UNITED NATIONS ENVIRONMENT PROGRAMME

Programme des Nations Unies pour l'environnement | Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде | برنامج الأمم المتحدة للبيئة
联合国环境规划署

UNEP

PROJECT DOCUMENT

SECTION 1: PROJECT IDENTIFICATION

1.1	**Project title:**	Pilot of Climate technology network and finance center in Asia Pacific (AP-CTNFC)
1.2	**Project number:**	GFL/ PMS:
1.3	**Project type:**	FSP
1.4	**Trust Fund:**	GEF
1.5	**Strategic objectives:**	
	GEF strategic long-term objective:	CCM-1, CCM-2, CCM-3, CCM-4, CCA-3
	Strategic programme for GEF V:	
1.6	**UNEP priority:**	Climate change
1.7	**Geographical scope:**	Regional Asia-Pacific
1.8	**Mode of execution:**	Internal
1.9	**Project executing organization:**	UNEP-DTIE
1.10	**Duration of project:**	30 months Commencing: Completion:

1.11	**Cost of project**	**US$**	**%**
	Cost to the GEF TF	**3,000,000**	**34.4%**
	Cost to SCCF	**250,000**	**2.8%**
	Sub-total	**3,250,000**	**37.2%**
	Co-financing		
	In-kind		
	UNEP	**1,000,000**	**11.4%**
	In cash		
	Finland (SEAN-CC)	**2,640,000**	**30.2%**
	Korea (CAN-CC)	**840,000**	**9.6%**
	Denmark	**1,000,000**	**11.4%**
	Sub-total	**5,480,000**	**62.7%**
	Total	**8,730,000**	**100%**

1.12 Project Information and link to UNEP Programme of Work 2012-2013

Identification	*Insert Project ID# from Programme Framework Table 3*					
Project Title	Pilot of Climate technology network and finance center in Asia Pacific (AP-CTNFC)					
Managing Division	DTIE					
Project Manager and Org. Unit	*Insert name*			DTIE		
Type/Location	Regional					
Region				Asia Pacific		
List Countries	Southeast Asia (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam), Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan) and additional TNA countries in the region (Mongolia, Sri Lanka, Nepal and Bhutan)					
Programme of Work	2012-13					
Sub-programme	Subprogramme 1. Climate Change					
Expected Accomplishment	EA (b) Low carbon and clean energy sources and technology alternatives are increasingly adopted, inefficient technologies are phased out and economic growth, pollution and greenhouse gas emissions are decoupled by countries based on technical and economic assessments, cooperation, policy advice, legislative support and catalytic financing mechanisms					
PoW Output(s) to which Project contributes[1]	#1b3					
Date of Programme Framework Clearance	*(dd/mm/yy)*					
Other Divisions/Regional Offices involved	ROAP	DEPI	DEWA	DELC		

1: Use numbering of PoW Output in Programme Framework (Table 1). Must be consistent with the Logical Framework in Section 3.

PROJECT SUMMARY

1. Asia-Pacific, home to 60% of the world's population, has a fast growing energy demand driven by economic and demographic growth. By far, the region is the largest overall GHG emitter in the world, led by China, India, Japan, Republic of Korea and Australia. The region also counts a large number of developing countries and an important number of islands which are both extremely vulnerable to climate change. In this context, supporting the countries of the region in their efforts to reduce GHG emissions and enhancing their resilience to climate change consequences is a priority for the international community and critical for ensuring sustainable development in the region.

2. While developing countries across Asia and the Pacific are already taking steps to follow low-carbon and climate-resilient development pathways, they are requesting international financial and technical support to identify, prioritize and deploy innovative technologies. The concept of this project is based on the importance of technology transfer in the global response to climate change, as reflected in the 2007 Bali Action Plan, the Copenhagen Accord, and the recent Cancun Agreement in which Parties recognized the key role of regional and national technology centers and networks to support national technology planning and program design, capacity building, knowledge management, strengthening of enabling environments, technology research, development, and demonstration, and technology deployment and transfer.

3. With a view to mitigating climate change by reducing the use of fossil fuels and, enhancing the resilience of countries to climate change consequences, the overall goal of the project is to accelerate the adoption and deployment of climate technologies and foster investments in environmentally sound technologies (ESTs) in Asia and the Pacific. The project will build on the encouraging market development rates of the countries in the region and will seek to demonstrate, on a pilot basis, the effectiveness of combining technology and finance mechanisms into catalyzed climate actions. This will be accomplished through the transfer, and diffusion of environmentally and socially sound technologies. These technologies will contribute to the development of lower emission growth pathways and greater resilience to climate change impacts, which can in turn enhance long term socio- economic development prospects, and foster a more sustainable development overall.

4. To achieve the overall goal mentioned above, the Project will be structured around six components which include: (i) facilitating a network of national and regional technology centers, networks, organizations and initiatives; (ii) building/strengthening national and regional climate technology centers and centers of excellence; (iii) Designing, developing and implementing country driven EST transfer policies, programs, demonstration projects and scale-up strategies; (iv) Integrating climate technology financing into national development strategies, plans and investment priorities; (v) Catalyzing investments in EST deployment; and (vi) Establishing a pilot "marketplace" of owners and users of low-carbon technologies to facilitate their transfer.

5. The project will be jointly implemented by UNEP and the Asian Development Bank (ADB). UNEP will implement and manage a technical assistance component focusing on capacity readiness and enabling conditions for climate technology transfer and deployment, whereas, ADB will provide support for the mobilization of public and private financial resources to foster ESTs markets in the region. It is expected that the project will lead to direct post project emissions reductions resulting equivalent to a total of 13,457,309 tCO2e. To ensure the successful implementation of the project, UNEP will establish a Climate Technology Network secretariat in Bangkok while ADB will set-up a Climate Finance Center in Manila. Both entities will work hand-in-hand, communicating actively and meeting on a regular basis.

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ACRONYMS AND ABBREVIATIONS

ADB	Asian development bank
AECEN	Asian Environmental compliance and enforcement network
AIT	Asian Institute of Technology
AP-CTNFC	Asia Pacific climate technology network and finance center
APERC	Asia Pacific Energy research center
APR	Annual project report
ASEAN	Association of South East Asia Nations
AWG-LCA	Ad hoc working group on long term cooperation action
AWP	Annual work plan
AWP	Annual work program
BAU	Business as usual
CAN	The Climate Action Network
CAREC	Central Asia regional economic cooperation
CC	Climate change
CEERD	Center for Energy environment
CIC	Climate innovation center
COP	Conference of the parties
CTCN	Climate technology centers and network
DMC	Developing Member Country (ADB term)
DTIE	Division of Technology, Industry and Economics
EE	Energy efficiency
ESCO	Energy services company
ESL	Energy saving lamps
EST	Environmentally sound technology
GDP	Gross domestic product
GEF	Global environmental facility
GHG	Green house gases
IEA	International Energy Agency
IGES	The institute of global environment strategies
IISD	International institute for sustainable development
ILs	Incandescent lamp
IMC	Inter - ministerial committee
IPCC	Intergovernmental panel on climate change
kW	Kilo Watt
LCE	Low carbon economy
LDC	Least developed countries
M&E	Monitoring and evaluation
MRV	Monitoring Reporting Verification
MTEF	Medium term expenditures Framework
MTOE	Million ton oil equivalent

NAMA	Nationally appropriate mitigation action
NAPA	National adaptation programme of actions
NBR	National bureau of Asian research
NDP	National development plans
NIP	National investment plan
PAS	Pacific alliance for sustainability
PIR	Project implementation review
PMC	Project management committee
PMU	Project Management Unit
PRSP	Poverty reduction strategy papers
PSC	Project steering committee
QPRs	Quarterly progress report
RE	Renewable energies
ROAP	Regional Office for Asia-Pacific
SAARC	South Asian association for regional cooperation
SC	Steering committee
SCAF	Seed Capital assistance facility
SEC	Secretariat
SPC	Secretariat of the Pacific community
SPREC	Secretariat of the Pacific Regional environment program
TA	Technical assistance
TEC	Technology executive committee
TM	Technology Mechanism
TNA	Technology needs assessment
UNDAF	United Nations Development Assistance Framework
UNEP	United Nations environment program
UN-ESCAP	United nations economic and social commission for Asia Pacific
UNFCCC	United nations framework convention on climate change
UNWTO	United Nations World Tourism Organisation

SECTION 2: BACKGROUND AND SITUATION ANALYSIS (BASELINE COURSE OF ACTION)

2.1. Background and context

1. During the United Nations Climate Change Conference in Cancun (COP 16/CMP 6), all the parties reiterated and reaffirmed that climate change is one of the greatest challenges of our times. Parties share a vision for long-term cooperative action in order to achieve the objective of the United Nations Framework Convention on Climate Change (UNFCCC) under its article 2; on the basis of equity and in accordance with common but differentiated responsibilities and respective capabilities. The vision addresses mitigation, adaptation, finance, technology development and transfer, and capacity building in a balanced, integrated and comprehensive manner to enhance and achieve the full, effective and sustained implementation of the convention.

2. Amongst the other regions, Asia-Pacific countries were represented and participated in the Cancun conference. This region, home to 60% of the world's population, has a fast growing energy demand driven by economic and demographic growth. It holds some of the world's major growing economies such as China, India and the Southeast Asia region. As a consequence, the region's GHG emissions level is rising and increasingly contributing to climate change. Over the past decade, CO_2 emissions in Asia and the Pacific jumped from 9.8 Billion tons in 1990 to more than 13 billion tons in 2006. By far, the region is the largest overall emitter in the world, led by China, India, Japan, Republic of Korea and Australia[1].

3. The region also counts a large number of developing countries and an important number of islands which are both extremely vulnerable to climate change. In 2006, the region accounted for 74% of over 21,000 casualties from natural disasters in the world (UN-ESCAP, 2010). The Intergovernmental Panel on Climate Change, in its publication titled Impacts, Adaptation and Vulnerability (IPCC, 2007) highlighted that Warming is likely to be well above the global mean in Central Asia, the Tibetan Plateau and Northern Asia, above the global mean in East Asia and South Asia, and similar to the global mean in South-East Asia. Clearly, Asia-Pacific countries will face adverse consequences from the resulting changing weather patterns – including variability of seasonal precipitation, droughts and floods. With the majority of its population living in or near coastal areas, rising sea levels and storm surges will pose serious challenges for adaptation.

4. Therefore, tackling climate change is clearly a high priority for the Asia-Pacific region and related issues should be addressed in line with the UNFCCC's work. In 2010, UNFCCC's Conference of the Parties (COP 16) closed on a high note with consensus being achieved on several important agreements, in forestry, financing and technology transfer. The main outcomes of the "Cancun Agreements" can be summarized as follows:

    - COP16's decision on long-term cooperative action under the Convention (AWG-LCA) ratifies the objective of limiting global warming to 2ºC in 2100. The decision

[1] ESCAP. Statistical Yearbook for Asia and the Pacific 2008, page 200

is to call for enhanced action on mitigation, bearing in mind the different circumstances of developed and developing countries. Industrialized countries are to develop low-carbon development plans and strategies and to report their inventories annually. Developing countries have committed to implementing "Nationally Appropriate Mitigation Actions" (NAMAs) with financial, technical and capacity-building support from developed countries. For monitoring purposes, all mitigation actions will be registered as well as measured, reported and verified (MRV).

- The Cancun Adaptation Framework' recognizes that adapting to climate change should have as much importance as reducing greenhouse gas emissions. It includes a set of measures for increased international cooperation and enhanced action on adaptation (including planning; impact, vulnerability and adaptation assessments; institutional strengthening; strengthening data, information and knowledge systems and improving climate related research) to reduce the vulnerability and build resilience in developing countries that are particularly vulnerable. Increased support to National Adaptation Programmes of Action (NAPAs) development and implementation is to be provided.

- Clear plans for finance, technology transfer and capacity building as a global approach to address climate change issues and foster environmentally sound technology market pull and push by adequate policies and suitable mechanisms. A Green Climate Fund financed by developed countries will be set up to help developing countries both reduce emissions and adapt to climate change. New processes for technology transfer are to be established provided by a new 'Technology Mechanism' and capacity building will be enhanced through the strengthening of institutions, networks, communication, education and training.

5. One of the major outputs of the COP 16 AWG-LCA was the establishment of the Technology Mechanism. The Technology Mechanism (TM) aims to enhance action and cooperation for technology development and transfer, particularly to developing countries, in support of climate change mitigation and adaptation. To facilitate its effective implementation, it will consist of two complementary components: the Technology Executive Committee (TEC) and the Climate Technology Center and Network (CTCN).

6. The TEC will have an advisory and administrative role, identifying technology needs and priorities, coordinating efforts, and providing recommendations for improvement. It will consist of a panel of 20 experts, 9 from developed countries and 11 from developing countries. The CTCN will provide direct in-country advice and support to facilitate prompt action on the deployment of technologies based on identified needs, including through a network of national, regional and international technology centers, networks and organizations (Box 1). Its main function will be to carry out the TEC's directives, and also to facilitate and improve upon existing initiatives. While the TEC could start its work immediately, work continues during 2011 to elaborate the terms of reference for the CTCN, with a view to making the CTCN operational in 2012.

Box 1: Roles and functions of the CTCN as stipulated in the Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010 (UNFCCC, 2011)

The Climate Technology Centre shall facilitate a network of national, regional, sectoral and international technology networks, organizations and initiatives with a view to engaging the participants of the Network effectively in the following functions:

(a) At the request of a developing country Party:

(i) Providing advice and support related to the identification of technology needs and the implementation of environmentally sound technologies, practices and processes;

(ii) Facilitating the provision of information, training and support for programmes to build or strengthen capacity of developing countries to identify technology options, make technology choices and operate, maintain and adapt technology;

(iii) Facilitating prompt action on the deployment of existing technology in developing country Parties based on identified needs;

(b) Stimulating and encouraging, through collaboration with the private sector, public institutions, academia and research institutions, the development and transfer of existing and emerging environmentally sound technologies, as well as opportunities for North–South, South–South and triangular technology cooperation;

(c) Facilitating a network of national, regional, sectoral and international technology centres, networks, organization and initiatives with a view to:

(i) Enhancing cooperation with national, regional and international technology centres and relevant national institutions;

(ii) Facilitating international partnerships among public and private stakeholders to accelerate the innovation and diffusion of environmentally sound technologies to developing country Parties;

(iii) Providing, at the request of a developing country Party, in-country technical assistance and training to support identified technology actions in developing country Parties;

(iv) Stimulating the establishment of twinning centre arrangements to promote North–South, South–South and triangular partnerships, with a view to encouraging cooperative research and development;

(v) Identifying, disseminating and assisting with developing analytical tools, policies and best practices for country-driven planning to support the dissemination of environmentally sound technologies;

(d) Performing other such activities as may be necessary to carry out its functions.

7. While many challenges still need to be addressed to make the TM and its related entities fully operational (i.e. functions, funding, institutional set-up and design still need to be agreed), the "Pilot in Asia-Pacific Climate Technology Network and Finance Center" project - jointly implemented by UNEP and ADB - aims to contribute to the design of the operational procedures of the TM and more specifically the CTCN by testing a regional CTCN approach for Asia-Pacific. In this regard, the pilot Asia-Pacific Climate Technology Network and Finance Center (AP-CTNFC) will aim to fulfill similar functions and objectives as those expected from the CTCN and outlined in Box 1.

8. AP-CTNFC will provide technical support and capacity building to foster technology transfer for low carbon development and climate resilience building and to facilitate investments and access to finance in the region. By supporting Asia-Pacific countries in defining and implementing NAMAs and NAPAs, the project will encourage long term growth in terms of transfer and deployment of climate technologies both at national and regional levels.

2.2. Global significance

9. Recognizing the crucial role that technology development and transfer must play in addressing the challenges posed by climate change, and taking advantage of the development opportunities offered by climate change for ESTs, Parties to the United Nations Framework Convention on Climate Change (UNFCCC) agreed on the need to promote, facilitate and finance the transfer of environmentally sound technologies (ESTs) and know-how to developing nations, and to assist those developing countries vulnerable to climate change in meeting the costs of adaptation.

10. In this regard, the "Pilot Asia-pacific Climate Technology Network and Finance Centre" (CTNFC) - a regional Global Environment Facility (GEF) project jointly implemented by UNEP and ADB - aims at supporting the development of low carbon and climate resilient societies in Asia and the Pacific by providing technical assistance and facilitating investments to public and private sector with a view to fostering climate technology transfer.

11. Appropriate policies and mechanisms will need to be strengthened to enable the establishment of a green market place in the region and to develop the capacity of countries to resist to climate change impacts. The project definitely has a global significance as ESTs provide a shift in terms of environment, social and economic development approaches that are consistent with the goals of global environment conventions and sustainable development principles.

12. In terms of global and local environment benefits, the implementation of this project can result in significant cumulative net Greenhouse Gas (GHG) emission reductions, provided that successful demonstration projects can be replicated and best practices are

widely deployed in the region and abroad. The CTNFC pilot in Asia-Pacific could lead to a total of 13,457,309 tCO2e emissions reductions over 10 years in Asia-Pacific; 9,891,958 tCO2e from investments in energy efficiency, 1,839,600 tCO2e from investments in renewable energy and 645,000 tCO2e from investments in sustainable transport solutions.

13. In terms of local benefits, the project offers many development opportunities for rural and urban communities in Asia-Pacific:

- Energy-Related Opportunities: Primary energy demand in Asia and the Pacific is projected to increase from 4,025 MTOE to 7,215 MTOE in 2030[2]. The project will lead to the adoption of more sustainable energy solutions on both the supply and demand sides while improving energy access and reducing fossil fuel dependency of the countries.

- Economic Opportunities: The project will contribute to economic growth by offering opportunities for the creation of new and innovative jobs in the production of goods and services for climate technology transfer. Moreover, improvements in energy access will also enable enterprise development in many sectors.

- Social Opportunities: It has already been widely recognized that for poor communities with no regular access to reliable energy services, enhanced electrification or the availability of clean fuels based on renewable sources of energy could reduce poverty, improve health conditions and increase standards of living. Moreover, improving climate resilience will directly contribute to the improvement of living conditions of the poor who are the most vulnerable to climate change impacts such as extreme weather events, increased water stress and sea level rise.

- Technical Opportunities: Technical skills will be strengthened in the field of climate change technologies and policy mechanisms; this will be achieved through North-South cooperation and South-South cooperation based on knowledge sharing, best practice application and technology transfer.

2.3. Threats, root causes and barrier analysis

2.3.1 Threats, and root causes

2.3.1.1 Economic threats

Economic challenges, energy consumption and climate change

14. In Asia-Pacific, a major challenge for the region has been to ensure an economic growth that spurs development. Between 1990 and 2008, the region's aggregate real GDP nearly doubled to $17.7 trillion and it is not currently far behind the aggregate real GDP of

[2] For BAU Trend, Energy outlook for Asia and the Pacific, ADB, APEC, 2009

Europe[3]. Within Asia and the Pacific, the highest growth rates in 2008 were achieved by the middle-income economies, at 6.9%. The low-income economies reached 5.7%, while the high-income economies only managed a modest 0.8% increase. China has been one of the fastest growers, even though its rate dropped in 2008 – to 9%[3]. Current and forecasted GDP's of different sub regions in Asia-Pacific are shown in the figure below:

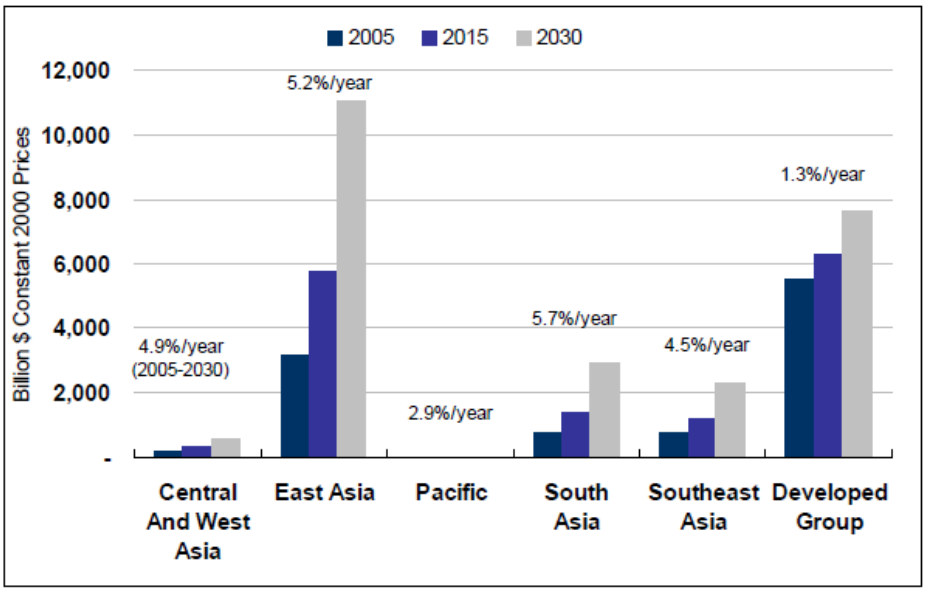


Figure 1 : GDP in Asia and the Pacific by subregion (2005-2030)[4]

15. Economic growth and population growth are the main drivers of energy consumption and energy is by far the largest contributor of GHG emissions in the region[5]. The link between GHG emissions and climate change has been established in the Fourth Assessment Report of the IPCC concluded: "Most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse-gas concentrations". Thus, confirming the broad acceptance by scientists of the link between GHG emissions and global climate change.

