technologies in selected Asian countries. Thirteen national institutes from Nepal, Bangladesh, Laos, Cambodia, Vietnam and the Philippines participated in this programme during 1997 –

2005. The technologies identified by the network were photovoltaics, biomass briquetting, and solar/biomass dryers.

Bilateral International co-operation: A number of bilateral cooperation has been initiated in Asia with focus on energy/renewable energy cooperation between the countries. Thailand has initiated collaboration with India, Cambodia and Lao PDR to name a few, which are Thai-India Renewable Energy, Thai-Cambodia Energy cooperation and Thai-Lao Energy cooperation.

ESCAP 2008 provides a comprehensive list of energy initiatives classified in terms of region and by sector (see Appendix A).

II.2 Lessons from RCM and Networks

An analysis of the above noted networks that facilitate the promotion of renewable energy in the Asia Pacific region indicates that for a network/mechanism to be successful, the following characteristics, among others, are essential:

- ***Focus on Well Defined and Broadly Endorsed National Priorities:*** The mandate for technology cooperation indicates that this will be most effective when it addresses national priorities, which are defined in existing development plans. These plans would have been subjected to a rigorous evaluation policy wise and therefore enjoy strong support from public and private stakeholders.

- ***Strengthen Country Capacity and Enabling Environments:*** International technology cooperation efforts will only result in sustained impacts if they build capacity and effective enabling environments in the participating countries.

- ***Apply a Comprehensive Approach and Sufficient Scale Over Multiple Years:*** Initiatives to advance technology cooperation should address all aspects of the technology life cycle in a country, including technology adaptation and

commercialization (and innovation where applicable), demonstration, deployment, and financing. Implementation should be conducted at sufficient scale of resources and over multiple years to achieve substantial and lasting global impacts.

- ***Coordinate International Programs:*** The bilateral and multilateral technology cooperation programs can achieve maximum impact if they are effectively coordinated so that resources can be leveraged and activities harmonized.

- ***Build Long-Term Public and Private Partnerships: C***ollaboration has the greatest value where it establishes long-term partnerships among developing and developed country technical institutes, companies, governments, and civil society. It is also essential to actively engage the private sector to help accelerate private investment and business partnerships between countries.

- ***Engage all Regions and Promote Knowledge Sharing across Countries:*** Technology cooperation efforts should engage countries and all levels of development and take full advantage of opportunities for countries to learn from each other through knowledge sharing at regional and global levels.

III A model RCM

Regional cooperation is an effective strategy that Asia and the Pacific could use to meet both energy security and climate change concerns. It is a “win-win” approach for all stakeholders (ADB, 2009).

One important area for regional cooperation is knowledge sharing and regional data collection in order to create a robust database that can be used to identify economically sound options. A few countries in the region have relatively developed technological capabilities in photovoltaic and vacuum-tube solar water heaters, wind turbines, and hydropower. This provides an excellent opening for cooperation in technology. A successful regional collaboration could turn the region into a market leader in the field of renewable energy.

Second, the region could set broad framework conditions for regional energy trade. Trade will occur only if the economics of it is favorable. Collaboration could include designing a regional, market-based mechanism for promoting sustainable development, drawing on the lessons learned from the successes and failures of promotion of renewable energy (and energy efficiency) projects, such as by the CDM.

Third, the region should set up training programs in relevant areas of the energy sector, such as energy efficiency and renewable energy technologies. Lack of basic capacity in terms of human expertise is a major barrier to energy efficiency progress. Regional collaboration would help in cost-sharing (with cost reduction), the scaling-up of research, and the building up of common pools of knowledge. A regional authority could identify programs that should be university-based and how much the private sector should be involved. Potential centers of excellence in the countries could be selected for identified areas of collaborative research. The goal is to create a common pool of knowledge at the industry level to achieve global competitiveness and accelerate the spread of technology in Asia and the Pacific.

Fourth, governments need to work together to address institutional, regulatory, and policy issues. Simultaneously, technical issues need to be sorted out. With similar stages of market development and similar technology needs, particularly in harnessing biomass, countries can collaborate in technology and share experiences in designing and implementing policies. A cooperative and collective approach would not only address energy related issues but also would lead to economic and environmental benefits for the entire region.

It is clear that a number of networks and mechanisms are available in the region (and beyond). At the same time, for the overall promotion of renewable energy deployment, the important attributes are technology, policies, financing and institutions. Many networks focus on one or two of these attributes, and as discussed above, regional cooperation can be an important ingredient for the countries to help meet their renewable energy targets.

III.1 Mission/Goal/Expected Outcomes

The expected outcome of a regional mechanism would have to be defined broadly in consultation with all stakeholders. This would focus on renewable energy promotion in the Asia and the Pacific region, though it could be related to other "related" issues such as assisting in energy security, addressing green house gas mitigation or the attainment of Millennium Development Goals. It could have as its mandate to help attain a certain "quantity" of renewable energy target (in absolute or in percentage terms) that is defined in consultation.

III.2 Activities, scope and functions

The activities of the regional cooperation mechanism, in order to play an important role, would be to address the important concerns of renewable energy promotion – technology dissemination, financing assistance, policy issues and capacity and institutional building.

The major directional focus that this regional mechanism could consider for promoting renewable energy in the Asia and the Pacific is:

- Generation of new knowledge and dissemination of renewable energy technologies, policies and financing models
- Develop new approaches, programmes and projects promoting renewable energy resources and technologies
- Build institutional and human capacity in countries

This should maintain close links with existing networks and other regional and international institutions and networks to avoid duplication of efforts. Moreover, the work and function of this mechanism should be geared at providing immense value addition to its stakeholders.

Some tangible and specific activities that the regional cooperation mechanism/network can undertake could be:

- Preparation of detailed renewable energy resource database – this would be primordial for any renewable energy application in the countries, and would be needed for any investment.
- Compilation and regular updating of renewable energy technologies (technology status and performance, cost, availability, manufacturers, etc)
- Analysis of renewable energy policies, technologies and financing models – its impact and applicability to promote/promotion of renewable energy technologies
- Implementation of specific (renewable energy) projects in the region
- Regular sharing of resources with other networks, through annual meetings, etc
- Development of manuals and tool kits for use by member institutions and others involved in renewable energy promotion
- Preparation of investment guides for investors on specific renewable energy technologies

These suggested activities and others could help the regional mechanism to provide useful insight on:

- evaluation of sustainable energy technologies
- develop capacity among major stakeholders and share the lessons and knowledge acquired in formulating and implementing sustainable energy approaches.
- support local and national governments, the private sector and others on sustainable energy policies, approaches, technologies, financing tools, etc

Figure 8 presents the various attributes of the regional mechanism.

III.3 Process for implementation

The process for implementation of the regional cooperation mechanism would need to consider the following:

The regional cooperation mechanism can be initiated either by using existing institutions and giving it a new focus or by creating a new institution.

The initiation would have to be from a “neutral” organisation, such as the UN or the ADB. Discussions on the need/viability of such a mechanism would have to be made with various funding sources. This may entail individual consultations initially in order to obtain consensus, before, say, conducting a regional meeting/discussion to formalize the working of this institution. Considering the scope and geographical reach, this mechanism should probably avail intergovernmental status for its smooth and effective functioning.

A result based management (RBM) using a log frame approach (LFA) could be used to define the objectives, activities and performance indicators of the mechanism, which can succinctly present the outcomes and outputs of this mechanism. The specific activities and the performance indicators for each, as well as the underlying assumptions and risks involved can be clearly noted.