16. Moreover, the Stern Review[6] demonstrated that an unstable climate will undermine the necessary conditions for economic growth in both the developed and developing countries. This means that countries following an environmentally unsustainable development path will threaten their own economic growth by generating climate change. In order to break this vicious circle, it is imperative to address climate change issues in an

[3] Statistical yearbook, ESCAP, 2009
[4] IEEJ Energy Journal Vol 5, No.2, 2010
[5] Without considering forestry and land use change
[6] The Stern review on the economics of climate change, 2006

integrated manner: reducing GHG emissions while building climate resilience to cope with the vulnerability of climate change consequences.

17. From 2000 to 2007, global energy consumption expanded about 1.1 per cent, while in Asia-Pacific, energy consumption increased by 2.6 per cent[7]. This growth in energy consumption is likely to continue. As of 2007, annual per capita energy consumption in Asia-Pacific was equivalent to 862 kilograms of oil equivalent (kgoe) while the world average was equivalent to 1,214. It should be noted though that the energy sector in most parts of the region is struggling hard to meet the rapid growth in demand. Primary energy demand in Asia and the Pacific is projected to grow 2.4 per cent year, a faster rate than the world average[8]. Although parts of this region have relatively abundant sources of renewable energy, a significant share of it is untapped due to various physical and economic factors.

18. Aside from the energy consumption growth led by economic growth and population growth; industrialization and intensive agriculture are also important sources of GHG emissions which must be addressed in both their mitigation and adaptation aspects. In Asia-Pacific and more specifically for East Asia, sustaining economic growth without compromising the environment is the greatest challenge facing over the next two decades.

Challenges of Agriculture, forestry and land use change

19. GHG emissions from deforestation and land use change account for as much as 25% of the global total, with the majority of those emissions coming from deforestation in tropical and sub-tropical developing countries (IPCC 2007c). In Southeast Asia, the percentage is much greater, topping to 80% in Indonesia, where the deforestation rate is high, and the destruction of peat forests contributes disproportionately to emissions (PEACE 2007; Hooijer et al. 2006). Southeast Asia's current total peatland CO2 emissions of 2,000 Mt/year—nearly 90% coming from Indonesia—equals to almost 8% of global emissions from fossil fuel burning (Hooijer et al. 2006). In other countries of the region where forest cover is still extensive, such as Papua New Guinea and the Solomon Islands, there are opportunities to prevent the rapid deforestation experienced by Southeast Asian countries, and thereby avoid significant future emissions.

[7] International Energy Agency; World Bank, World Development; World Population Prospects: The 2008 Revision Population Database. Online database, accessed on 10 September 2009.
[8] Energy outlook for Asia and the Pacific, Asia-Pacific Economic Cooperation and ADB, October, 2009, Page 7

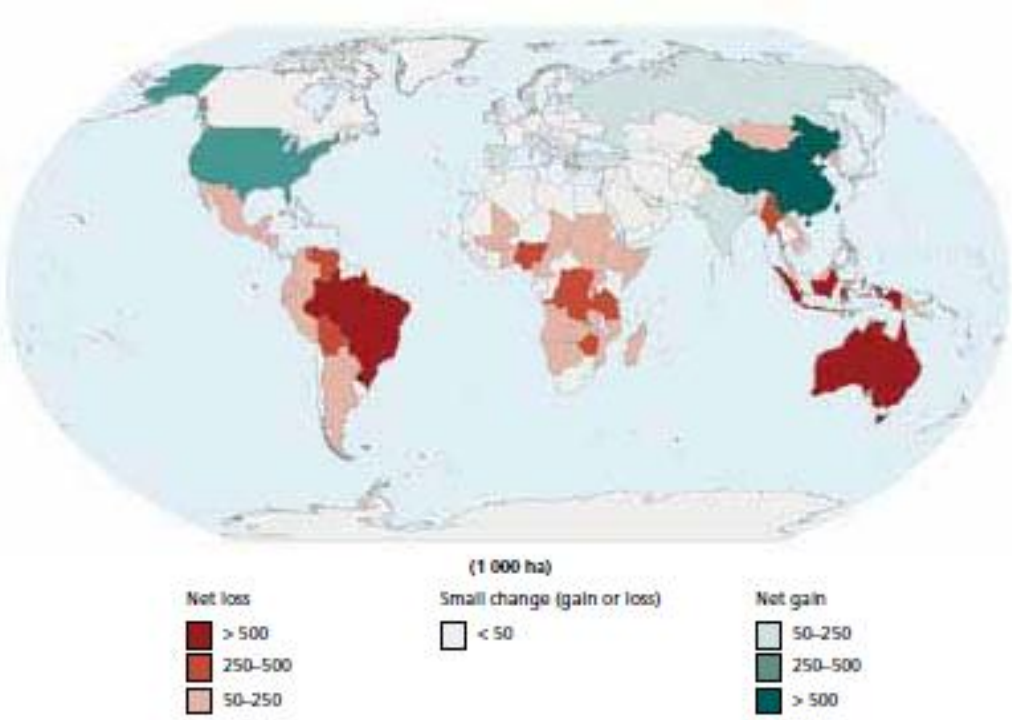


Figure 2 : Annual change in forest area by country, 1990-2010[9]

20. During the next half century, urbanization within 30 km of the Asian coastline is arguably one of the most significant demographic and geographic changes to be expected. Cities need food & beverage products, which are typically produced by farmers in the rural areas. Rural areas will thus increasingly be subjected to deforestation for the introduction of intensive agriculture practices to meet the increasing demand. The intensive agricultural production methods will increase the amounts of nitrogen and methane emitted by cattle and will eventually lead to decreased crop yields due to soil degradation as the result of the increasing number of intense mono-cultures and increasing variability of weather patterns. Related land and forest degradation will affect some vital ecosystem services.

21. Indonesia and Malaysia for example, are the largest producers of palm oil producing 85% of the world's production. This industry is becoming more and more important as it feeds the worldwide food processing industry in palm oil. Besides the negative impact of intensive agriculture and mono-cultures on crop yields, the intense production of palm oil also generates alarming effects on biodiversity due to mainly to deforestation (i.e. the native orangutans are disappearing due to the growth of palm plantations[10] and the most pessimistic estimations predict the disappearance of wild orangutans by 2020).

22. Moreover, the water crisis is expected to worsen in the coming years due to climate change. Areas such as Northeast China and the flood-prone river deltas of Bangladesh and

[9] Global Forest resources assessment 2010, FAO
[10] The Economics of Ecosystems and Biodiversity (TEEB) study is a global initiative to highlight the economic benefits of biodiversity; www.teebweb.org

Vietnam are getting more and more prone to severe land degradation and soil loss. In this context and considering the increasing pressure from fast population growth and urbanization, the risk of hunger is expected to remain extremely high in many developing countries of the region. Furthermore, in the least developed countries (LDC)[11] in which agriculture often is the main economic driver, this increasing water crisis combined with the increase of intensive agricultural practices will threaten not only food security, but also the national economies. Sustainable agriculture practices and processes need to be promoted and implemented in Asia-Pacific to mitigate and adapt to climate change. This is essential to ensure food security, economic productivity, biodiversity preservation and to some extent national security.

Challenges of Technology Innovation and Transfer

23. Technological innovation is required both to mitigate climate change (e.g. to make technologies and services more efficient in terms of fossil fuel use and develop alternative energy sources) and adapt to its effects (e.g. developing effective techniques and technologies for climate resilient agriculture, for sustainable water management…). Without technological innovation, the transition to low carbon and climate resilient development will not be possible. The biggest hurdle in developing new technologies is securing funding for the development stage. And it is also often hindered by the lack of qualified scientists and technicians. In this context, both financial and technical assistance is clearly needed to ensure the development of new climate change mitigation and adaptation technologies.

24. Technology transfer of low carbon technologies from developed countries to developing countries is a top priority. Despite the rapid growth in Asia and the Pacific, many countries in the region cannot afford the more advanced technologies and technology transfer is often limited due to inappropriate conditionalities and prohibitive prices. In other words, there is a limit to what developing countries can do to bring their countries to adopt and implement the low carbon and climate resilient development path. Therefore, international cooperation with a view to facilitate climate technology transfer to developing countries is critical to tackle the climate change challenge.

2.3.1.2 Social threats

Challenges of poverty alleviation

25. Approximately two thirds of the world's poor live in the Asia-Pacific region. This slice of the population is the most vulnerable to the direct impacts of climate change (e.g. sea level rise and emerging pattern of higher intensity and more frequent cyclones and typhoons) and to its indirect consequences (e.g. water shortage, crop yields decrease…).

[11] The 14 LDC in Asia-Pacific are Afghanistan, Bangladesh, Bhutan, Cambodia, Kiribati, Lao People's Democratic Republic, Myanmar, Nepal, Samoa, Solomon Islands, Timor-Leste, Tuvalu, Vanuatu, Yemen (as listed by the UN office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States.

While adaptation technologies would provide them with more secure livelihoods, improving energy production, energy use and energy access would enable poor people to carry out more productive activities and services, providing them with opportunities to increase their income. Poverty alleviation could really benefit from energy services, indeed, while energy services alone are not sufficient to eradicate poverty, they are essential in creating the conditions for economic growth and improving social equity.

26. When addressing the issue of energy access,, issues at stake do not only include providing access to modern energy services to rural communities but also improving the quality of energy used by the poor. Inefficient use of biomass (1.7 billion people still rely on traditional biomass) and poor quality cooking stoves foster health issues as well as the degradation of socio-economic and environmental conditions of communities. A combination of climate change adaptation and sustainable energy access can play a key role in the poverty alleviation in Asia-Pacific. Both approaches shall be adopted in order to cope with the vulnerability of the poor and provide them with better conditions of living.

Challenges of population growth

27. According to the 2008 Statistical Yearbook for Asia and the Pacific, the population growth rate in the region dropped to 1.1 per cent in 2007 from more than 1.5 percent between 1990 and 1995. Despite the slowing population growth, Asia still accounts for more than 60 per cent of the global population and is home to some of the most densely populated places in the world. The projected population levels of Asia and the Pacific for 2005-2030 are illustrated in the figure below:

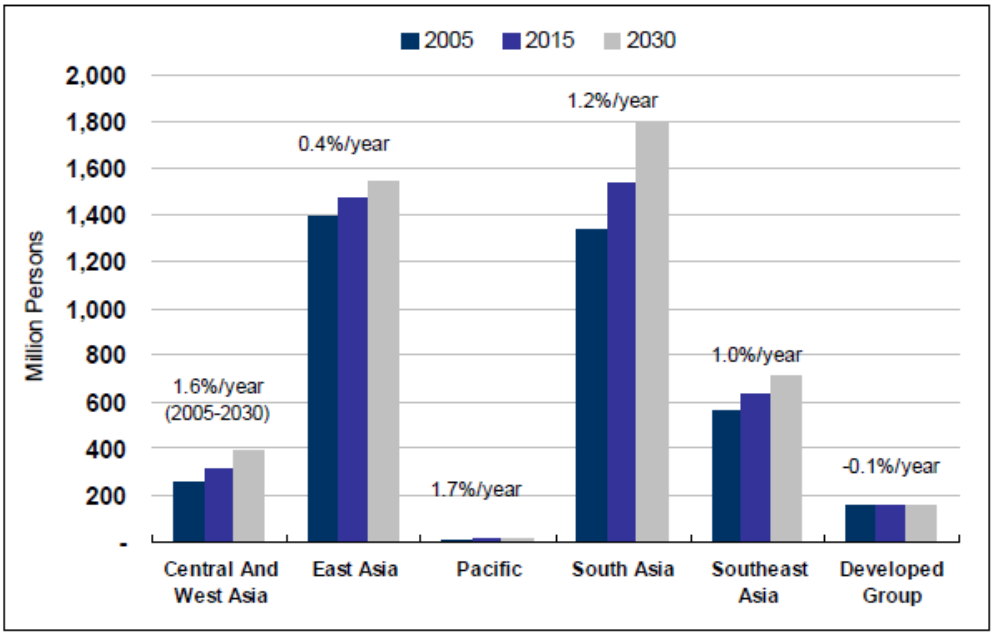


Figure 3: Population in Asia and the Pacific by subregion (2005-2030)[12]

[12] IEEJ Energy Journal Vol 5, No.2, 2010

28. If countries do not take the necessary steps to switch to low carbon and climate resilient development paths and do not receive appropriate financial and technical support to do so, population growth will definitely lead to an increase in GHG emissions levels in the region and consequently accelerate climate change. Indeed, energy needs will definitely increase with population growth particularly in urban areas and as a result GHG emissions will also increase. Across the region, however, the energy consumption per capita varies considerably. Countries such as Australia or New Zealand consume almost 100 times more electricity per capita than Bangladesh, Cambodia or Myanmar[13]. With economic development in developing countries, the energy consumption per capita will rise with the large population base.While population growth is inevitable, minimizing its contribution to climate change is possible but only if countries - with support from the international community - adopt and implement low carbon development strategies.

2.3.1.3 Environmental threats

Ecosystem degradation

29. The ecosystems within the Asia-Pacific region represent a key asset for the world at local, regional and international levels. They contribute directly and substantially to regional economies by providing food and water to sustain livelihoods amongst a range of other natural resources and ecosystem services. With the projected growth both in terms of population and economy, ecosystems in the region will face increasing pressure from human activities as well as from related deforestation and land use change. This will reduce the resilience of ecosystems to the effects of climate change and increase their vulnerability. In particular, climate change will seriously affect coral reefs, mangroves, wetlands and forests.

30. The Pacific Islands hold the largest number of coral reefs worldwide. These coral reefs provide countries with a natural defense for beach erosion, essential habitats for fish species, and major tourist attractions. Scientific studies have shown the high sensitivity of coral reefs to temperature variations and thus to climate change. .Mangroves do also provide essential habitat for the Asia-Pacific coastal biodiversity, while protecting the shoreline and providing key resources for the poor. The scientific community sees relative sea-level rise due to climate change as the greatest threat to mangroves.

31. Similarly, the overall impact of human activities combined with the effects of climate change is expected to have severe consequences on the forest ecosystems of the region. For example, increasing intensity and spread of forest fires in the region have been observed in the past 20 years, largely attributed to the increase in temperature and decrease in precipitation coupled with rising intensity of land uses, especially in South-East Asia (e.g. the 1997-1998 El Niño Southern Oscillation (ENSO) events in Indonesia triggered forest

[13] Energy Security and Sustainable Development in Asia and the Pacific, United Nations Economic and Social Commission for Asia and the Pacific, April, 2008, Page 11.

and brush fires in 9,7 million hectares and led to serious consequences for the poor populations dependent upon these ecosystems).

32. Wetlands are also being threatened by temperature increase. The precipitation decline and droughts in most delta regions of Pakistan, Bangladesh and India have resulted in the drying up of wetlands and severe degradation of ecosystems. In the end, only tailored ecosystem management practices and sustainable land management practices could provide conditions that would improve ecosystem resilience and provide better strategies to tackle climate change in the region by offsetting the potential decrease of natural carbon storage and grassland productivity.

Scarce water resources

33. Managing water resources to ensure a secure supply to growing populations is already a major challenge in many areas of the Asia-Pacific region. Maintaining water security is especially a key priority for the poor rural people of the region, and climate change impacts on water resources may have a wide array of subsequent negative consequences. Climate change is in fact expected to further modify the availability of water resources, driven by seasonal decreases in rainfall and runoff in South and Southeast Asia and increases in runoff in other areas, particularly the Pacific Islands. Melting glaciers in the Himalayas are projected to lead to increased flooding and rock avalanches; and to reduce fresh water resources within the next two to three decades - as it will lead to decreased river flows as the glaciers recede.

34. Freshwater availability in Central, South, East and Southeast Asia, particularly in large river basins, is projected to decrease due to climate change which, along with population growth and increasing demand arising from higher standards of living, could adversely affect more than a billion of people by the 2050s. The expansion of areas under severe water stress will be one of the most pressing and urgent environmental problems in the region, especially in South and Southeast Asia, as the number of rural populations living under serious water stress is expected to increase substantially in absolute terms.

Global and regional environmental issues

35. In the Asia-Pacific region, there are many environmental issues cutting across national boundaries e.g. the degradation and unsustainable management of middle and upper watersheds of the Mekong river affects freshwater quality and availability, the productivity of fisheries, and hydrological conditions in downstream riparian countries such as Cambodia and Vietnam. Transboundary acid rain in Northeast Asia is another major cross cutting environmental issue for the countries in the region. Tackling regional environmental issues requires close cooperation across national boundaries.

36. If no action is taken towards developing a low carbon and climate resilient future, strains on the environment will worsen both in the region and globally. A low carbon development path would not only reduce GHG emissions and improve local and regional

environmental conditions but increase the amount of available renewable energy and clean energy. This, in turn, could increase national energy security while solid climate change resilience would improve the livelihoods of the population.

2.3.2 Barrier analysis

2.3.2.1 Financial Barriers

37. The financial barriers have been identified as the key obstacles to public and private sector investments in climate change technologies such as renewable energy, energy-efficient technologies and adaptation technologies and techniques in Asia-Pacific. The main barriers are as follows:

a. Lack of dedicated equity funding sources, given that the capital requirements for significant emission reductions in this region are so important that only a growing market for implementing clean energy solutions with private sector participation could really have an impact.

b. Insufficiency of financial resources for low-carbon and adaptation projects.

c. Lack of dedicated financing tools or mechanims within financial institutions in the region to support clean energy technologies or low-carbon emission and climate resilience strategies.

2.3.2.2 Institutional and Policy Barriers

38. Institutional and policy barriers are of special significance as they limit the ability of climate change mitigation and adaptation technologies or best practices to attract the needed investments. In fact, the lack of a level playing field in terms of policies and institutional mechanisms (e.g. many countries still use fossil fuel subsidies) make it difficult for ESTs to compete with conventional non resource efficient technologies (e.g. fossil fuel-based technologies). Some of the key institutional and policy barriers identified during the project preparatory phase are presented as follows:

a. Insufficient coordination between government institutions to implement low-carbon and adaptation policies.

b. Lack of institutional mechanisms that are financially sustainable and provide the services to both the Government and private sector.

c. Absence of a holistic approach and policy packages for low carbon technology development.

d. Lack of policy and institutional mechanisms that allow the ecosystems to be sustainably utilized.

2.3.2.3 Technical Barriers

39. There is a need to ensure the credibility of climate change technologies and build local capacities to operate, maintain, design, and build those technologies, as well as to develop

and implement country driven ESTs transfer policies, programs and demonstration projects. Some of the key technical barriers identified are presented as follows:

a. Insufficient technical capacity to develop adapted climate mitigation and adaptation actions.

b. Insufficient technical capacity to design and introduce master plans to mobilize project investors for tackling climate change.

c. Lack of expertise to develop bankable proposals; a barrier that has to be rapidly overcome in order to build a pipeline of projects that would guarantee to regional and local financial institutions that a market does exist and, as a result, encourage them to invest in climate change technologies.

2.3.2.4 Information Barriers

40. Significant information barriers to climate technology transfer in Asia-Pacific were also identified during the project preparatory phase and are stated below:

a. Lack of awareness from national government ministries and local authorities as well as from the private sector regarding the economic development opportunities that combating climate change offers (e.g. benefits of energy efficiency).

b. Lack of information on lessons and best practices related to climate technology transfer especially on climate change adaptation solutions and best practice for climate resilience building.

2.4. Institutional, Sectoral and Policy context

2.4.1. *Institutional mechanisms*

41. Institutional mechanisms for coordinating national approaches on climate change differ strongly between countries in the region as countries differ from each other strongly as illustrated by the examples below. Generally, the setting up and implementation of a low emissions and climate resilient strategy are coordinated either by National Sustainable Development Councils or by National Climate Change Councils, with implementation delegated to energy, environment, and other line ministries. However, in some countries such inter-sectoral coordination platforms have not yet been established and in many countries, these mechanisms have only been recently established and their effectiveness and influence has often been very limited to date.

42. In Japan, immediately after the adoption of the Kyoto Protocol in December 1997, the government set up the Global Warming Headquarters (GWH), chaired by the Prime Minister including the representation of all line Ministries. The GWH drew up Guidelines on Measures to Prevent Global Warming in 1998, which allocated responsibilities to each sector to reach specific emission reduction targets, backed by the Climate Change Policy Law. Moreover, the Prime Minister's office established an Advisory Panel on Climate Change in February 2008 to discuss various issues regarding the pathways to develop a

LCE and Japan's contribution to the global community[14]. While the guidelines clearly refer to activities which will assist in moving Japan towards a low carbon development path, this is not a specific mandate or objective of the GWH.

43. In the case of South Korea, after signing the Kyoto Protocol in 1997, the government established an Inter-Ministerial Committee (IMC) on the UNFCCC in 1998, chaired by the Prime Minister, supported by five task forces and an expert pool drawn from nine Research Institutes. This arrangement was expanded in 2001 to include a new task force on general coordination, headed by the Office for Policy Coordination. Separated from and working independently of the IMC, a Presidential Commission on Sustainable Development was established in 2000. The new government in 2007 has emphasized that the climate change crisis can be converted into an opportunity for green economic growth. So far, however, there has been no change in national institutional arrangements related to climate change[15].

44. In Lao PDR, the Department of Environment (DoE) within the Water Resources and Environment Administration (WREA) has been appointed as the national focal point for climate change actions and initiatives. In 2008 the National Steering Committee on Climate Change (NSCCC) was established, chaired by the Deputy Prime Minister and with the Director General of DoE as the secretary and with members from all concerned sectors. NSCCC established seven Technical Working Groups with representatives from various line agencies. The main task of the Technical Working Groups is to study and assess the impacts of climate change on the issues under their respective responsibility for the period 2009 to 2020. The DoE, which acts as the secretariat to the NSCCC, facilitates and coordinates the work of the Technical Working Groups.

45. In the Philippines, the Climate Change Commission (CCC) has been established under the Office of the President in 2010. It is an independent and autonomous body that has the same status as that of a national government agency. Attached to the Office of the President, CCC is the sole policymaking body of the government tasked to coordinate, monitor and evaluate the programs and action plans of the government relating to climate change.

46. In Vietnam, the Ministry of Natural Resources and Environment (MNRE) has been assigned by the Government of Viet Nam to be the National Focal Agency for implementing the UNFCCC and Kyoto Protocol and is the managing government institution for all climate change activities. Other ministries are involved in climate change activities but up to now, there is not a national platform for institutionalizing Climate Change in Viet Nam.

2.4.2. Laws, regulations, rules and standards

2.4.2.1.Laws/Legislation

[14] IGES White Paper, Chapter 8: Institutional Changes in Asia in Response to Climate Change, 21 June 2008, Page190
[15] IGES White Paper, Chapter 8: Institutional Changes in Asia in Response to Climate Change , 21 June 2008, Page 191

47. Many Asia-Pacific countries have already revised and amended some of their laws/legislation or issued new laws to promote renewable energy and energy efficiency but overall there is a need to establish more laws to enable countries to establish low emission and climate resilient economies. In fact, no country in the region has enacted revised legislations that enable them to shift from their current economic development path to a low carbon and climate resilient development path.

48. Japan's actions provide a good example of promoting laws for low carbon development. The Law Concerning the Promotion of the Measures to Cope with Global Warming (or Climate Change Policy Law) enacted in 1998, was prepared for the Kyoto Protocol Target Achievement Plan, and was subsequently approved by the Cabinet in 2005. This plan not only sets GHG reduction target of 6 per cent under the Kyoto Protocol but also pursues long-term, continuous emissions reduction. The country's Climate Change Policy Law supplements the 1993 Basic Environment Law, which sets as a national goal the establishment of sustainable society. The enabling legislation, however, focuses on the short-term objectives and does not stipulate a legal requirement to achieve a low carbon economy and no clear mention of climate resilience is stipulated.

49. In other countries, we can highlight some major steps that have been taken concerning the energy legislation - as revising the energy legislation is absolutely critical to ensure low carbon development. China, for example, has enacted two significant laws pertaining to energy development, the Renewable Energy law, which took effect in 2006, and the Energy Conservation Law, which became effective in 2008. However, China still lacks a complete set of energy laws for comprehensive energy deployment to guarantee energy security, energy supply and energy trade while fostering the transition to a Low Carbon Economy (LCE).

50. The Pacific Islands Greenhouse Gas Abatement through Renewable Energy Programme (PIGGAREP) is working to remove barriers to using renewable energy in Cook Islands, Fiji, Kiribati, Nauru, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu. Some of the countries with higher renewable energy targets in the region include Tuvalu, which has a target of 100% renewable energy use by the year 2020, and Niue, which also has a 100% renewable energy economy target.

51. The legislative situation regarding climate change adaptation is more difficult to evaluate and requires a deeper analysis to accurately draw the line of adaptation regulatory frameworks and assess related needs.

2.4.2.2.Regulations

52. Asia Pacific has become the fastest growing market for climate change related investment in the world. Countries in the region acknowledge the critical importance that their national policies continue to play for the successful achievement of global emission reductions. Many have made ambitious commitments to reduce greenhouse gas emissions in the Copenhagen Accord. Individual governments are therefore striving to achieve stable

regulatory frameworks in order to stimulate long term investment and foster local industries. Most of these recently established regulatory frameworks are targeting the energy sector as showed in the few examples that follow.

53. China's Renewable Energy Law in 2005, amended in December 2009, promotes renewables through free grid connection and requiring the grid to take all power generated by a clean energy project. These regulations are backed up by a regulatory framework comprising national, regional and local policies that provides for renewable energy targets for local governments, preferential tax treatment and access to cheap credit for clean energy developers. It also provides preferential tariffs for wind, biomass, hydropower and solar power.

54. India's existing energy policy and regulatory framework, made up of the Energy Conservation Act 2001, India Electricity Act 2003, the 2005 National Electricity Policy and India's Eleventh Five-Year Plan (2007-2012), provides for the promotion of renewable energy sources. The Ministry of New and Renewable Energy also offers a number of centralised fiscal incentives to renewable energy projects and India has implemented a system of feed-in tariffs and generation-based incentives for renewable energy. The Bureau of Energy Efficiency also established the Action Plan for Energy Efficiency and under the Energy Conservation Act 2001, India established the legal and institutional frameworks for both the Central and State Indian governments to promote energy efficiency throughout the country.

55. Thailand has developed and is in the process of implementing a 15 year National Alternative Energy Development Plan (2008–2022) which aims to increase the share of alternative energy to 20 per cent of total energy consumption by 2022 (from a baseline of less than one per cent in 2007). The measures presented under the plan include the introduction of a new feed-in tariff scheme for the purchase of power from renewable energy projects and incentives (such as direct financial support) for investments in renewable projects or technology. Thailand is also committed to its Energy Conservation Plan 2008–2011 which aims to cut energy consumption by 10.8 per cent of the country's total energy demand in 2011. The plan sets out targets for industry and transport, and equipment and appliance standards.

56. While Vietnam has not implemented any measures specifically directed at meeting international greenhouse gas reduction commitments, several steps have been taken in relation to renewable energy. The Renewable Energy Action Plan serves as the framework for development of Vietnam's policies regarding renewable energy. To encourage renewable energy projects, Vietnam has introduced two incentives, the Regulation of Avoided Cost Tariff and Standardised Power Purchase Agreement for Small Renewable Energy Power Plants (SPPA Regulation) and the Avoided Cost Tariff for 2009 (ACT Regulation).

57. In Indonesia, the National Energy Policy - Presidential Regulation No. 5 of 2006 includes targets for an energy mix by 2020 which includes at least 15 per cent of national

energy consumption to be generated from renewable energy, including biofuel, geothermal and other renewable energy sources. Law No 30 of 2009 concerning Electricity and subsequent implementing regulations have to some extent increased the opportunity for private investment in this sector, encouraging foreign investment in renewable power projects.

58. While some important steps are being taken in the energy sector, there is definitely a need to promote improved regulatory frameworks in all sectors with a view to shift to low carbon and climate resilient development paths in Asia-Pacific countries.

2.4.2.3.Rules and standards

59. Many countries in Asia-Pacific still lack the necessary rules and standards to shift their economies to low carbon and climate resilient development paths. Standards need to be improved to make the law more effective. Among the rules and standards needed for the transition to a low carbon economy and climate resilience society there are for example: emission standards and corresponding criteria for various industries; and criteria for the approval of construction projects in many industrial sectors (iron and steel, metallurgy, building materials, power generation and lighting, fuels and chemicals).

2.4.3. Policies

60. Tailored energy policies are extremely important to lead countries towards low carbon development. However, energy policies also strongly affect a country's energy security, economic development and international trade patterns, and in turn, influence the standard of living. These policies are generally dominated by resource exploration and production issues, depending of course on each country's available energy resources. The relatively low status accorded to climate change in energy policies can also be related to natural resource endowments (e.g. India has large coal reserves - estimated to be about 234 billion tons in 2002 - and therefore has a carbon-intensive energy system, similarly China also has a carbon-intensive energy structure, with coal accounted for 66-75 per cent of primary energy consumption from 1980 to 2006). The reversal of policies with a view to improve energy security, such as switching from oil to coal in Indonesia and Vietnam, and from forest protection to deforestation for the production of biofuels in Malaysia and Indonesia, are illustrations of how easily a country's strategic energy policy decisions can increase GHG emissions (i.e Indonesia's energy policy to rapidly expand coal-fired power generation will increase the country's GHG emissions from coal by 20 times between 2005 and 2025[16]).

61. With differing energy resources and production bases, countries in Asia-Pacific need to adopt different energy policies to achieve a balance between energy demand and economic development. For example, coal will remain China's major primary energy source for a long time. The country is in a stage of rapid industrialization and urbanization, with two thirds of its primary energy needs met with coal - about 70% of its electricity

[16] Ibid.

comes from coal-fired plants. Its large-scale infrastructure construction needs enormous quantities of steel, cement and electric power. Although China continues to optimize its energy supply structure, it has abundant coal, little petroleum and inadequate natural gas. Therefore, the challenge is to design appropriate energy policies that are neutral enough to promote economic development using the country's domestic energy resources, while transitioning to a low carbon development path.

62. Regarding adaptation policies, national communications to the UNFCCC reveal that there's limited attention given to adaptation. Very few countries have national policy frameworks for adaptation programs of actions. The measures to date largely include policy documents such as national adaptation programmes of action (NAPA) by least developed countries (LDC), disaster management plans, and enhanced research on adaptation in agriculture. The limited attention devoted to adaptation is a cause of concern given Asia's vulnerability to climate impacts.

Differences among developing countries in the Asia-Pacific region

63. There are some major differences among the developing countries in the Asia-Pacific region. In addition to historical factors, the premise of common but differentiated responsibilities also lies with a nation's ability to address global environmental challenges, such as climate change. Developing countries understand that the ability for countries at the stage of rapid industrialization like China and India, with high rates of economic growth, technological capacity and numerous natural resources, is very different than the ability of say a least developed country such as Afghanistan, Lao PDR or Nepal.

64. For countries at the stage of rapid industrialization, developing a low carbon economy presents clear opportunities (i.e. key sectors can gain competitiveness through energy savings and pollution reductions). But in these countries the transition to a low carbon economy is challenged by rapid economic growth, increasing employment pressure, a coal dominated energy structure, limited capacities for technology development and inadequate institutional mechanisms and policies. On the other hand, the failure to embrace a low carbon future would potentially put these countries at risk of being unsustainable and in an "either/or" position between economic growth and developing a low carbon growth path. Therefore, the countries of the region at the stage of rapid industrialization must come up with a low carbon development approach that would be in line with both their long-term and short-term development objectives and interests.

65. Least Developed Countries tend to suffer from low domestic savings that do not meet their investment needs. Many of them also are politically unstable, have weak governance and are torn by conflicts which have damaged infrastructure, diverted budgetary resources and deterred foreign investment. Least developed countries also tend to have limited internal markets and fewer trade opportunities. In addition, a good portion of them have been seriously affected by environmental degradation and other biophysical barriers that not only have weakened their access to natural resources but also undermined human well-being. The high proportion of traditional fuels in the energy consumption of least

developed countries signals their inability to provide access to modern energy services - a major constraint to their economic and social development. Therefore, the least developed countries should highly promote the increase of domestic savings to support energy infrastructure investment requirements, strengthen national capacities for ecosystem management and energy planning to enhance the sustainability of development and growth.

2.4.4. Sectoral analysis

2.4.4.1.The IT and mobile communication sector

66. The industry is in a period of significant long term growth in Asia, the GESI smart 2020 report found that the IT sector - as a solution provider to other sectors - could reduce global emission by significant amount (5.8 Gt out of 52 Gt businesses as usual in 2020 of total emissions)[17] through enabling reduction to other sectors,. The sector needs to balance the carbon intensity of its production with the efficiencies its products can bring to markets. This sector is to be kept abreast of developments notably in energy efficiency.

2.4.4.2.The transport sector

67. According to McKinsey's business as usual scenario, greenhouse gas emissions in the global transport sector are set to grow about 2.5% per year reaching 11.4 Gt CO2 by 2030. In absolute terms, the transport sector's estimated 18.7 Gt CO2 in 2030[18]. In Asia-Pacific, The transport sector's CO2 emissions will increase at the fastest annual growth rate, 2.8% through 2030. With this growth, the transport sector's share of total CO2 emissions will increase from 12.5% in 2005 to 13.7% in 2030[19]. Despite the fast growth in final energy demand, the transport sector's share will remain relatively small (19.7% in 2030 from 16.6% in 2005). By contrast, the other sectors will maintain the largest share (39.0% in 2030 from 40.2% in 2005). However, urbanization in Asia-Pacific will lead to robust growth in energy demand. Energy demand for urban transport is expected to grow in particular, due to rising vehicle stocks and the difficulty in shifting urban lifestyles away from vehicle dependence. Challenges posed by rising urban transport energy demand need to be overcome by bringing together the efforts of local and central government. Coordination of different policy goals, including those for energy, transport, urban planning, and construction, are essential to minimize the impacts on energy security and the environment.

2.4.4.3.The Energy sector

68. The energy sector includes upstream energy exploration and production, and downstream refining, power generation transmission and distribution to customers. The IEA's reference scenario projects a 40% rise in global primary energy demand from 2007-

[17] Unlocking Asia's potential, January 2011, ASrla
[18] McKinsey & Company (2009):"Pathways to a low carbon economy" Version 2 of the world greenhouse cost abatement curve.
[19] Energy outlook for Asia and the Pacific, October 2009, ADB/APEC.

2030[20], assuming no change in government policies. China and India account for 53% of this demand rise, with additional demand accounted for by strong growth within ASEAN. The IEA concludes that "this is contributing to a refocusing of the global energy landscape towards Asia". Given the energy mix of Asia-Pacific energy industry's impacts on GHG emissions and economic development are extensive. Furthermore, Asia's energy sector has significant exposure to climate change risks as locations near major water bodies means that extreme weather may test structural stability. An Energy outlook of the region is further developed in the document.

2.4.4.4.The Industrial sector

69. Some of the fastest growing industries in Asian and Pacific developing countries are, in the absence of high corporate environmental performance, limited resource efficiency standards and effective national pollution control policies, likely to produce relatively high toxic waste and GHG emissions. Rapidly expanding industries also include industries which are known to be highly energy and water-intensive. There is insufficient evidence that industrial parks have lived up to their potential of minimizing pollution by implementing measures and adopting techniques and technologies to foster resource efficiency (i.e. providing cost-effective waste treatment and pollution control services). GHG emissions and hazardous waste production, management and trade are a growing challenge. Fast-growing energy intensive industrial subsectors include the production of transport equipment, crude steel, chemicals, petroleum and rubber and plastic products.

70. Water is an increasingly scarce commodity in many countries, but little, if any, attention has been paid to the intensity of water use, or water productivity in the industrial sector. Viet Nam, Georgia, Mongolia and water stressed Central Asian countries (with the exception of Turkmenistan), have adopted patterns of industrial water use in which they use more water to produce one dollar of GDP from industry than most other countries of the region. The production of transport equipment for example involves relatively water-intensive processes.

71. Cleaner production initiatives, along with corporate rating and disclosure programmes and the application of economic instruments have been highly successful in reducing pollution in localized areas. However, making the patterns of industrial development more environmentally sustainable requires industrial sector planning and investment promotion that takes into account the intensities of pollution and resource use, as well as risks to human health and natural-resource based livelihoods, especially in countries with limited capacity for pollution monitoring and control, and limited natural resource endowments.

72. Countries with, for example, limited water resources and pollution control capacity, can ill-afford to develop industrial sectors with high risks of water pollution, such as the food or chemicals industry. In most countries, the amount of SO2 emitted and industrial organic water pollution discharged for each dollar of GDP earned in 2000 was lower than in 1990. But these reductions in pollution intensity were not enough to reduce the total

[20] See the IEA's World Energy Outlook 2009 Fact Sheet at www.worldenergyoutlook.org

emissions of these pollutants. A few countries have made significant progress in reducing pollution intensities, while some countries are increasing the amount of pollution produced for every dollar of GDP earned. Central Asian countries are among the countries with the highest pollution intensities of the region.[21]

2.4.4.5.The Tourism sector

73. The world tourism organization (UNWTO) has determined that tourism is a primary source of foreign exchange earnings in 46 out of 50 of the world's Least Developed Countries (LDCs)[22]. Given the important number of LDCs in Asia-Pacific and the amount of touristic hotspots in the region, the tourism sector is a key economic growth contributor for the region. Moreover, Tourism has the potential to lift people out of poverty through the employment and entrepreneurial opportunities it provides. Furthermore, the tourism sector has the potential to make a substantial contribution to the achievement of, the United Nations Millenium Development Goals (UNWTO 2007c). This, however, requires that the sector adapts to climate change and reduces its contribution to climate change through the reduction of the overall environmental footprint of tourism.

74. Indeed, unabated climate change would increase the risks and costs substantially (IPCC 2007b) and so both mitigation and adaptation strategies are required immediately to limit the impact of climate change on the ability to achieve the UN Millennium Development Goals. Preferably, destinations, businesses, and tourism organizations should thus seek to address mitigation and adaptation simultaneously.

2.5. Stakeholder mapping and analysis

75. The participation of stakeholders will be solicited for different activities such as participating, benefiting and contributing to network meetings and technical capacity building workshops, conducting studies or assessments, or developing awareness raising and training materials. Below follows a non-exhaustive list of key stakeholders.

2.5.1. International level

76. With a view to foster North-South cooperation, some partnerships and synergies will be developed with international organizations, networks, and research centers such as:

- The International Energy Agency (IEA): For over a decade, the IEA has been providing analyses on the energy dimension of climate change and the energy implications of the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. The Agency's areas of expertise include emissions trading and the CDM (from international architecture to domestic implementation issues), the links between energy security and climate policy goals

[21] UNESCAP
[22] UNWTO 2007c, see also UNDP 2005; Hall 2007

and, the effects of policy uncertainty on investment, and sectoral approaches to emission reductions.

- Climate Technology Initiative - Private Financing Advisory Network (CTI-PFAN): CTI-PFAN is a multilateral, public-private partnership that operates to bridge the gap between investments and clean energy businesses. It identifies promising clean energy projects at an early stage and provides mentoring for development of a business plan, investment pitch, and growth strategy, significantly enhancing the possibility of financial closure.

- Renewable Energy Policy Network for the 21st century (REN21): REN21 convenes international multistakeholder leaders to enable a rapid global transition to renewable energy. REN21 promotes renewable energy to meet the needs of both industrialised and developing countries that are driven by climate change, energy security, development and poverty alleviation. The overarching goal of REN21 is the promotion of policies that will increase the wise use of renewable energy worldwide. In order to achieve this objective, REN21 encourages action in three areas: Policy, Advocacy, and Exchange.

- The International Renewable Energy Agency (IRENA): IRENA is a treaty level inter-governmental organisation with a goal of promoting the widespread and increased adoption and sustainable use of all forms of renewable energy. IRENA is a centre of excellence for renewable energy technology, and acts as a facilitator and catalyst, providing experience for practical applications and policies, offering support on all matters relating to renewable energy and helping countries to benefit from the efficient development and transfer of knowledge and technology.

- The Renewable Energy and Energy Efficiency Partnership (REEEP): REEEP 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. REEEP develops and supports policy-maker networks through initiatives such as the Energy Efficiency Coalition (EEC), the Sustainable Energy Regulation Network (SERN) and Renewable Energy and International Law (REIL) sub-networks.