Table 3: Logical Framework Analysis of the Renewable energy promotion in the Asia and the Pacific through regional cooperation mechanism

Narrative Summary	**Expected Results**	**Performance Measurement**	**Assumptions / Risks**
Project Goal: *To contribute to the promotion of renewable energy use in the Asia and the Pacific region*	Ultimate Outcome / Impact Result Statement (say, after the year 2020): *Enhanced and sustained use of renewable energy*	Performance Indicators: ▪ *Renewable energy share in the overall energy use in the countries* ▪ *etc*	Assumption: • *Governments and others support promotion of renewable energy* • *etc*
Project Purpose:	Intermediate Outcome Results (say, Year 2014 onwards): ▪ *Implementation of activities planned*	Performance Indicators: ▪ *Number of projects initiated/completed* ▪ *No of publications/ reports,* ▪ *etc*	Assumption: • *Donors and governments will continue to support the mechanism.* • *etc*

Note: What has been noted in italics are suggestive

Identification of core group of personnel would be necessary to initiate activities. They need to have a clear set of terms of reference regarding their work profile and activities.

Other processes could then follow and adopt standard accepted practices and protocols, as appropriate.

A regular monitoring and evaluation scheme/process including an external evaluation at regular periods would have to be put in place to ascertain the effectiveness and impact of the mechanism/network in discharging its activities, as well as the management of the mechanism, and to provide feedback and inputs to the mechanism/network.