- The Energy and Resources Institute (TERI): TERI is a research institute based in New Delhi focusing its research activities in the fields of energy, environment and sustainable development: (a) tackling issues of concern to Indian society, and the world at large, and develop innovative and cost effective solutions; (b) enhancing networking for sustainable interventions; (c) realizing potential for national and international leadership as a knowledge based agent of change in the fields of energy, environment, other natural resources and sustainable development; and (iv) inspiring and reaching out to diverse stakeholders for realising a shared vision of global sustainable development.

- International Climate Change Partnership (ICCP): ICCP is a global coalition of companies and trade associations from diverse industries committed to constructive and responsible participation in the international policy process concerning global climate change.

- The Climate Action Network (CAN): a worldwide network of over 600 Non-Governmental Organizations (NGOs) working to promote government and individual action to limit human-induced climate change to ecologically sustainable levels. CAN members work to achieve this goal through information exchange and the coordinated development of NGO strategy on international, regional, and national climate issues. CAN has seven regional offices which co-ordinate these efforts in Africa, Australia, Central and Eastern Europe, Western Europe, Latin America, North America, South Asia, and Southeast Asia. Climate Action Network's vision is to protect the atmosphere while allowing for sustainable and equitable development worldwide.

- The World Business Council for Sustainable Development (WBCSD): WBCSD is a CEO-led, global association of some 200 companies dealing exclusively with business and sustainable development. The Council provides a platform for companies to explore sustainable development, share knowledge, experiences and best practices, and to advocate business positions on these issues in a variety of forums, working with governments, non-governmental and intergovernmental organizations. Members are drawn from more than 30 countries and 20 major industrial sectors. The Council also benefits from a global network of some 60 national and regional business councils and regional partners.

- Other internationally recognized research institutes such as the UNEP Risoe Centre on Energy, Climate and Sustainable Development (URC), the UNEP World Conservation Monitoring Centre (UNEP-WCMC), GRID-Arendal, the Centre for Climate Change Economics and Policy (CCCEP), the Tyndal Centre for Climate Change Research, the World Resource Institute (WRI) or the Wuppertal Institute for Climate, Environment and Energy…

- UN agencies active in climate change and members of UN Energy as well as the UNFCCC Secretariat.

2.5.2. Regional level

2.5.2.1.Associations and economic communities

77. Regional associations have the potential to play a key role in lobbying and information dissemination at a very high level, reaching the policy and decision makers, sensitizing and mobilizing them for action on climate change:

- Association of Southeast Asian Nations (ASEAN): was established on 8 August 1967 in Bangkok, Thailand, with the signing of the ASEAN Declaration (Bangkok Declaration) by the Founding Fathers of ASEAN, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. As set out in the ASEAN Declaration, the aims and purposes of ASEAN are:

  a. To accelerate the economic growth, social progress and cultural development in the region through joint endeavors in the spirit of equality and partnership in order to strengthen the foundation for a prosperous and peaceful community of Southeast Asian Nations;

  b. To promote regional peace and stability through abiding respect for justice and the rule of law in the relationship among countries of the region and adherence to the principles of the United Nations Charter;

  c. To promote active collaboration and mutual assistance on matters of common interest in the economic, social, cultural, technical, scientific and administrative fields;

  d. To provide assistance to each other in the form of training and research facilities in the educational, professional, technical and administrative spheres;

  e. To collaborate more effectively for the greater utilization of their agriculture and industries, the expansion of their trade, including the study of the problems of international commodity trade, the improvement of their transportation and communications facilities and the raising of the living standards of their peoples;

  f. To promote Southeast Asian studies; and

  g. To maintain close and beneficial cooperation with existing international and regional organisations with similar aims and purposes, and explore all avenues for even closer cooperation among themselves.

- ASEAN Centre for energy (ACE): ACE is an intergovernmental organization established by ASEAN member countries. It is guided by a Governing Council composed of the Senior Officials of the energy sector in the ASEAN countries and a representative from the ASEAN Secretariat. Core funding is provided by an Energy Endowment Fund established from equal contributions of the ten member countries and managed by a private fund manager. The ASEAN Centre for Energy will accelerate the integration of energy strategies within ASEAN by providing relevant information state-of-the-art technology and expertise to ensure that over the long term, necessary energy development policies and programs are in harmony with the economic growth and the environmental sustainability of the region.

- The South Asian Association for Regional Cooperation (SAARC): is an organization of South Asian nations, founded in December 1985 and dedicated to economic, technological, social, and cultural development emphasizing collective self-reliance. Its seven founding members are Bangladesh, Bhutan, India, the

Maldives, Nepal, Pakistan, and Sri Lanka. Afghanistan joined the organization in 2005. Meetings of heads of state are usually scheduled annually; meetings of foreign secretaries, twice annually. It is headquartered in Kathmandu, Nepal. The 11 stated areas of cooperation are agriculture; education, culture, and sports; health, population, and child welfare; the environment and meteorology; rural development (including the SAARC Youth Volunteers Program); tourism; transport; science and technology; communications. SAARC provides a platform for the peoples of South Asia to work together in a spirit of friendship, trust and understanding. It aims to accelerate the process of economic and social development in Member States.

- The Economic Cooperation Organization (ECO) is an intergovernmental organization involving seven Asian and three Eurasian nations. It provides a platform to discuss ways to improve development and promote trade, and investment opportunities. The ECO is an ad hoc organization under the United Nations Charter (Chap. VIII). The common objective is to establish a single market for goods and services, much like the European Union. ECO's secretariat and cultural department are located in Tehran, its economic bureau is in Turkey and its scientific bureau is situated in Pakistan. The main missions of the ECO are:

    a. Sustainable economic development of Member States;
    b. Progressive removal of trade barriers and promotion of intra- regional trade; Greater role of ECO region in the growth of world trade; Gradual integration of the economies of the Member States with the world economy;
    c. Development of transport & communications infrastructure linking the Member States with each other and with the outside world;
    d. Economic liberalization and privatization;
    e. Mobilization and utilization of ECO region's material resources;
    f. Effective utilization of the agricultural and industrial potentials of ECO region;
    g. Regional cooperation for drug abuse control, ecological and environmental protection and strengthening of historical and cultural ties among the peoples of the ECO region; and
    h. Mutually beneficial cooperation with regional and international organizations.

- The Secretariat of the Pacific Community, or SPC (sometimes Pacific Community), is a regional intergovernmental organisation whose membership includes both nations and territories. It aims to "develop the technical, professional, scientific, research, planning and management capability of Pacific Island people and directly provide information and advice, to enable them to make informed decisions about their future development and well-being." The SPC headquarters is in Nouméa, New Caledonia.

- Secretariat of the Pacific Regional Environment Programme (SPREP): SPREP's unique focus is to sustain the integrity of the ecosystems of the Pacific islands region to support life and livelihoods today and tomorrow. SPREP's mandate is to promote cooperation in the Pacific islands region and to provide assistance in order to protect and improve the environment and to ensure sustainable development for present and future generations.

- Council of Regional Organizations for the Pacific (CROP): The Forum Leaders established the Council of Regional Organisations of the Pacific, CROP (formerly the South Pacific Organisations Coordinating Committee, SPOCC) in 1988 with the mandate to improve cooperation, coordination, and collaboration among the various intergovernmental regional organisations to work toward achieving the common goal of sustainable development in the Pacific region. CROP comprises the heads of the intergovernmental regional organisations in the Pacific. CROP functions as a coordination mechanism between the heads of the regional organisations in the Pacific, and (ii) a high-level advisory body, to provide policy advice and may assist in facilitating policy formulation at national, regional and international level. CROP provides a forum to enable CROP heads to collectively review progress with their respective organisations' contributions on the Pacific Plan.

2.5.2.2. Networks

78. Existing networks operating in the region will help in facilitating knowledge sharing amongst different private and public stakeholders and strengthen the CTNFC actions in Asia-Pacific:

- The Asia-Pacific Partnership on Clean Development and Climate, also known as APP, is an international, voluntary, public-private partnership among Australia, Canada, India, Japan, the People's Republic of China, South Korea, and the United States to co-operate on the development and transfer of technology which enables reduction of greenhouse gas emissions that is consistent with and complementary to the UNFCCC and other relevant international instruments, and is intended to complement but not replace the Kyoto Protocol. The intent is to create a voluntary, non-legally binding framework for international cooperation to facilitate the development, diffusion, deployment, and transfer of existing, emerging and longer term cost- effective, cleaner, more efficient technologies and practices among the Partners through concrete and substantial cooperation so as to achieve practical results; promote and create enabling environments to assist in such efforts; facilitate attainment of the Partners' respective national pollution reduction, energy security and climate change objectives; and provide a forum for exploring the Partners' respective policy approaches relevant to addressing interlinked development, energy, environment, and climate change issues within the context of clean development goals, and for sharing experiences in developing and implementing respective national development and energy strategies.

- Asian Environmental Compliance and Enforcement Network (AECEN): In 2005, environmental agency leaders from 13 Asian countries established the Asian Environmental Compliance and Enforcement Network (AECEN) to promote improved compliance with environmental legal requirements in Asia. AECEN accomplishes this task through the exchange of innovative policies and practices among member enforcement agencies. The mission of AECEN is to promote improved compliance with environmental legal requirements in Asia through regional exchange of innovative policies and practices.

- The Asia Pacific Adaptation Network (APAN): APAN is co-hosted by the Asian Institute of Technology/UNEP Regional Resource Center for Asia-Pacific (RRC.AP) and the Institute for Global Environmental Strategies (IGES). It is a regional knowledge center for adaptation collecting, synthesizing, packaging and disseminating adaptation-related data, information and knowledge at regional, sub-regional and national levels with a view to support adaptation capacity building, policy-setting, planning and practices.

- The Asian Cities Climate Change Resilience Network: the network aims to catalyze attention, funding, and action on building climate change resilience for poor and vulnerable people by creating robust models and methodologies for assessing and addressing risk through active engagement and analysis of various cities.

- The Pacific Risk Management 'Ohana' (PRiMO): PRiMO is a consortium of local, national, and regional agencies, institutions, and organizations committed to enhancing the resilience of Pacific communities to hazards. Through PRiMO partners are working together to increase collaboration on development, delivery, and application of risk management information, products, and services for Pacific communities while cultivating an appreciation for the unique physical and cultural characteristics of the region.

- The Asia-Pacific Network for Global Change Research (APN): APN is a network of member country governments (membership of 22 member countries as of March 2010) that promotes global change research in the region, increases developing country involvement in that research, and strengthens interactions between the science community and policy-makers. The APN strives to enable the developing countries of the region to participate increasingly in, and to benefit fully from, cooperative research in the region.

2.5.2.3. Technology and policy strategy centers

79. Cooperation on research and development as well as technical knowledge sharing will be built around well established climate relevant technology and policy centers, such as:

- The Asian Institute of Technology (AIT) is an international institution for higher education in engineering, advanced technologies, and management and planning. It "promotes technological change and sustainable development" in the Asia-Pacific region, through higher education, research and outreach.

- The Asia Pacific Energy Research Centre (APERC) was established in July 1996 in Tokyo, as an affiliate of the Institute of Energy Economics, Japan (IEEJ), pursuant to the Action Agenda adopted by the Asia- Pacific Economic Cooperation (APEC) Economic Leaders at the Osaka Summit in November 1995. The Government of Japan agreed to host and finance the Centre. The primary objective of APERC is to foster understanding amongst APEC economies of global, regional and domestic energy demand and supply trends, energy infrastructure development, energy regulatory reform, and related policy issues in view of the regional prosperity. APERC advocates rational energy policy formulation and enhances capacity building in energy research in the region, following the APEC's Non-binding Energy Policy Principles for furthering energy security, economic growth, and environmental quality in an effort to implement our mission and vision.

- The Regional Environmental Centre for Central Asia (CAREC): CAREC promotes multi-sector cooperation in addressing environmental problems in Central Asia at the local, national and regional levels. It seeks to create opportunities to attract to Central Asia the advanced knowledge, best international practices and technologies in the field of environmental management and sustainable development.

- The Institute for Global Environmental Strategies (IGES), established by an initiative of the Japanese Government in 1998, is a research institute that conducts pragmatic and innovative strategic policy research to support sustainable development in the Asia-Pacific region. The mission of IGES is to create effective strategies and propose practical solutions to support sustainable development, particularly in the Asia-Pacific region, while looking ahead 50 or even 100 years into the future. Expectations and requests are increasing that the Asia-Pacific region plays an important role in international efforts to deal with climate change and other critical environmental issues. It is vital to carry out appropriate policy proposals based on conditions in each area of the region, which is characterized by diversities in terms of economy, politics, culture and natural environment. IGES will enhance collaborations with a broad range of stakeholders such as national governments, local authorities, businesses, non-governmental organizations, citizens and experts, to carry out strategic policy research from an Asia-Pacific perspective and to disseminate the results around the world, so that it can contribute to the transition towards a sustainable society.

- The Indian Institute of Technology Bombay (IITB): IITB is a public research university located in Powai, Mumbai. IITB consists of 15 academic departments, and one school, with a strong emphasis on scientific and technological research.

The IITB is already involved in climate change networks; in fact, it is member of the steering committee of the APAN (Asia Pacific adaptation network).

- Energy Research Institute (China) (ERI): ERI was established in 1980. It is a national economy and policy research organization conducting studies on China's energy issues. Since its establishment, it has been affiliated with the former State Commission and the former State Economy Commission. Throughout, it was guided by the Chinese Academy of Sciences in many aspects of its research work. In 1988, ERI was put under the administration of the now former State Planning Commission. Further reforms in 2003 made ERI part of the National Development and Reform Commission. The ERI is also one of 7 research institutes administrated by the Academy of Macro-economic Research (AMR). The ERI participated to the nineteenth Asia-Pacific seminar on climate change toward low carbon and climate change resilient Asia-Pacific that was conducted in July 2010. ERI is divided into 6 research centers with 3 function divisions and offices which include the Center for Energy Economy and Development Strategy Research, the Energy Efficiency Center, the Center for Renewable Energy Development, the Center for Energy, Environment and Climate Change Research, the Center for Clean Development Mechanism project management, the Center for Energy Systerm Analysis and Market Analysis and the Center for Energy Conservation Information Dissemination.

- The Shenzhen International Technology Promotion Centre for Sustainable Development (ITPC): member of the UNIDO technology centers network, ITPC is a platform for addressing the issues of energy and environment related technologies and fostering business partnerships, it supports industries to achieve sustainable development. It serves as a national/regional forum in tracking the latest worldwide development in leading-edge technology for energy and environment development and protection; it promotes technology transfer and cooperation partnerships, policy dialogue, exchange of experiences, information network and business linkages between South-South and North-North countries and it seeks to address the concerns of less developed economies for the development of energy and environment related technologies and solutions, investment financing, manpower training and information dissemination.

- Climate innovation centers (CIC: India): This new climate innovation center settled by the World Bank focuses on key locally-relevant technology products that help meet climate and energy challenges facing developing countries in different regions of the world. This involves the identification, development and/or modification, and dissemination of these products. On the technical front, this might involve adaptation of a technology for local conditions (e.g., wind turbines and components for extreme weather conditions or poor wind regimes), the development of a product around an existing technology (e.g., the development of PV-based lighting systems to provide a robust and cost-effective solution for rural areas), or the development of technologies that meet specific local needs that will not be serviced

by global technology markets (e.g., improved cookstoves to provide higher-efficiency and lower-polluting cooking option).

2.5.2.4. Private sector

80. The private sector is a key element in building an adequate market place for the development of low carbon and climate resilient economies; it also plays an important role in the R&D and technology deployment financing. The CTNFC will seek to engage private sector associations and companies that play or can play a major role in fostering climate technology transfer such as:

- Asia Power Institute (API): API conducts research and development relating to the generation, delivery and use of electricity for the benefit of the public. As an independent, nonprofit organization, API brings together its consultants and professionals as well as experts from academia and industry to help address challenges in electricity, including reliability, efficiency, health, safety and the environment.

- The Centre for Energy Environment Resources Development (CEERD): CEERD conducts training, research and consultancy in the energy and environment fields, notably energy efficiency, renewable technologies and Climate Change (CDM), within regional or international projects, or private sector cooperation.

- The Association for Sustainable & Responsible Investment in Asia (ASrIA): ASrIA is a not for profit, membership association dedicated to promoting corporate responsibility and sustainable investment practice in the Asia Pacific region. ASrIA's members include investment institutions managing over US$4 trillion in assets, however membership is open to any organisation which has an interest in sustainable investment. ASrIA's goal is to build market capacity for SRI. We provide insightful, up to date and accessible information on the development of SRI in Asia and globally. We have also become the platform for different sectors within the community to exchange information and perspectives on SRI, and to take practice forward.

- Other regional private technology providers, utilities or industrials and related professional networks and associations.

2.5.3. National level

81. At a national level the CTNFC will engage the following types of stakeholders:

- National climate change focal points and staff from national/regional climate change offices/departments: as primary contact persons/institutions of their country in the UNFCCC process and for coordinating all national climate change related

issues, they will directly benefit from the project activities and play a key role in raising awareness, disseminating relevant information and leading the government institutions to adopt the necessary strategies, policies and regulations for climate technology transfer.

- Line Ministries and related institutions: who have a key role to play in national mitigation and adaptation efforts; they will directly benefit from the project activities and play a key role in developing and implementing the enabling conditions and incentives for climate technology transfer.

- National Bureaus of Standards: as the leading institutions for the improvement of national standards and labels, they will directly benefit from the project activities and play a key role to certify climate technologies and promote consumer acceptance e.g. by requiring energy-efficiency labels for appliances.

- Public investment agencies and funds, and related investment entities: they will directly benefit from the project activities and play a key role in providing investments for project development and implementation phases.

- Private sector especially through the private sector technology developers and vendors, utilities, industries, manufactures, installers: they will directly benefit from the project activities and play a key role in developing and implementing projects for the deployment of ESTs.

- Private investors, banks and other financial institutions: they will directly benefit from the project activities and play a key role in providing investments for project development phase and implementation phase for the improvement and deployment of ESTs.

- Professionals, technical institutions, technology laboratories and centers of excellence, universities and colleges, technical and social society NGOs (incl. National Cleaner Production Centers): they will directly benefit from the project activities and provide support, advice and expertise for policy, market mechanisms and project development.

- In –country development partners/donor community: advocacy and investments for national priority programs both for project development and implementation (including for the development and implementation of enabling policy regulations).

82. The stakeholders mapping above is a non exhaustive listing of relevant institutions and professionals, it is intended to build, around those stakeholder, a strong synergy with an integrated approach regarding all the functions involved in the CTNFC. Thus, allowing each partner and member of the network to take full advantage of the participation of the other members. Additional stakeholders will be identified during project implementation,

enriching the possible synergies within the network. It is also to be kept in mind that not all the stakeholders identified and listed above will necessarily be solicited in the project, a more accurate drawing of the integrated roles and activities of each stakeholder will be further well-addressed following countries requests and specifications.

2.6. Baseline analysis and gaps

2.6.1. Asia-Pacific Energy outlook

2.6.1.1. Primary Energy Demand

83. Primary energy demand in Asia and the Pacific is projected to increase from 4,025.3 MTOE in 2005 to 7,215.2 MTOE in 2030, growing at an annual rate of 2.4%. The projected growth rate is slower compared to the historical annual growth rate of 3.5% observed between 1990 and 2005. With this growth, per capita energy demand of Asia and the Pacific will reach 1.57 TOE in 2030—nearly 50% higher than the 2005 level. Despite the substantial increase in per capita energy demand, the projected 2030 level is still lower than the current world average per capita energy demand of 1.79 TOE in 2005[23].

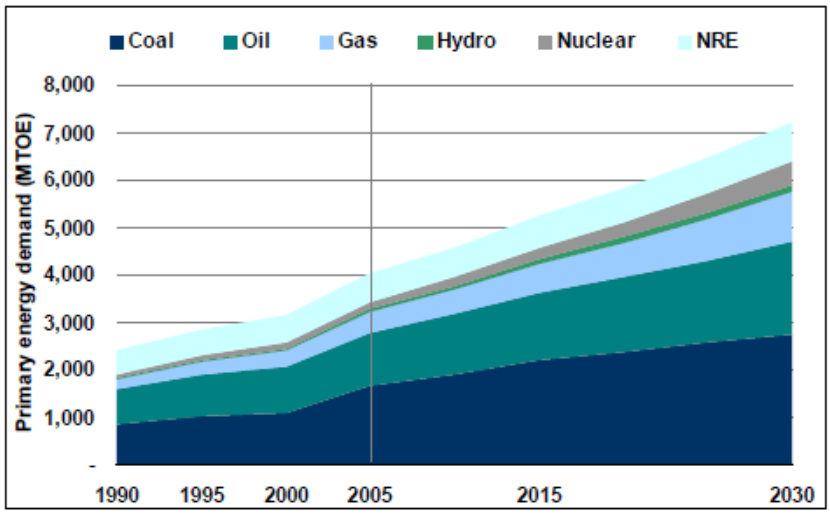


Figure 4: Primary Energy demand in Asia and the Pacific (1990-2030)[24],[25]

[23] The world average per capita energy demand is calculated using the information from EIA 2009. International Energy outlook. Washington, DC.
[24] IEEJ Energy Journal Vol 5, No.2, 2010/ APERC, 2009
[25] NRE: New and renewable energies

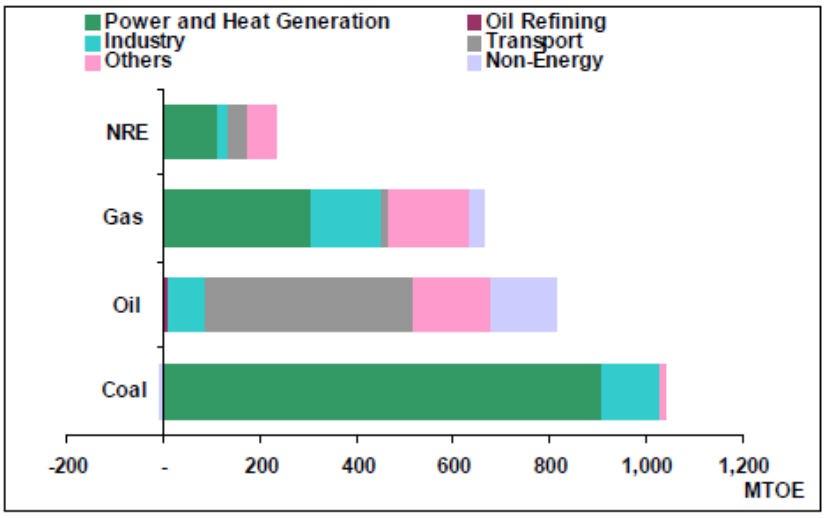


Figure 5 : Incremental Energy Demand growth by energy and by sector (2005-2030)[24,26]

84. Figure 5 shows that with 38.3 % of the total energy primary demand (TPED) in 2030, Coal will maintain the biggest share of primary energy demand in Asia-Pacific and as shown in Figure 6, this growth in coal demand will mainly come from power and heat generation. Oil will be second accounting for 27% of TPED in 2030, its growth will be mainly driven by the transport sector. Increasingly utilized given its ease of use and lower environmental burden, Natural Gas will be third - its higher supply cost compared to coal will however limit its use. Other types of energy will account for a small share in the TPED, New and Renewable Energy (NRE) will contribute at a level of 11% in 2030 with Nuclear accounting for 5% and Hydro for 3%.

85. However, the projected growth in primary energy demand varies substantially by sub-region and by country e.g.it ranges from a growth range of 4.5% in the Pacific Islands to a growth range of 0.5% in the most advanced countries. This is of course due to the diversity of economic development, population, industry structure, energy resource endowment, and technology levels across Asia-Pacific countries.

[26] Others include commercial/ public services, agriculture/ forestry, fishing, other sources not specified elsewhere. Non-Energy: Fuel used as a raw material and not as a source of energy

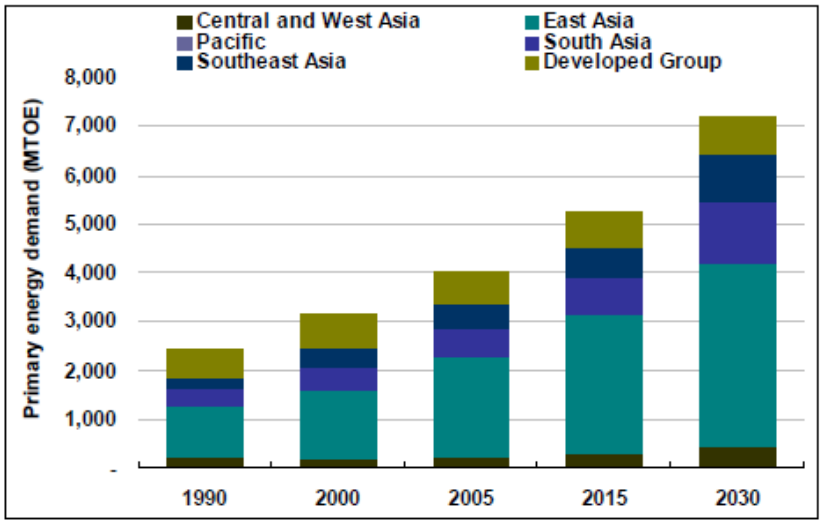


Figure 6 : Primary Energy Demand by subregion (2005-2030)[24]

86. Figure 6 shows that by 2030, East Asia will still record the highest share of primary energy demand in Asia-Pacific. East Asia's energy demand is estimated to increase from 2,058.8 MTOE in 2005 to 3,776.6 MTOE in 2030, with a growth rate of 2.5% per year through 2030. Meanwhile, when comparing this energy growth rate of 2.5% to the growth rate of GDPs of 5.2% for East Asia it shows that the energy demand will grow at a slower rate than the GDP, this elasticity, which is also observed in the developed group, is mainly due to a foreseen change in the industry structure and an increasing implementation of energy efficiency in cross sectors.

2.6.1.2. Final energy demand by sector

87. In Asia-Pacific, final energy demand is projected to increase from 2,700.0 MTOE in 2005 to 4,634.5 MTOE in 2030, an annual growth rate of 2.2% per year. Figure 7 below shows the region's final energy demand by sector from 1990 to 2030.

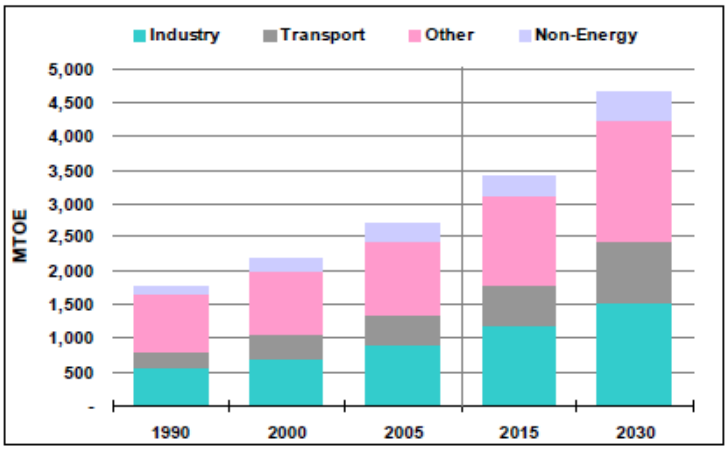


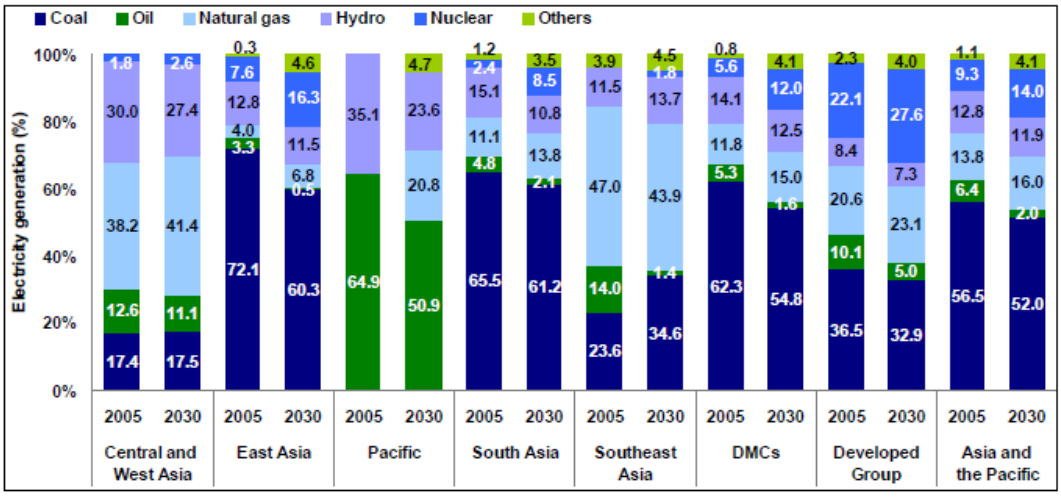
Figure 7 : Final Energy Demand by Sector (1990-2000-2005-2015-2030)[24, 26]

88. The final energy demand from the transport sector is projected to increase the fastest with an annual growth rate of 2.9% per year through 2030. It is followed by the industry sector with an annual growth rate of 2.1% and the others at 2.1% per year. Energy demand from the non-energy sector (e.g. feedstock for the petrochemical industry) will grow relatively slowly at 1.7% per year. Despite its fast growth, the transport sector's final energy demand share will remain relatively small (19.7% in 2030 from 16.6% in 2005). By contrast, the other sectors will maintain the largest share (from 40.2% in 2005 to 39.0% in 2030), reflecting the unrelenting use of biomass in some countries. Industry will account for the second-largest share (from 33.9% in 2005 to 32.9% in 2030).

89. The transport sector is a major consumer of energy – particularly petroleum. It is also one of the major emitters of CO2. In 2007, the world road, rail and aviation sectors consumed 2,297 million tons of oil equivalent. The Asia-Pacific region was responsible for only 576 million tons (25.1%) with 427 million tons (74.2%) used by the road sector, followed by aviation (11.6%), shipping and others (9%), and rail (5.2%). In 2007, the transport sector in Asia and the Pacific was responsible for 1,642 million tons of CO2 emissions, compared to 1,972 million tons in North America and 1,050 million tons in Europe. From 2006 to 2007, CO2 emissions from the transport sector in the region increased by about 4.4%. Most of the emissions came from the road sector which in 2007 released 1,323 million tons. In contrast, emissions from aviation and railways were 221 and 67 million tons, respectively.

2.6.1.3. Electricity Generation Mix

90. The Electrical mix varies by sub-region, renewable energies are widely used in the Pacific region while it is barely used in east and South Asia where coal has the biggest share. New and renewable energies are expected to increase but their share will remain very low. In the Pacific region it is Oil that has by far the biggest share, making the pacific region very sensitive to Oil prices fluctuations. The figure below shows the electrical mix in 2005 and the trends for 2030 by sub-region.



Note : "Others" include geothermal, solar, wind, and renewables.

Figure 8 : Electrical Mix by sub-region (2005--2030)[24,26]

2.6.2. CO2 emissions outlook

91. CO2 emissions in Asia-Pacific will increase from 10,064.8 million tons of CO2 (Mt CO2) in 2005 to 17,763.3 Mt CO2 in 2030 at an emissions growth rate of 2.3% per year, a slightly slower rate than for projected growth in energy demand (2.4%). South Asia's and Southeast Asia's CO2 intensities are projected to increase as a result of the expected increase in coal demand—mainly for power generation. In contrast, for East Asia and the Developed Group, CO2 intensities are expected to decrease, due mainly to the increased use of NRE sources. Per capita CO2 emissions in 2030 vary widely in the region from the Pacific's 1.54 tons to the Developed Group's 11.48 tons.

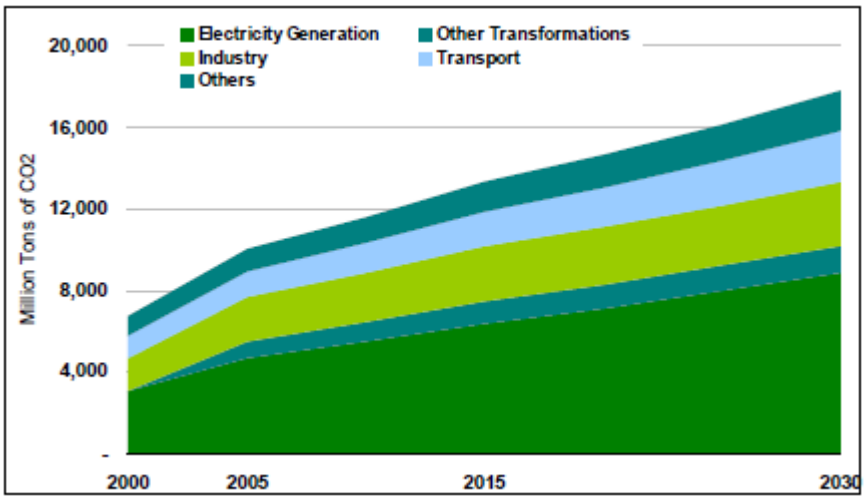


Figure 9 : CO_2 Emissions (2000--2030)[24,26]

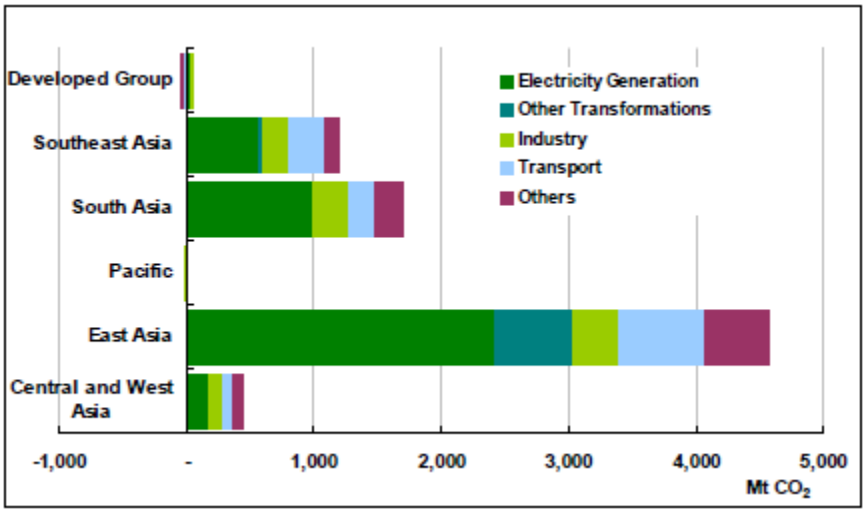


Figure 10 : CO_2 Emissions Increment by sub-region and by sector (2005--2030)[24,26]

92. CO2 emissions from the transport sector will increase the fastest at an annual growth rate of 2.8% through 2030. The power sector follows with an annual CO2 emissions growth rate of 2.6% While the industry sector's CO2 emissions are expected to grow relatively slowly at a rate of 1.5% through 2030. East Asia is the largest emitter with a forecast of 10, 226 Mt CO2 in 2030, followed by South Asia; 2,843 Mt CO2, developed group 1,704, Central and west: 891 Mt and at last the Pacific with only 22 Mt CO2 emission through 2030.

2.6.3. Climate vulnerability outlook

93. As already mentioned in the section 2.3, major environmental issues are endangering the development and well being of Asia-Pacific societies and more specifically the region is extremely vulnerable to climate change with its numerous coastal cities and poor populations. Sea level rise is of greatest concern to island and coastal nations in the region, in addition, climate change will have a significant effect on agriculture and water resources. Forests could also be significantly affected by climate change.

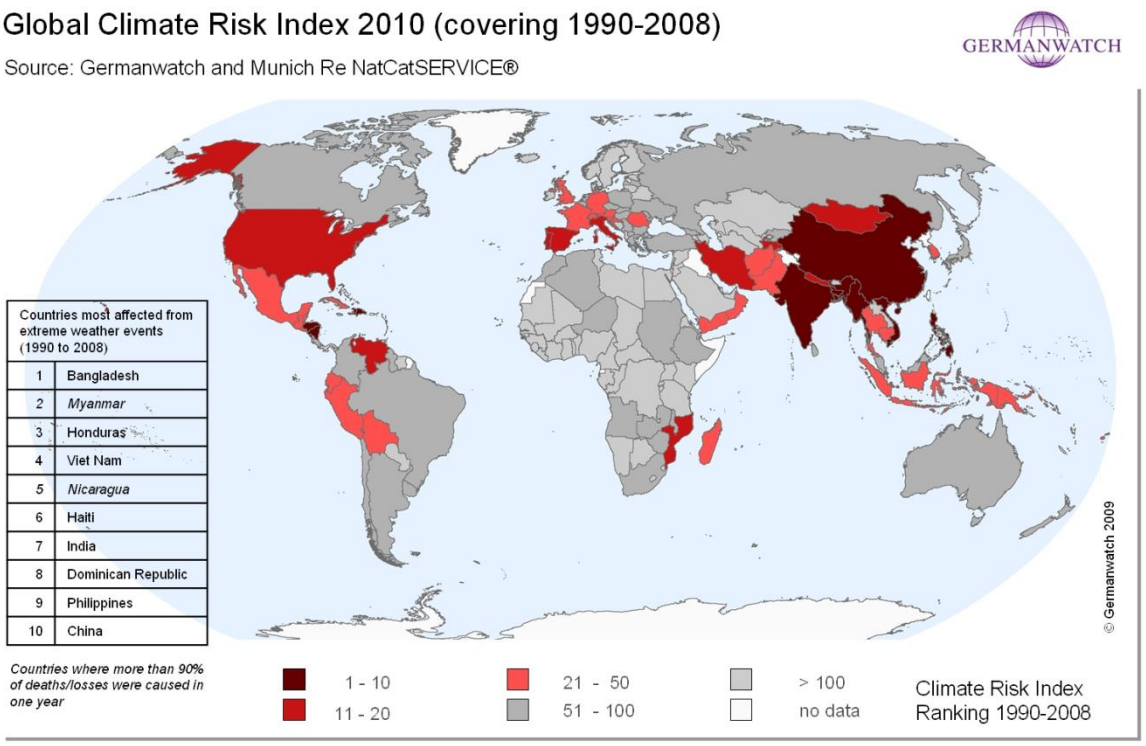


Figure 11 : Global Climate Risk Index 2010, Germanwatch

94. Compared to other regions in the world, Asia-Pacific is one of the most vulnerable to climate change impacts. Figure 11 shows the Global Climate Risk Index (CRI) for the different countries. Developed by Germanwatch, the CRI quantifies the impacts of extreme weather events in terms of human and economic loss. The CRI Index clearly shows that most affected countries in the period of 1990-2008 are Asian countries. Among the 10 most affected countries there are 6 countries from the Asia-Pacific region: Bangladesh, Myanmar, Vietnam, India, Philippines and China.

95. According to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (2007), some of the most important potential impacts in the Asia-Pacific region due to Climate Change are the following:

96. On Ecosystems and Biodiversity:

- Tibetan Plateau glaciers of 4km in length are projected to disappear with 3º C temperature rise and no change in precipitation. If current warming rates are maintained, glaciers located over Tibetan Plateau are likely to shrink at very rapid rates from 500,000 km2 in 1995 to 100,000 km2 by the 2030s.
- Around 30% of Asia's coral reefs are likely to be lost in the next 30 years due to multiple stresses and climate change.

- Forest production in North Asia is likely to benefit from carbon fertilization. But the combined effects of climate change, extreme weather events and human activities are likely to increase the forest fire frequency.
- The Lena delta has been retreating at an annual rate of 3.6-4.5 m due to thermo-erosion processes which are likely to be influenced by projected rise in temperature.
- Net primary productivity of grassland in colder regions of Asia is projected to decline and shift northward due to climate change. The limited herbaceous production, heat stress from higher temperature and poor water intake due to declining rainfall could lead to reduced milk yields and increased incidence of diseases in animals.
- With a 1m rise in sea level, 2,500 km2 of mangroves in Asia are likely to be lost.

97. On Agriculture:

- Bangladesh would be worst affected by the sea level rise in terms of loss of land. Approximately 1,000 km2 of cultivated land and sea product culturing area is likely to become salt marsh, and 5,000 km2 of Red River delta, and 15,000 – 20,000 km2 of Mekong River delta are projected to be flooded.
- Cereal yields could decrease up to 30% by 2050 even in South Asia. In West Asia, climate change is likely to cause severe water stress in the 21st century.
- In East Asia, a 1ºC rise in surface air temperature expected by the 2020s, would make water demand for agricultural irrigation increase by 6 – 10 % or more.
- Rice yield is projected to decrease up to 40% in irrigated lowland areas of central and southern Japan under doubled atmospheric CO2.

98. On Health:

- Increase in coastal water temperatures would exacerbate the abundance and / or toxicity of cholera in South Asia.
- Increases in endemic morbidity and mortality due to diarrheal disease primarily associated with floods and droughts are expected in East, South and South-East Asia.

99. Furthermore, as explained in the Asia-Pacific Regional Climate Change Adaptation Assessment Final Report, by the International Resources Group (2010), current models do not project an increase in the frequency of natural disasters; however, their intensity would continue rising due to increased urbanization and exploitation of coastal areas and sea level rise. For instance, Figure 12 below shows the number of victims of floods and the density of persons exposed to them for the years 1980-2000. IRG foresees an increase of approximately 16 million affected persons, affecting Thailand, Viet Nam, Indonesia and the Philippines in particular.