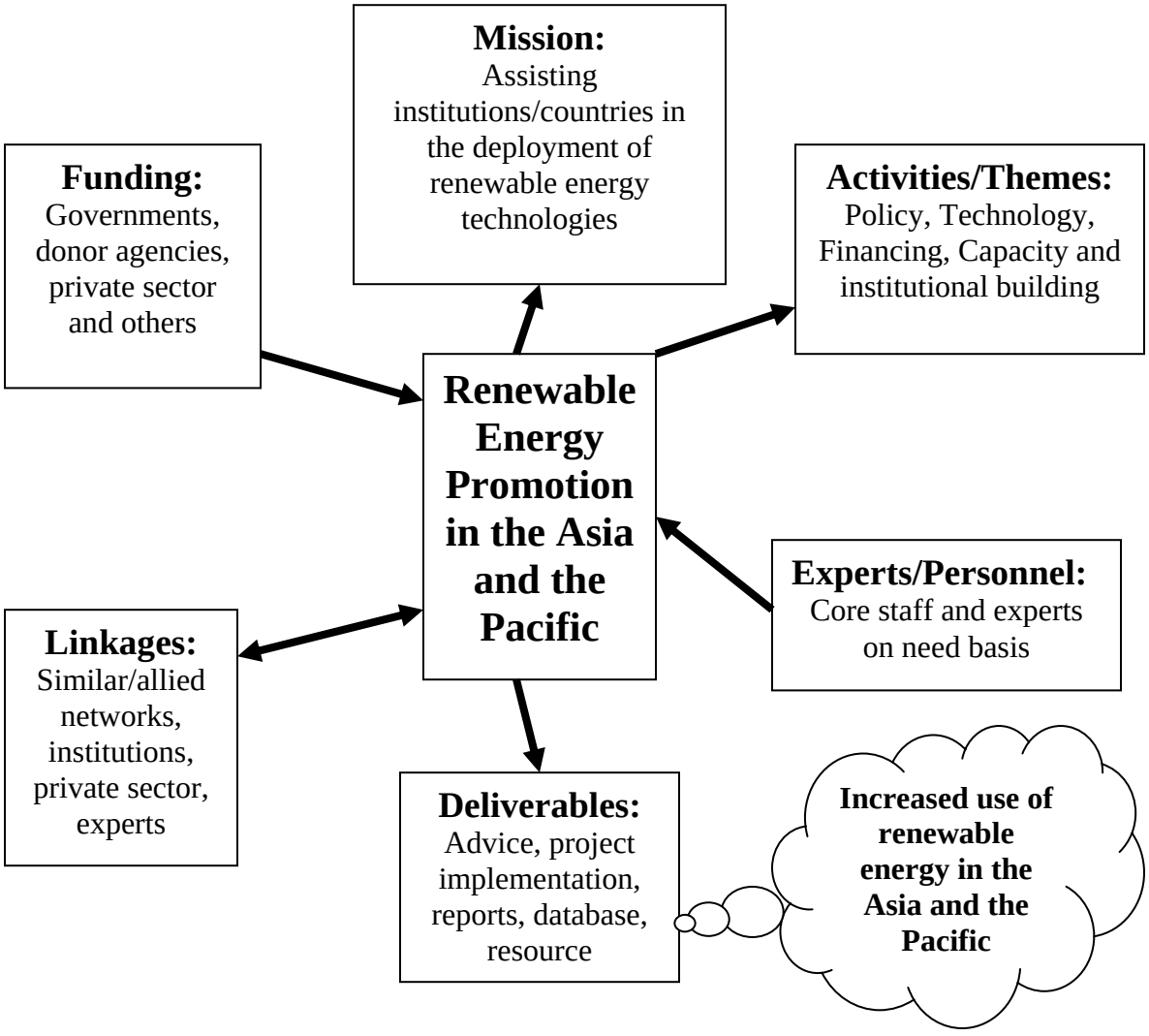

Figure 8: The model RCM: Mission, funding, activities, personnel and deliverables

IV Conclusion

The realisable potential for renewables is large across all of Asia. For example, in the medium term to 2030, there is significant realisable potential for renewables in ASEAN-6 countries covering nearly all renewable energy technologies for electricity, heating, and transport fuel production (IEA, 2010). It is estimated that the total potential for renewable electricity in 2030 is about 1.8 times the total 2007 electricity consumption in the region. The additional realisable potential in the ASEAN-6 countries could be as much as 12 times the current deployment of renewable electricity, especially for non-hydro sources. Among non-hydro renewables, significant contributors would be biomass, onshore wind, geothermal and solar photovoltaics. This clearly underlines the potential for renewable energy deployment in the Asia Pacific region.

At the same time, literature indicates that a number of networks and mechanisms are available in the region (and beyond) that fosters the promotion of cooperation of energy issues among countries and institutions/organisations under a variety of mechanisms and processes. However, there is no network/mechanism (other than the recently initiated International Renewable Energy Agency (IRENA)) whose focus is exclusively on renewable energy resource and technology promotion in this region.

For the overall promotion of renewable energy deployment, it is clear that a number of barriers need to be overcome. The major obstacles are technology, policy, financing, capacity and institutions. Therefore, it is clear that any mechanism to be successful should be able to address all these challenges holistically. Most other networks focus on some of these challenges due to their inherent nature of the mechanism or network. On the other hand, regional cooperation can be an important ingredient that could assist the countries address the challenges due to the various advantages and thus help the countries meet their renewable energy targets.

The model regional cooperation mechanism should have a clear and a direct focus on the promotion of renewable energy in the participating member institutions/countries, with a

clear plan of activities and functions and well defined targets to attain within specific periods of time. Funding, personnel and experts would need to be mobilized. A monitoring and evaluation scheme/process including an external evaluation will help in providing feedback and inputs.

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Appendix A: International initiatives on energy

Intergovernmental	Partnership	Network	Programme
ACD	APP-CDC	ENERGIA	CAREC
ACE	BFA	GNESD	CD4CDM
ACMECS	ECO-Asia	INFORSE	CLASP
APEC	EESD	PEG (Pacific)	EUEI
BIMP-EAGA	IPHE		GMS Program
BIMSTEC	PCFV		GTI
BSEC	PEG		GVEP
ECNEA	PIESD		PIEPSAP
ECO	REEEP		RDI
ECT			SARI/E
EurAsEC			SASEC
Mekong Programme			SECSCA
PIFS			SEFI
SAARC			
SCO			
SOPAC			
SPECA			

Source: ESCAP, 2008

Disclaimer and Report Information

This report has been prepared with the financial support of the United Nations ESCAP.

The views expressed in this study are purely those of the author and do not necessarily reflect the views of the UNESCAP