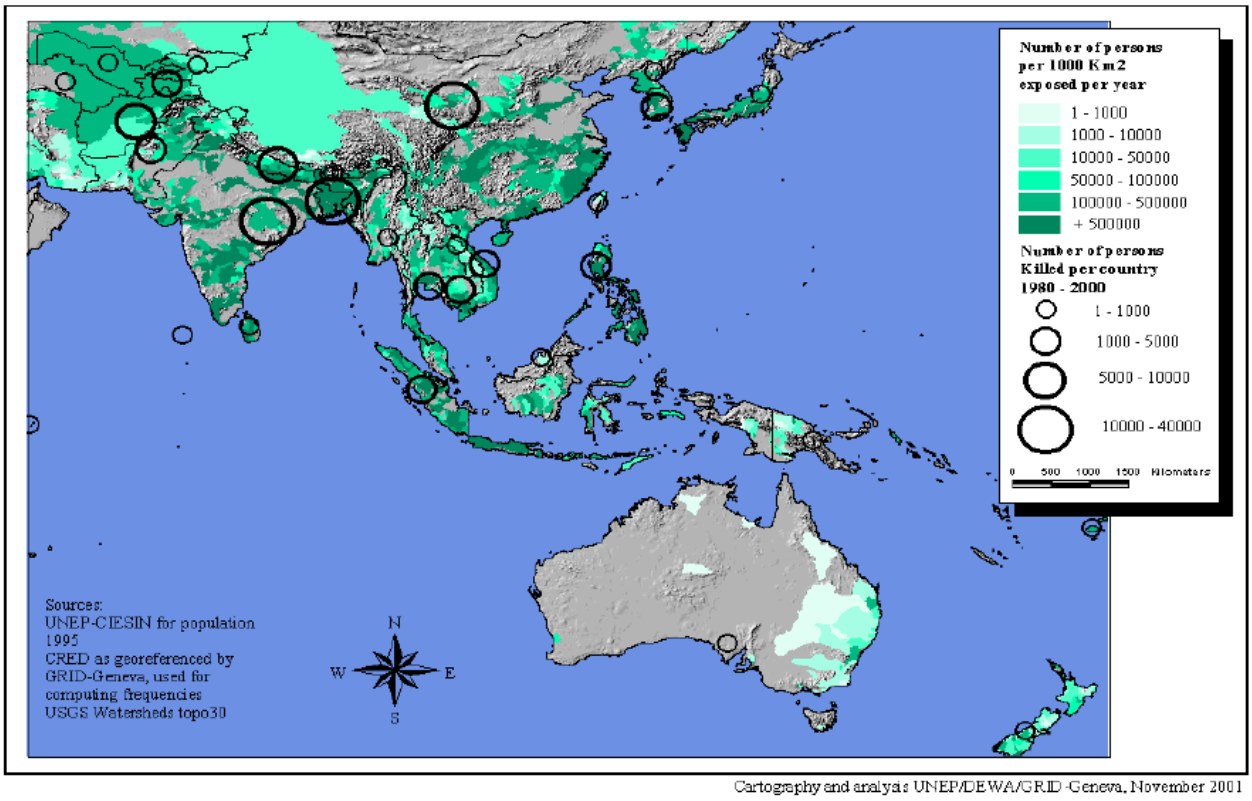


Figure 12: Density of persons exposed to and killed by floods in Asia and the Pacific, 1980-2000, UNEP-CIESIN

100. Beside mitigation, it is clear that adaptation actions are urgently needed in Asia-Pacific to cope and build resilience to the possible impacts and to prevent an increase in the number of affected persons and victims shown above.

2.6.4. Baseline scenario

101. The baseline scenario is defined by business as usual development trends in Asia-Pacific in terms of energy consumption and CO2 emissions per sector. The BAU trends correspond to the evolution of the energy situation with no major shift neither in the policy framework nor in the behavioural pattern would occur as well as no technological breakthrough would be involved.

102. The starting point of the baseline scenario is the year of 2008[27] for which the IEA provides an energy balance estimation for Asia-Pacific excluding China and OECD Pacific. IEA provides the primary energy demand, and the final energy consumption per sector for the year 2008. According to the Energy outlook published by ADB and AERC in

[27] http://www.iea.org/stats/index.asp
* : Non Energy use covers those fuels that are used as raw materials in the different sectors and are not consumed as a fuel or transformed into another fuel.

2009, the annual growth of primary energy demand in the region of Asia and the Pacific is estimated at 2.4% annually till 2030 while the annual growth of CO_2 emissions is estimated at the rate of 2.3%.

103. Based on the above, the primary energy demand and the CO2 emissions trends over the next 10 years are then calculated using IEA estimation for 2008 and the annual growth rate that is linearly applied. The results are shown in the Table 1 below:

Year	2008 IEA	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Primary energy demand (MTOE)	4 572.50	4 682.24	4 909.68	5 027.52	5 148.18	5 271.73	5 398.26	5 527.81	5 660.48	5 796.33	5 935.44
CO2 emissions (Mt)	11656.61	11924.71	12198.96	12479.54	12766.57	13060.21	13360.59	13667.88	13982.24	14303.84	14632.83

Table 1 : Primary energy demand and CO2 emissions 2008-2018 (BAU)

104. The trends in terms of final energy consumption by sector are based on the sectoral energy consumption distribution given by the IEA for the year 2008 with a strong assumption of an unchanged distribution over the next 10 years. The results are given in the Table 2 below:

Year	IEA 2008 (%)	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Industry (MTOE)	38%	1105.05	1131.57	1158.73	1186.54	1215.01	1244.17	1274.03	1304.61	1335.95	1367.98	1400.81
Transport (MTOE)	15%	436.21	446.67	457.39	468.37	479.61	491.12	502.91	514.97	527.33	539.99	552.95
Residential (MTOE)	27%	785.16	804.01	823.31	843.06	863.3	884.02	905.23	926.96	949.21	971.99	995.31
Commercial and Public Services (MTOE)	6%	174.48	178.66	182.95	187.34	191.84	196.44	201.16	205.99	210.93	215.99	221.18
Agriculture / Forestry (MTOE)	2%	58.16	59.55	60.98	62.44	63.94	65.48	67.05	68.66	70.31	71.99	73.72
Non-Specified (MTOE)	2%	58.16	59.55	60.98	62.44	63.94	65.48	67.05	68.66	70.31	71.99	73.72
Non-Energy Use * (MTOE)	10%	290.81	297.78	304.92	312.24	319.74	327.41	335.27	343.32	351.56	359.99	368.63

Table 2 : Final energy consumption per sector 2008-2018 (BAU)

105. As a result, the BAU scenario indicates a reduction in the energy consumption share of the industry sector due to improved energy efficiency and energy conservation practices. Whereas for the transport sector, the energy consumption share is expected to grow in the long term and meet the worldwide rate at around 20%. The assumption of unchanged energy distribution per sector for the next 10 years calls to another assumption which is the constant distribution of CO2 emissions per sector - considering no technological breakthrough for this BAU scenario. This results in the trends in CO2 emissions per sector given in Table 3 below:

Year	%	2 008	2 009	2 010	2 011	2 012	2 013	2 014	2 015	2 016	2 017	2 018
Transport (Mt)	13%	1 457.07	1 490.59	1 524.87	1 559.94	1 595.82	1 632.52	1 670.07	1 708.48	1 747.78	1 787.98	1 829.10
Power (Electricity and heat) (Mt)	46%	5 397.06	5 521.13	5 648.13	5 778.03	5 910.92	6 046.87	6 185.95	6 328.23	6 473.78	6 622.67	6 774.99
Industry (Mt)	30%	3 520.29	3 601.26	3 684.11	3 768.83	3 855.51	3 944.18	4 034.89	4 127.71	4 222.64	4 319.76	4 419.11
Other** (Mt)	11%	1 282.26	1 311.72	1 341.88	1 372.75	1 404.32	1 436.62	1 469.66	1 503.47	1 538.05	1 573.42	1 609.61

Table 3 : CO_2 emissions in Asia Pacific 2008-2018 (BAU)

106. Considering the fuel mix for electricity generation in Asia pacific, CO2 emissions from the power sector were calculated using the emission factors given in Table 4 below:

Fuel type	g/kWh
Oil	500
Gas	350
Coal	800

Table 4 : CO_2 emission factor per fuel type

107. Electricity generation in Asia-Pacific is largely based on coal fuelled power plants and as a result it strongly contributes to climate change. The electrical mix in 2005 for the region and the associated CO2 emissions are given in Table 5 below:

Electrical Mix (%)	%	TWh	CO2 emission (Mt)
Year	% in 2005	2005	2005
Coal	57%	3731.68	2985.35
Oil	6%	422.71	211.35
Natural Gas	14%	911.45	319.01
Hydro	13%	845.41	0
Nuclear	9%	614.24	0
Other	1%	72.65	0

Table 5 : Electrical mix and CO_2 emissions for Asia-Pacific (2005)

2.6.5. Alternative scenario

108. The alternative scenario induced by the implementation of the pilot CTNFC project in Asia-Pacific is estimated based on the investments that would be mobilized during the project. Of the projects six components, component five, 'Catalyzing investments in EST deployment' - led by ADB - is expected to result in direct investments in climate mitigation technologies, which will result in attributable GHG emissions reductions.

109. GEF identifies three potential categories of emissions reductions, which can be reported in the tracking tools: direct project emissions reductions, direct post project emissions reductions and indirect project emissions. For this project only direct post project emissions are reported. Given the relatively short time horizon of this project (2.5 years) it is unlikely that emissions reductions resulting from this project will be realized within the project time frame, therefore direct project emissions reductions are not estimated in the tracking tool. Indirect emissions are not estimated as the dispersed nature of the project interventions over a wide geographical area means that it is not feasible to calculate indirect emissions. Therefore, direct post project emissions only are reported.

110. ADB's total direct investment of $120 million will leverage an additional $240 million in non-ADB resulting in a total investment of $360 million; related investments will be

divided in an approximate ratio of 42%/42%/16% between energy efficiency, renewable energy and transportation investments: equivalent to $150 million each in energy efficiency and renewable energy and $60 million in transport. In addition, ADB's total equity investment of $60 million will leverage an additional $240 million in from other fund investors ADB resulting in a total investment of $300 million; one third of this will be invested in adaptation, one third in energy efficiency and one third in renewable energy. Total investments generated by the project are thus expected to be equivalent to 660 million USD.

111. As this project differs from typical technology transfer projects, a specific approach was developed to estimate emissions reduction as a result from the CTNFC. For details about this approach refer to Annex F of the CEO endorsement document. It is estimated that direct post project emissions reductions resulting from CTNFC activities will equivalent to a total of 13,457,309 tCO2e; 9,891,958 tCO2e from investments in energy efficiency, 1,839,600 tCO2e from investments in renewable energy and 645,000 tCO2e from investments in sustainable transport solutions.

2.7. Linkages with other GEF and non-GEF interventions

112. A number of important climate change mitigation (including energy efficiency and renewable energy projects) and adaptation initiatives funded by the GEF and other donors are under implementation at global, regional and national levels. The Asia-Pacific CTNFC project has been designed to complement activities of ongoing climate technology transfer projects/programmes and to build synergies among them. The project will seek to build on lessons learnt from past and ongoing climate technology transfer projects and to establish linkages with ongoing global, regional and national climate technology transfer initiatives. A non-exhaustive list of relevant initiatives with which the CTNFC will seek to build linkages is given below.

2.7.1. GEF interventions

2.7.1.1.Global level

113. GEF Technology Needs Assessment – implemented by UNEP and UNDP: The project is supporting 36 countries in conducting Technology Needs Assessments (TNAs). TNAs consist of in-depth analysis of the actual market and trade barriers that hinder the transfer of a prioritized selection of technologies, followed by an assessment of the policy, institutional and finance options to overcome these barriers. The systematic analysis of barriers focuses on both the most important technologies (taking into account the current situation, development priorities, and costs), and the potential market opportunities that exist at the national and regional level. On this basis comprehensive national plans agreed by all stakeholders in the countries will be prepared that are consistent with both the domestic, regional, and global situations. The experience and lessons learnt through this project for Asia-Pacific TNA countries will be will be further disseminated in Asia-Pacific through the CTNFC e.g. through the organization of joint workshops to enhance cross

country learning, and knowledge sharing of the climate technologies. In addition some of the tools and methodologies developed through this global initiative will promoted through the CTNFC.

114. GEF Global Market Transformation for Efficient Lighting (en.lighten) – implemented by UNEP: The objective of this project is to Phase-out Incandescent Lamps (ILs) production and sale through the transformation of the lighting products market with a view to promote high quality Energy Saving Lamps (ESLs). The key components of this project are as follows:

- Global stakeholder network and center of excellence, providing expertise, information and guidance
- Targeted country support (analyses, advice and recommendations, country lighting assessment, sign in mechanism, global road map for inefficient lighting phase out)
- Expertise, information and guidance (guidance tools for governments, private sector and civil society)

This Global initiative will be the source of expertise and information for lighting technology issues. The information and tools produced by this global initiative will be further disseminated in Asia-Pacific through the CTNFC e.g. through the organization of joint workshops. The CTNFC will collaborate with en.lighten to help the sub-regions to develop tailored phase-out strategies and support countries in designing national phase-out initiatives.

115. GEF Global Fuel Economy Initiative – implemented by UNEP: The project objective is to stabilize greenhouse gas emissions from the global light duty vehicles fleet by improving the fuel efficiency of light duty vehicles worldwide by 50% by 2050. To reach its objective the project intervenes in the following areas:

- Data modeling through the production of a Global Fuel and Vehicles GHG database and report; Reports with fuel economy baselines and trends at global and regional levels and for 4 pilot countries; and Technical analyses on fuel economy potential and policy options.
- Policy Development through the development of an interactive fuel economy tool set; support for the development of regional actions plans, the establishment of regional support networks established; implementing pilot projects at national level; and the development of global program for roll out.
- Outreach & stakeholder support through the development of a dedicated website (fuel economy toolset, best practice…); the development of information tools for consumers; and setting-up national fuel economy campaigns.

The information and tools produced by this global initiative will be further disseminated in Asia-Pacific through the CTNFC e.g. through the organization of joint workshops. Also

the Asia-pacific network and technology center will benefit from the information already made available under the data modeling and policy development report with respect to GHG emission sources the government envisioned abatement strategies. The proposed project will achieve synergies by exchanging information on the project activities on a regular basis.

116. GEF Seed Capital Assistance Facility (SCAF) – implemented by UNEP, AsDB and AfDB: This project proposes the creation of a financing facility dedicated solely to helping early stage renewable energy enterprises access seed capital from conventional energy investors in 14 countries across Asia, Africa and Latin America. By sharing transaction costs and buying-up investment returns, the facility will be a form of GEF/financier partnership bridging the gap between what local sustainable energy entrepreneurs are able to offer in terms of returns on investment, and the requirements of the investment community. By bridging this gap, the facility will help provide local enterprise with the sort of enterprise development and early stage risk capital needed to plan and develop new sustainable energy projects, products and service offerings. The CTNFC will offer a platform to facilitate SCAF activities in the region and disseminate related information to potential sustainable energy entrepreneurs in Asia-Pacific.

2.7.1.2.Regional level

117. GEF Pacific alliance for sustainability (PAS) Low Carbon-Energy Islands-Accelerating the Use of Energy Efficient and renewable Energy – implemented by UNEP: The objective of this project is to help reduce GHG emissions by strengthening national capacities to formulate policies, plans, strategies and programs for the accelerated medium-term and long-term deployment of low-carbon energy systems in small-island countries by the private sector. The project components are:

- Enabling framework for energy demand strategies involving energy efficiency programs;
- Implementation of country specific accelerated low-carbon energy islands strategies;
- Building market awareness and local capacities.

Given the number of island countries in Asia-Pacific, the CTNFC will seek to disseminate the results, best practices and lessons learnt from this project.

118. GEF Pacific alliance for sustainability (PAS) - Promoting Energy efficiency in the Pacific implemented by AsDB: This project focuses on one of the least-cost areas of intervention to reduce GHG emissions from the energy sector and promotes energy security through generating energy savings in the residential, commercial and governmental sectors. It includes the implementation of five pilot-scale EE projects and the identification of much larger-scale EE initiatives across each of the same five PICs (Pacific island countries). Therefore, in its second phase the project will seek to mainstream EE and energy conservation measures in national policies, plans and strategies and to build local

capacity, as well as identify concrete proposals for cross-sectoral EE programs at the national level. This second phase is expected to produce real global environmental benefits and energy savings. It is structured around three major components:

- Policies, institutions and capacity building (Energy efficiency and energy targets, workshops, fiscal incentives, building codes…);
- Increase market penetration and implementation of energy efficiency technologies, practice and product;
- Monitoring and evaluation public awareness and information sharing.

CTNFC will seek to disseminate the results, best practices and lessons learnt from this project with a view to apply and replicate them in the other island countries of the region.

2.7.1.3.Country level

119. GEF Strategic planning and action to strengthen climate resilience of rural communities in Nusa Tenggara Timor province, Indonesia (SPARC) – implemented by UNDP: the objective of this project is to reduce the GHG Emissions and improve energy security through energy efficiency (EE) and energy Conservation practices. The project focuses on the following aspects:

- Policies, institutions and capacity building through Energy Efficiency programs and energy targets in country roadmap, fiscal incentives, building codes…);
- Increase market penetration and implementation of Energy efficiency technologies, practices and product;
- Monitoring and evaluation public awareness and information sharing.

CTNFC will seek to disseminate the results, best practices and lessons learnt from this project with a view to apply and replicate them in the other island countries of the region.

120. GEF Energy efficiency promotion in Industry, China – implemented by the WB: the objective of this project is to improve energy efficiency and reduce GHG emissions in key industrial sectors in China by addressing both energy management and technical issues. This project has the following components:

- Provide policy support: Policy mechanisms strengthened for promoting industrial energy conservation, management and efficiency.
- Capacity building for energy managers (Training program and certification scheme for energy managerial personnel)
- Demonstration projects
- Information sharing

The promotion of energy efficiency in the Chinese industry will bring a solid base for the dissemination of energy efficiency programs in other Asia-Pacific countries with intensive

industries such as India. CTNFC will seek to disseminate the results, best practices and lessons learnt from this project with a view to apply and replicate them other countries with intensive industries in the region.

121. GEF Market Development and Promotion of Solar Concentrators based Process Heat Applications in India – implemented by UNDP: The objective of this project is to increase the use and promotion of solar concentrators for low and medium process heat applications in India. The project components are the following:

- Provide assistance on technology package development and standardization;
- Awareness and capacity building;
- Planning and operationalizing demonstration projects (30 demonstration projects in 5 sector developed);
- Identification and removals of financial barriers in the adoption of solar concentrator's technology in India.

CTNFC will seek to disseminate the results, best practices and lessons learnt from this project with a view to promote solar concentrators for heat applications in other countries of the region.

2.7.2. Non GEF-Initiatives

122. UNEP and its partners currently manage and facilitate three regional climate change networking initiatives in the region. The CTNFC will build on these existing networks and benefit from their established mechanisms, tools and contacts as well as lessons learnt to date and best practices.

123. Southeast Asia Network of Climate Change Focal Points (SEAN-CC): Started in 2009 and funded by Finland, SEAN-CC provides support to the 10 ASEAN countries to meet their UNFCCC commitments. While the network covers all aspects of climate change, the main emphasis is on informing and supporting climate change focal points and other relevant stakeholders to reform policies and implement programmes for energy efficiency, renewable energy, and reduced GHG emissions. SEAN-CC support can be clustered in 3 broad categories: (i) facilitating knowledge generation and sharing, (ii) providing targeted capacity building, and (iii) providing sector specific technical assistance and policy advice for concrete national and regional actions. Overall priority areas for support are jointly defined with the national climate change focal points and related activities are designed responding to direct country requests. SEAN-CC's technical assistance and policy advice activities include:

- Support for conducting market and feasibility assessments,
- Designing sector specific technology transfer initiatives and pilot projects,
- Identifying mitigation and technology priorities,
- Developing enabling policies (incl. technology standards and regulations),
- Supporting fund mobilization and

- Supporting member countries preparing UNFCCC negotiations and applying UNFCCC decisions and tools/mechanisms.

A Network Secretariat based in UNEP's Regional Office in Bangkok plans, coordinates, provides day-to-day support and takes part to the implementation of the various SEAN-CC activities at regional and national levels.

124. Central Asia Climate Change Network (CAN-CC): this network was launched in 2010 with funding from Korea on the model of SEAN-CC. The focus of this project is to facilitate technology transfer of cleaner energy technologies and their market development in Central Asia, by promoting improved policies and regulations, development of national clean technology plans, and establishment of energy performance standards. The project has the following three components:

- Facilitation of communication, knowledge sharing and interaction between public institutions and capacity building on climate technologies and climate technology transfer policies;
- Support National Clean Technology Planning processes;
- Support the development of Markets for Energy Efficient Technologies.

125. The Asia-Pacific climate change adaptation network (APAN): The APAN network aims to build climate resilience of vulnerable human systems, ecosystems and economies through the mobilization of knowledge and technologies to support adaptation capacity building, policy setting, planning and practices. The Adaptation Network activities will be undertaken by its regional hub, sub-regional nodes and partner institutions in the Asia Pacific region. The Adaptation Network is facilitated by UNEP, Institute for Global Environment Strategies (IGES), AIT - UNEP RRC.AP, Asian Development Bank (ADB) in partnership with other key actors in the region.

126. National Cleaner Production Centers (NCPCs): Since 1992, UNIDO and UNEP jointly launched a programme to establish National Cleaner Production Centres (NCPCs). The NCPCs were established to deliver services to business, government and other stakeholders in their home country and to assist them with the implementation of Cleaner Production methods, practices, policies and technologies. Over time the NCPCs have become increasingly independent from UNIDO and UNEP both administratively and financially. In Asia-Pacific, NCPCs have been established in 7 countries (Cambodia; China; India; Lao People's Democratic Republic; Republic of Korea; Sri Lanka; and Viet Nam).

127. Facilitating Implementation and Readiness for Mitigation (FIRM): In Asia-Pacific, this new project supports Vietnam and Indonesia to make a "quick start" on technology-based mitigation activities that are compatible with the evolving concept of Nationally Appropriate Mitigation Actions (NAMAs). FIRM will provide focused technical advice and strengthen the capabilities of energy and environmental policy makers and experts – and the institutions in which they work. The result will be the accelerated implementation

of public and private mitigation projects within a NAMA framework, and reduced emission of greenhouse gases. The project will build on existing UNEP support to developing countries that are preparing national Technology Needs Assessments (TNAs) and Technology Action Plans (TAPs) funded by the GEF.

SECTION 3: INTERVENTION STRATEGY (ALTERNATIVE)

3.1. Project Rationale, Policy Conformity, and Expected Global Environmental Benefits

128. As highlighted in section 2, climate change is a major concern for the region as it will increasingly affect economic growth and development in most Asia-Pacific countries. If no steps are taken to lead countries in the region towards a low carbon development path, the CO2 emissions of Asia-Pacific - equivalent to 10,064.8 Mt CO2 in 2005 - are expected to increase up to 17,763.3 Mt CO2 in 2030. In addition other major environmental challenges posed by population growth and the rapid development of the Asia-Pacific economies increase the economic and social vulnerability to climate change and hinder the potential for sustainable development in the region. Important measures must therefore be taken to strengthen the climate resilience of countries in the region. It is widely acknowledged that improved and new technologies have a major role to play in tackling global climate change and therefore there is an urgent need to support and accelerate technology transfer for developing countries.

129. The market penetration rate of ESTs in Asia-Pacific varies a lot among countries from limited rates in some countries to near zero in the poorest ones. This demonstrates that many efforts must still be undertaken to achieve an active promotion and deployment of ESTs and that a very limited number of countries have benefited from ESTs transfer to date. In this context, the GEF Pilot Asia-Pacific Climate Technology Network and Finance Center (CTNFC) - co-hosted and managed by UNEP and ADB - aims to foster climate technology transfer to support Asia-Pacific countries in their efforts to shift to low carbon and climate resilient development patterns. The CTNFC will focus both on creating the enabling conditions for climate technology transfer and on fostering investments for developing and deploying ESTs responding to the priority mitigation and adaptation needs of the countries in the region.

130. In addition to the global environmental benefits in terms of GHG emission reduction, additional expected benefits include:

- Contribution to the protection of ecosystems and ecosystem services in Asia-Pacific;
- Reduction of local pollution from industries and conventional energy sources;
- Stimulation of new industries, new companies and new jobs;
- Economic savings e.g. through energy savings and fewer investments for rehabilitations and reconstructions as a result of more resilient buildings and infrastructure;
- Reduced dependency on imported fossil fuels and reduced submission to volatility of oil prices;
- Enhanced local skills for designing and implementing climate technology solutions;

- Improved living conditions and reduced pressure on vulnerable groups.

3.2. Project Goal and Objective

131. The project will be jointly implemented by ADB and UNEP leveraging complementary skills, experience and expertise from both organisations. UNEP will provide technical assistance and policy advice with a view to ensure capacity readiness and establish enabling conditions for climate technology transfer and market transformation. ADB will provide financial expertise and tools to trigger investments and fund mobilization with a view to accelerate the deployment of climate technologies. The UNEP-managed components of this initiative will especially build on the experience, lessons and activities implemented under the GEF TNA project and the UNEP-led climate change networks in the region. While the ADB-managed components will be strongly linked to two key initiatives established by ADB to support an up-scaling of investments in low-carbon and climate-resilient technologies in Asia and the Pacific namely the 'Asia Climate Change and Clean Energy Venture Capital Initiative' and a new initiative aiming at establishing a low-carbon marketplace in Asia-Pacific entitled 'Demonstration of an assisted broker model for transfer of low carbon technologies in Asia Pacific'. In addition, the CTNFC will also benefit from and promote the experience, expertise and tools developed through the numerous other climate technology initiatives implemented by both UNEP and ADB.

132. The main goals of the project are summaraised below:

- **Facilitate deployment of climate technologies:** The Project will pilot a regional approach to facilitating deployment of climate technologies, one that combines transverse support, from networking, capacity building and technical advice so as to establish enabling conditions, down to mobilization of financial resources to make investments happen. In short, it seeks to demonstrate the effectiveness of linking technology and finance mechanisms in catalyzing climate actions.

- **Assist developing countries of Asia-Pacific in addressing challenges to make transition towards low carbon and climate resilient economies:** The Project will serve as the regional hub to assist developing countries of Asia and the Pacific in addressing the significant challenges they face in making the transition towards low-carbon and climate-resilient economies. They will accomplish this in part through the development, transfer, and diffusion of environmentally and socially sound technologies.

- **Assist the reshape of appropriate policies and measures for climate change mitigation and adaptation:** the Project will assist developing countries in Asia and the Pacific to put in place appropriate policies and measures such as those that aspire to (i) improve energy efficiency, reduce emissions, and enhance climate resilience, e.g. national energy efficiency and renewable energy targets; (ii) promote market mechanisms that can provide additional incentives to climate solutions, e.g. feed-in

tariff for renewable energy, renewable energy certificates, enhanced use of carbon finance, clear and long term fee structure for waste and waste water treatment service; and (iii) strengthen policies and institutions to facilitate the transfer of technologies. The Project will also assist in assessing technology needs, enhancing governance and capacity, and facilitating partnerships for the development and transfer of existing and emerging technologies, building on recent and ongoing assessment work, such as the TNA project, and assistance to NAMAs and NAPAs.

- **Build a market place for climate technologies by catalyzing public and private investment for these technologies:** The Project will catalyze public and private finance for these technologies while assisting with integrating technology transfer considerations into developing countries' policies and investment programs and strengthening design and enforcement capacities of public institutions in regard to technology transfer.

- **Provide technical assistance, policy advice and expertise:** In addition to short-term needs for policy advice, the Project will facilitate the structural change by providing advice on, among other topics: (i) low-carbon technologies; (ii) climate resilience technologies; (iii) macro policies to create the "pull" for climate technologies; (iv) legal and regulatory systems to stimulate the domestic development and import of climate technologies; (v) financial systems to facilitate the development and flow of climate technologies, including pricing and taxing; (vi) markets and trading systems for climate technologies; (vii) organizations and businesses for facilitating the development and transfer of technologies; and (viii) data gathering and monitoring systems to track technology development and transfer.

133. Finally, the ultimate goal of the project is to reduce GHG emissions by assisting Asia-Pacific countries in their transition to a low carbon development path and reduce their vulnerability to climate change by improving climate resilience knowledge and skills in the region.

3.3 Project Components and Expected Results

134. The Project will pilot a regional approach to facilitate the deployment of climate technologies, via technical support provided to Asia- Pacific countries in order to help them reach enabling conditions that would prepare the market to accommodate the development of environmentally sound technologies in the region. It will be built upon six components, combining a global approach with three country readiness building components managed by UNEP and three investment facilitation components implemented by ADB.

135. The activities will be designed so that they are in line with national priorities and agreed upon with the national climate change focal points or other designated representatives from governments and consistent with the country's United Nations Development Assistance Framework (UNDAF). UNEP activities cover technical

assistance (including policy advice) enabling conditions, and knowledge generation and sharing in the areas of climate change mitigation and adaptation.

136. Technical assistance and policy advice provided by UNEP will include support in (i) Sustainable energy, energy efficiency and energy conservation (ii) Conducting market and feasibility assessments (iii) Designing sector specific technology transfer programs/ initiatives (for the phase out of obsolete technologies and the deployment of ESTs) (iv) Identifying mitigation and technology priorities (v) Developing enabling policies, harmonized standards' and regulations (vi) Designing the pilot and demonstration project, and (vii) Assisting with related fund mobilization.

137. Given the limited funding, the priority to benefit from UNEP Technical Assistance components shall be given to countries with which UNEP is already engaged either through existing climate change networks or through the implementation of Technology Needs Assessments. These countries are listed below:

- South East Asia (member countries of the Southeast Asia Network of Climate Change Focal Points - SEAN-CC): Thailand, Malaysia, Philippines, Indonesia, Vietnam, Cambodia, Laos; and to a lesser extent Brunei, Singapore, and Myanmar - note that Cambodia, Indonesia, Thailand, Vietnam and Lao PDR are also TNA countries; and Indonesia and Vietnam are FIRM countries.
- Central Asia (member countries of the Climate Change Network in Central Asia): Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan - note that Kazakhstan is also a TNA country.
- Remaining TNA countries in Asia-Pacific: Mongolia, Sri Lanka, Nepal and Bhutan.

138. Nonetheless, regarding component 1, leading countries such as China and India will be invited to participate in workshops where they could play a leading role and could activate South-South technology transfer with other countries having less experience in climate technologies. Motivated Pacific islands countries will also be invited to participate to meetings and workshops.

139. Regarding the knowledge platform and networking activities of component 1 (i.e. online website/KM platform and meetings/workshops), all countries in the region should benefit from related activities.

140. The concerned sectors will be selected according to country requirements and following consultation with national focal points, which will highlight national and regional climate change priorities.

141. The project components and activities are developed hereafter:

COMPONENT 1: Facilitating a network of national and regional technology centers, networks, organizations, and initiatives

142. The activities associated with this component are intended to engage all relevant actors in the efforts to move to low-carbon and climate-resilient societies. The mobilization and networking between institutions/centers both from the public and private sector and between professionals at national and regional level is critical to promote the necessary strategic alliances for related technical innovation/adaptation, technology acquisition/deployment and technology management.

143. The expected outcome of this project component is to foster the collaboration between public and private professionals on climate technology transfer on one hand and strengthen cross-sectoral coordination on the other hand. The main outcome and key outputs of this component are described as follows:

Outcome 1: ***Increased collaboration in the region for transfer of climate technologies between thematic or sector/technology specific centers and institutions***

144. In the past years, within the context of the economic growth, increasing climate change disasters and scarce resources, national and regional authorities have better understood the necessity of having approaches leading to a low carbon and climate resilient development. They have confirmed the need for a high-level, cross-sectoral dialogue in order to reach the objectives related to improving citizens' quality of life and achieving financial savings through the implementation of the best practices for urban and rural development.

Output 1.1: Collaboration is strengthened between key stakeholders at national level

145. Given the limited funding, support at a national level will only be provided to countries participating in a UNEP-managed climate change networks, through which UNEP will be able to leverage the funds and the know-how to assist those countries.

146. The need for cooperation based on technical knowledge and experience, allowing to share best practices on climate technologies, has been a constant concern for countries willing to shape appropriate policy packages and establish a favourable market.

147. With a view to strengthening national collaboration (including partnerships) between key stakeholders to foster climate technology transfer, the following sub-activities may be carried out, based on country requests:

- Strengthening the coordination amongst decision-makers to implement climate compatible policies and programs for technology transfer (e.g. by supporting National Climate Change Committees on Climate Technology Transfer issues).
- Supporting sectoral dialogue and collaboration for climate technology transfer (e.g. between Climate Change Offices/professionals and Energy

institutions/professionals for the promotion of clean energy technologies and solutions by supporting the organization of national/regional clean energy conferences and climate technology exhibitions).

Output 1.2: Regional and thematic expert groups are established to provide guidance and support to private and public actors for climate technology transfer

148. Establishing regional and thematic expert groups - based on regionally agreed climate technology priorities - to advise governments on technology transfer for low carbon and climate resilient development:

- Identifying the five major regional climate technology priorities through consultations with key government institutions (Ministries of Economy/Finance/Planning, Environment, Energy and Infrastructure, Agriculture).
- Identifying relevant national/regional experts or existing expert groups in line with the five major regional climate technology priorities.
- Establishing (or engaging existing) thematic expert groups related to the five major regional climate technology priorities to provide technical guidance/advice to national and regional institutions (e.g. peer-reviewing of new national policies/regulations, conducting national/regional assessments, developing policy guidance documents).

Output 1.3: Public-private partnership on climate technologies are promoted and supported

149. Promoting and supporting the establishment of public-private partnerships for climate technology transfer:

- Identifying existing mechanisms/ for public-private collaboration.
- Conducting technology specific studies and assessments including case studies, organizing exchange visits and workshops to demonstrate the benefits for the private sector (e.g. power producers, manufacturers, industry and financiers) of committing to achieve a national low carbon and climate resilient development.
- Strengthening the dialogue on climate technology transfer between the private sector and governments (based on TNA results or other similar national documents) to communicate about the establishment of enabling policies and appropriate market mechanisms.

Output 1.4: North-South cooperation is promoted and South-South cooperation supported for sharing know-how, knowledge and good practices

150. This major output will be carried out through the following activities:

- Based on priority technologies/technology issues, identifying opportunities for South-South and North-South cooperation.

- Providing advice (e.g. for establishing cooperation agreements) and establishing special incentives (e.g. funding incentives) to stimulate twinning arrangements between centres to encourage cooperative R&D for adapting technologies to local conditions, or the development of joint analysis and research programmes or to facilitate professional exchange programmes.
- Promoting cross-border business cooperation by supporting the development of regional climate technology initiatives (e.g. for phasing out obsolete technologies, developing new markets for climate technologies or adapting technologies to local markets).
- Developing or scaling-up Climate Change knowledge management platforms/websites.
- Establishing or linking existing virtual networks, communities of practice around prioritized climate technologies.
- Developing or linking existing searchable databases on ESTs.
- Developing and improving the availability of reliable and accessible climate technology knowledge (e.g. market assessments and feasibility studies, guidelines and technology manuals, targeted analysis documents on key climate change issues of mutual interest for Network members, briefs on success stories, lessons and best practices from from GEF-UNEP and UNEP's mitigation and technology transfer projects/programmes).
- Organizing regional or subregional network meetings to share lessons learned and achievements between sectors, countries and institutions to generate added benefits for single countries and the whole region.

COMPONENT 2: Building/ strengthening national and regional technology transfer centers and centers of excellence

151. While component 1 is designed to strengthen partnership and dialogue between key stakeholders, Component 2 is designed to build or strengthen climate technology institutions and centers of excellence.

152. Indeed, strenghtening technology transfer in a region or in a country requires the availability of technology, policy and research centers support. Those centers of excellence provide higly valuable advice, projections and recommendations to global leaders with a view to designing appropiate policies allowing the development and the propagation of climate technologies. The main outcome and key outputs of this project component are described as follows:

Outcome 2: ***Thematic-specific and technology-specific institutions and centers capable of providing environmentally sustainable technology (EST) transfer services to governments, financial institutions, public and private technology developers/providers at national and regional levels are strengthened (and/or created)***

153. Specialized institutions and professionals in Asia-Pacific, and in developing countries in general, need guidance and capacity building to better play their role in the national

efforts to accelerate climate technology transfer (e.g. by promoting low carbon technologies and implementing EE&C initiatives). Specialized regional and national centres/institutes both from the public and private sectors and more independent institutions can address the shortcomings of traditional approaches by acting as focal points for information, advice and expertise for climate technology transfer.

Output 2.1: Appropriate institutions and centres for supporting climate technology transfer are identified

154. The activities involved in achieving this output include identifying private and public institutions and potential climate technology centers that have the greatest capability to influence policy (including the private sector). Key institutions implementing low carbon initiatives and related climate technology transfer activities (both at regional and national levels) are an example of relevant institutions. An analysis of their role and possible interventions will then be conducted in order to find coherent synergies between stakeholders and avoid overlapping and repeating activities.

Output 2.2: The establishment of specialized national climate technology transfer institutions is supported

155. Developing countries across Asia and the Pacific are requesting international financial and technical support to identify, prioritize and deploy innovative technologies. The Project will help developing countries meet the growing demand for related climate change technologies as stated in their national plans and strategies, in the form of National Climate Change Strategies and related action plans such as Low carbon development plans, Nationally Appropriate Mitigation Actions (NAMAs), National Adaptation Programs of Action (NAPAs), etc., and national communications to the United Nations Framework Convention on Climate Change (UNFCCC).

156. This output will consist of the promotion and the support (based on country requests) of the establishment/strengthening of specialized national institutions. Those institutions will be mandated to act as focal points for expertise and advice on mitigation, adaptation and technology transfer. They will also play a key role in the dissemination of relevant regulations or policies. The activities needed regarding this output will be the following:

- Institutional audits and capacity assessment of existing public institutions responsible for energy efficiency and renewable energies with the view of building fully-fledged and sustainable public institutions for energy efficiency and renewable energy deployment in the countries.
- Development of business plans for mandated climate technology institutions.

Output 2.3: The capacities of climate technology institutions and professionals are strengthened

157. Once relevant institutions have been identified and while centers of excellence have been either launched or assisted, a focus shall be made on the capacity building of climate

technology institutions and professionals in aims of strengthening the technical background that the reshaped market and policies will rely on.

158. Capacity building of climate technology transfer institutions and professionals will be based on the following activities:

- Targeted capacity building in selected public and private institutions to deliver climate technology transfer services, including financial institutions (e.g. designing, financing, implementing, operating and monitoring RE/EE&C measures).
- Training and certification of energy auditors for industry (including oil fired thermal power plants).
- Training and certification of profesionals and testing laboratories for conducting energy audits for appliances and equipments.
- Training of local financial institutions on the essential elements of sustainable energy project financing.
- Training staff from regulatory agencies and public institutions in charge of energy policies and programmes to implement climate compatible development strategies, policy packages and investment decisions, and to leverage funding options and prioritize actions.

Output 2.4: Tech-entrepreneurship development and green productivity is promoted

159. In general terms, entrepreneurship in technologies is a major driver for innovation. California and the Silicon Valley in particular are a good illustration of this fact. Innovation in turn is a key element of cost and energy efficiency (more efficient materials, more competitive processes, etc.); by promoting tech-entrepreneurship, we facilitate the emergence of technology push and market pull products that will foster research investment and help build public-private partnerships in R&D.

160. On the other hand, Green productivity standards will create a demand stimulus for clean products and a response to the tech-entrepreneurship offers, creating or strengthening a clean tech market in the region.

161. In addition, those combined efforts will have a real positive impact regarding the learning curves of both the private and public sectors. If appropriately implemented, those actions will make, in the long run, green economy more efficient (less investment for better results) and it will also facilitate the implementation of green policies in the region.

162. Promoting tech-entrepreneurship development and green productivity will be based on the following activities:

- Identifying and strengthening actors/institutes that can play an advisory role for tech-entrepreneurship.
- Developing institutional instruments and measures for tech-entrepreneurship.

- Designing/deploying seed and growth capital facilities for tech-entrepreneurs and enterprise development services for clean enterprise start-ups.

COMPONENT 3: Design, development and implementation of country-driven EST transfer policies, programs, demonstration projects, and scale up strategies

163. Country-driven assistance will be provided for the design, development and implementation of EST transfer policies and demonstration projects. Indeed, the establishment of an enabling environment for investments through appropriate policies, regulations and legal frameworks at national and regional levels is necessary for increasing innovation performance and investment in EST transfers in the Asia-Pacific region. The regional approach will be strengthened by prioritizing policies and measures that would be beneficial at the regional level vis-à-vis national levels. The two main outcomes and outputs of this component which focuses on climate technology transfer policies, pilot projects/programmes and scale-up strategies are the following:

***Outcome 3:* Support and opportunities for national, regional and global investments in ESTs are explored**

164. In order to secure a long-term and steady growth of the ESTs deployment at a regional and a national level, and not only creating an ESTs bubble, it is important to consider long term investment strategies based on suitable and cost effective mechanisms. The major activity will be as follows:

Output 3.1: The design, development and implementation of country-driven EST transfer programs, demonstration projects, and scale-up strategies is supported

165. Support the design, development and implementation of country-driven EST transfer programmes, demonstration projects and scale-up strategies (e.g. country/region tailored phase out programmes for obsolete technologies like lighting or cooling devices). This activity will serve to support decision-makers' design and deliver climate compatible development. A range of country-driven technical assistance activities aligned with national development policies and planning must be engaged to strengthen the engagement of the private sector and increase flows of donor climate funding. These technical assistance activities must be delivered 'by' or 'jointly with' local experts or institutions to ensure local capacity building.

***Outcome 4:* Enabling policy environment and mechanisms created for transfer of climate technologies**

166. A need of technical and financial policy mechanisms for climate technology transfer has been highlighted by the Asia-pacific countries (primarily ministries of environment). Technical assistance will be provided on that axe of development with the following expected outputs:

Output 4.1: The design and establishment of country-tailored pro-climate policies supporting climate technology transfer is supported

167. In terms of climate technology transfer mechanisms for mitigation:

- Promoting and assessing the feasibility and relevance of the new concepts and approaches brought forward through the UNFCCC process and building regional and national capacity to evolve towards the design and implementation of the necessary new mechanisms responding to the needs of climate change in countries.
- Conducting national (or regional) sustainable energy resource assessments leading to the identification of specific sites with high development potential and detailed analysis of infrastructure requirements and costs.
- Development or strengthening of country tailored policies for public transport or vehicle efficiency.
- Development or strengthening of monitoring and evaluation mechanisms/instruments for measuring impacts of national policies and regulations for energy efficiency and renewable energies.

168. In terms of climate technology transfer mechanisms for adaptation:

- Conducting climate change impact assessments and generating additional adaptation information for decision-making purposes.
- Providing adaptation strategy advice and economic analysis for sectors such as water, agriculture/food security, and health.
- Supporting the development of forestry, biodiversity and land-use strategies and programmes.

Output 4.2: The design and establishment of national and regional standards and regulations for identified priority climate technologies is supported

169. This activity will consist in supporting the development and improvement of national and regional energy efficiency standards and labels for building envelopes, mechanical systems, equipment, and appliances (for identified priority mitigation technologies) including the establishment of related certification procedures and 'test and verification' facilities. The objective is to establish clear goals based on mandatory standards and figured regulations.

Output 4.3: The design and establishment of cost-effective mechanisms adapted to individual country conditions for leveraging increased public and private investment in climate technologies is supported

170. This activity will result, notably, in activities promoting a low carbon energy sector, such as:

- Identifying and promoting highly cost-effective energy efficiency improvements and related technologies (e.g. by conducting power quality studies, etc.).
- Testing of business models and mechanisms to provide energy efficiency services for existing buildings through energy service companies (ESCOs).

Output 4.4: The design and establishment of NAMA/NAPA-linked subsidies and other financial incentives aimed at reducing EST project development/transaction costs is supported

171. A support on the design and implementation of NAMA/NAPA subsidies and financial incentives actions will follow the sub-activities below:

- Enforcement of the design and establishment of NAMA-linked subsidies/national climate funds and other financial incentives aimed at reducing EST project development/transaction costs.
- Supporting the design and implementation of fiscal and financial incentives to stimulate investment in clean energy technologies, for example, design of renewable energy feed-in tariffs, tax incentives for investment schemes or the establishment of tax incentives, soft loans, or subsidies for designing, constructing, and operating energy efficient buildings.

172. In order to ensure a smooth integration to the existing local ownership, the project components will be built on the basis of existing institutions and networks that will be strengthened, and actions will be led by country driven requirements.

173. The following three components listed below focussing on financial investments facilitation will be managed and developed by ADB.

COMPONENT 4: Integrating climate technology financing needs into national development strategies, plans, and investment priorities

174. This component will focus on providing technical assistance enabling countries to mainstream technology policies and shaping financing interventions (such as those identified through Component 3) into national development strategies and investment priorities. The component will help address the gaps and pursue the opportunities identified by environmental agencies and other line agencies through investment programs coordinated by economic and planning ministries. Inputs will be provided to the countries' development strategies and investment plans (including ADB's country partnership strategies and country operations business plans) so that best practices and latest information on climate technologies, along with TNAs, are adequately reflected in development priorities and actions. Provision of these support services will be coordinated closely with the consultation and programming missions under the Adaptation Fund, the Climate Investment Funds, and prospectively the Green Climate Fund to avoid duplication and maximize synergy.

COMPONENT 5: Catalyzing investments in EST deployment

175. This component will mobilize appropriate financial resources from both public and private sources to catalyze investments in EST deployment. Public resources, for instance, may be used to assist with the incremental costs over business-as-usual technology in order to enhance global environmental benefits such as reduced GHG emissions, reduced vulnerability to climate change, and associated co-benefits.

176. Venture capital is expected to be a key source of financing. ADB, through its Asia Climate Change and Clean Energy Venture Capital Initiative, is set to invest $60–100 million in multiple venture capital funds, which in turn is expected to leverage $400–600 million from bilateral sources and institutional investors for early finance stages to start up companies marketing climate-friendly technologies. The Project can serve as a mechanism to provide advisory support by establishing a complementary technical assistance facility to support selected venture capital funds on topics such as emerging market opportunities, technological competence, growth potential of investee companies, and IPR issues. This assistance would help venture funds reduce their transaction costs and buid their technical knowledge of the emerging climate technology market. Priority technology areas include energy use and production, and adaptation in the water, agriculture/food security, and health sectors.

COMPONENT 6: Establishing a pilot "marketplace" of owners and users of low-carbon technologies to facilitate their transfer

177. This component will address the lack of access to information and markets, a key barrier to technology transfer. The marketplace will facilitate market creation as a matchmaking platform, where potential sellers and buyers of products can gain access to information at every phase of the technology development chain. The proposed pilot structure and scope of the assisted broker model to be applied is based on lessons from existing IPR marketplaces. It will bring value to technology providers, particularly to SMEs and institutions by providing additional revenue, contact with potential partners, and a suitable structure for transactions. At the same time, technology recipients will gain access to patents and know-how and support from a trustworthy third party broker. The successful demonstration will help pave the way for the establishment of a full-fledged business for the transfer of low-carbon technologies in Asia and the Pacific that can also be replicated in other regions.

178. The marketplace will set up a common platform that can be utilized not only for energy technologies but also for adaptation technologies in water, health, and other sectors. The platform will also support companies involved through Component 5 activities to further expand their market reach of climate change mitigation and adaptation technologies.

179. To summarize the project components and operation, this project combines technical assistance and investments, building on the complementary comparative advantages of the

two cooperating GEF Agencies (ADB and UNEP). This approach is deemed to be the most cost-effective and more likely to lead to sustainable results, due to better coordination and enhanced potential to leverage substantial investment from both the project resources and the private sector. Grants alone would not be able to leverage a high level of private sector investments, while investments alone may not be able to adequately identify and address barriers to technology transfer and national priorities and to utilize the regional network and associated expertise.

180. On that basis, the project seeks to have a global approach to tackle climate change issues in the region of Asia-Pacific by combining complementary expertise: technical/scientific and finance to enhance the deployment of climate change technology transfer.

3.4. Intervention Logic and Key Assumptions (UNEP components)

	Indicator	Baseline Start of Project (2012)	Targets End of Project (2015)	Source of verification	Risks and Assumptions
Overall project outcome: Diffusion of technologies that promote low-carbon and climate-resilient development enhanced (overall objective, ADB/UNEP combined)	Total investment in low-carbon and climate resilient technologies in participating DMCs increases by more than 10% from 2012 to 2020 (baseline 2012: to be determined)	(baseline 2012: to be determined)	More than 10% increase in investment from 2012 to 2020	DMC reports to the United Nations Framework Convention on Climate Change DMC and ADB investment portfolios, market surveys Industry and market reports Reporting requested by ADB	Lack interest of governments due to other competing demands and more urgent priorities Weak national institutions and limited human and financial resources Governments are committed to foster climate technology transfer for low carbon and climate resilient development Strong engagement from public and private sector professionals and operators
	Direct investment in climate resilient and mitigation technologies realized.	$180 million investment for climate technologies mobilized leading to $480 million leveraged from co-financiers	TA progress reports		
Outcome 1: Increased collaboration in the region for transfer of climate technologies between thematic	Number of climate technology networks linking public and private	Near zero	5 new regional or sub-regional sector-specific or technology specific climate technology networks	Reports from the new regional or sub-regional sector-specific or technology specific climate technology networks	Public and private stakeholders are willing to exchange, partner and synergize for accelerating climate technology transfer

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
		Start of Project (2012)	**End of Project (2015)**		
or sector/technology specific centers/institutions (Component 1: UNEP)	professionals on climate technology transfer in the region Improved cross-sectoral and cross regional coordination for climate technology transfer at national and regional levels	Limited cross-sectoral coordination and cross-regional for climate technology transfer	6-8 countries and 2 sub-regional associations/economic organizations (ASEAN, CAREC) have officially made steps to improve coordination for climate technology transfer	Reports/strategies/plans/statements from national and sub-regional climate change coordination entities on climate technology transfer (e.g. National Climate Change Councils, ASEAN working group on Climate Change…)	
Outcome 2: Thematic and technology specific institutions and centers are strengthened (and/or created) (Component 2: UNEP)	Level of support provided to thematic and technology institutions and centers with a view to improve the quality and availability of climate technology transfer services at regional and national level	Baseline to be established	At least 12 institutions/centers supported 70% of the supported institutions and/or centers respond that the support provided meet their needs	Feedback from institutions/centers on tailored technical support/assistance received (survey, letters/written communications…) Reports training workshops delivered or other capacity building events and workshop Evaluation forms by participants	Existing government agencies and private sector institutions dealing with in EST's are willing to cooperate for the successful establishment of climate technology transfer services/facilities

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
		Start of Project (2012)	**End of Project (2015)**		
Outcome 3: Support and opportunities for national, regional and global investments in ESTs are explored (Component 3: UNEP)	Number of new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies developed	BAU scenario	5-8 new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies submitted for funding	National and regional country-driven EST transfer programmes, demonstration projects and scale-up strategies	Existing government agencies and private sector are willing to engage and collaborate to design, develop and implement climate technology transfer initiatives
Outcome 4: Enabling policy environment and mechanisms created for transfer of climate technologies (Component 3: UNEP)	Number of new legal and regulatory instruments to promote sustainable EST market development	Limited number of enabling policies for climate technology transfer	New enabling policies to foster climate technology transfer are established in 6-8 countries	National policy documents	Governments are committed to foster climate technology transfer for low carbon and climate resilient development

3.5. Risk Analysis and Risk Management Measures

RISK LOG						
Risk Description		**Category**	**Impact Severity**	**Likelihood**	**Risk Management Strategy & Safeguards**	**When / By Whom?**
1	There is a risk of a lack of institutional involvement from the key ministries in the management of a project and a risk that financial incentives will not be provided to businesses	Institutional risk	High	Medium	Letter of intentions form countries and activities responding to official requests from the countries	2012-2015 Network secretariat
2	Collapse of or delays in international and regional dialogue on climate change particularly on UNFCCC technology and financing mechanisms	Political and institutional risk	Medium	Low	The project is implemented in close coordination with UNFCCC Secretariat which coordinates the establishment of the UNFCCC Technology Mechanism and the Green Climate Fund. The UNFCCC Secretariat will be represented on the project Steering Committee. In addition activities will be based on country requests and aligned with national development priorities; thus activities will benefit a broader agenda than just climate change per se.	2012-2015 Network secretariat

RISK LOG						
Risk Description		**Category**	**Impact Severity**	**Likelihood**	**Risk Management Strategy & Safeguards**	**When / By Whom?**
3	Political or macroeconomic instability in countries which may affect national priorities, market conditions, and the policy environment for technology development and transfer	Economic and political risks	Medium	Low	There are excellent economic growth perspectives in Asia and the Pacific. The project will adopt flexible design, including in its governance.	2012-2015 Network secretariat
4	Inadequate support from governments and other stakeholders to commit to policy or institutional reforms or to provide needed human and financial resources	Governmental and organizational risks	High	Low	Adopt a participatory and consultative approach in project planning, design and implementation to ensure strong ownership which will involve the conduct of workshops and consultations to seek inputs/ views of stakeholders during inception, implementation and monitoring of activities progress.	2012-2015 Network secretariat
5	Lack of qualified and available staff and experts (especially technology experts) to participate in project support activities	Technical risks	Low	Low	Tap existing networks to identify and engage qualified experts for the project. When necessary, formal agreements will be forged such as Memorandum of Understanding/ Agreement to define key responsibilities.	2012-2015 Network secretariat

3.6. Consistency With National Priorities or Plans

181. Climate change awareness throughout developing countries of Asia and the Pacific is rising, so these countries are taking mitigation and adaptation actions to face and reduce the consequences of climate change. The least developed countries in Asia-Pacific are taking steps to follow a low-carbon and climate-resilient development path, reflected in their respective national communications to the United Nations Framework Convention on Climate Change (UNFCCC), National Climate Change Strategies and related action plans (Low carbon development plans, NAMAs, NAPAs), National Energy Plans and Strategies, Technology Needs Assessments (TNAs), National Investment Plans (NIPs), Medium-Term Expenditure Frameworks (MTEFs), Poverty Reduction Strategy Papers (PRSPs) or National Development Plans (NDPs), etc.

182. The actions and policies undertaken by the three biggest emitters among the developing countries of Asia and the Pacific are eloquent examples of the emerging priorities for addressing climate change issues:

- In China, The Renewable Energy Law of 2005 and the Working Plan for Energy Conservation and GHG Reduction in 2007 are examples of national climate change measures already underway.
- In India, the National Energy conservation program undertaken in 2008 shows the rising priority of mitigation actions.
- In Indonesia, keeping the energy elasticity below one (1) by strengthening energy conservation is a clear target in the evolving policies.

183. Moreover, an important number of coastal countries that are extremely vulnerable to climate-change-induced disasters are setting adaptation to climate change as top priorities on their policy agendas.

184. Developing countries have sought to enhance cooperation to tackle climate change through regional and sub-regional bodies such as the Association of Southeast Asian Nations (ASEAN), the Central Asia Regional Economic Cooperation (CAREC), and the South Asian Association for Regional Cooperation (SAARC). For example, ASEAN and CAREC leaders have, in various joint statements such as those issued to the UNFCCC, cited environmentally sound technologies as an important area of collaboration.

185. The project is designed in recognition of the importance of technology transfer to the global response to climate change, as reflected in the 2007 Bali Action Plan, the Copenhagen Accord, and the recent Cancun Agreement. The Cancun Agreement defines the key terms of the Technology Mechanism which includes the establishment of a Climate Technology Center and Network (CTCN) which could entail the setting up of regional and national technology centers and networks to facilitate information sharing, coordination, and investments.

186. By creating a pilot of the CTNFC in Asia-Pacific the project will support developing countries of Asia-Pacific to meet the growing demand for the climate technology investments captured in their policies and regulations. It will also provide insights to the UNFCCC for the design of the operating procedures of the technology mechanism and the CTCN in particular.

187. The project seeks to undertake a regional approach that will allow the development of country-specific or transboundary activities tackling climate change under different cultural and socio-economic conditions, increasing the global knowledge value and maximizing synergies, while taking advantage of economies of scale. Dissemination of lessons learned and cross-country linkages will ensure ongoing and effective knowledge exchange and dissemination.

188. To summarize, by activating technology transfer to foster investments in the EST's with the reinforcement of private-public partnership, the CTNFC project is consistent with national priorities and plans of the Asia and the Pacific countries.

3.7. Incremental Reasoning

189. The intervention of the GEF is ultimately responding to the international community's call for enhanced action on development, transfer and diffusion of technologies to achieve global environmental mitigation and adaptation benefits, by helping developing countries to address climate change, as articulated in decisions of the UNFCCC. The commitment of the governments to shift towards low-carbon and climate resilient development paths needs to be supported by the international community including bilateral and multilateral partners. With the support from GEF through the CTNFC, the current barriers to climate technology transfer at national and regional levels in Asia-Pacific (i.e. capacity, policy and funding barriers) will be adressed more rapidly and the significant global environmental benefits from CO2 emissions reductions in Asia-Pacific resulting from the deployment of low-emission technologies and techniques for strengthening climate resilience will be materialized sooner.

190. The project channels the complementary comparative advantages of the two cooperating GEF agencies, combining technical assistance for country readiness (UNEP) and investment facilitation (ADB). Thus, it will enhance the potential to leverage substantial investment from both the project resources and the private sector. Moreover, the knowledge shared, the tools and the guidance developed during the project will not only benefit the Asia-Pacific region, but will also provide UNFCCC with insights on how to build the operating procedures of the CTCN. Hence, the project has a replicability potential as it could serve as a model for regional CTCN approaches.

191. This project will contribute to accelerating the decoupling of economic growth from unsustainable resource consumption in Asia-Pacific and the transition of its economies to low carbon and climate resilient models. The continuous consumption of coal for power generation and the inefficient of use of energy makes societies more vulnerable to climate

change, leading to increased poverty, weather disasters and climate change victims. The Asia-Pacific market is at an early stage concerning climate friendly technologies, without technical and financial support it would continue to rely on inefficient technologies, non climate-resilient building and infrastructure and other low cost and unsustainable technologies.

192. GEF support is required to back up an integrated approach for low carbon and climate resilient development in Asia-Pacific and transform the current markets and unsustainable production/consumption patterns. By promoting an integrated approach for low carbon and climate resilient development in Asia-Pacific and fostering the deployment of climate technologies, the project will have a direct and indirect impact on adaptation, EE and RE business promotion, cleaner transportation as well as direct consumers choices towards more climate-friendly products and appliances. Furthermore, the introduction of best practices and adapted policies and technologies will help countries to meet the Millenium Development Goals. The implementation of the proposed project activities and the high replicability potential of the project are in accordance with the government's programs and are expected to urge the use of environmentally sound technologies in buildings, infrastructures, households, industries, transportation as well as the enhancement of living conditions.

3.8. Sustainability

193. Sustainability of the project is based on several factors including institutional routing, fostering investment and leveraging strong technical capacity building and market transformation through the development of business opportunities in the EST industry and the socio-economic dimension of the project by building climate-resilient societies. These factors seek to maximize the local responsibility of the project in order to ensure its sustainability, and they are highlighted hereafter:

- *Institutional.* The project builds on existing institutions and agencies that work to promote low-carbon and climate-resilient development in Asia and the Pacific depending on their focus areas. The project will strengthen ongoing initiatives, networks and plans; bring together all key actors to strengthen national and regional mitigation and adaptation policies; remove barriers and build readiness for climate technology transfer; strengthen cross-sectoral policy consultation platforms and strengthen public-private partnerships for low carbon and climate resilient development.
- *Technical.* The project will facilitate the investment in climate technologies through establishing or strengthening networks, technology centers, expert groups, knowledge sharing platforms and expert advice to both public and private sector. The networks, technical studies/assessments/tools and trainings developed through the project will ensure that after the project is over, project objectives and benefits will be owned and internalized by stakeholders and that stakeholders will have the capacity to sustain these project objectives. In addition, technology transfer ensures technical sustainability through the creation of centres of excellence that will foster the transfer of environmentally sound technologies and best practices, and will also conduct

research and development programs on EST's at a regional level so that sub-regions and countries may also benefit from these centres.

- *Financial.* Investments provided via equity funds will leverage other private investments and create trust in ESTs market and investment loans, thus improving local financing opportunities. Awareness campaigns will be conducted on both the supply and demand side to catalyze demand to achieve a significant and long-term market transformation process, which will sustain demand and supply dynamics of the climate tech-products and processes in the post-project period. Furthermore, the project intends to improve the readiness of countries by strengthening or creating adequate policy frameworks (policies, laws, regulations...) and financial incentives for ESTs deployment in Asia-Pacific.
- *Socio-economic.* Fostering the EST market will lead to the creation of green jobs and encourage tech-entrepreneurships in the region. Moreover, the provision of new sources of income and the building of climate-resilient capacity will contribute to poverty alleviation and to the enhancement of the living conditions of vulnerable groups. The global approach of the project for both adaptation and mitigation aspects will lead to positive socio-economic impacts at all levels of the society.

194. The sustainability of the project results will be ensured by involving all key national and regional stakeholders, supporting initiatives and developing adequate tools identified by the national and regional partners based on their needs and priorities. Also as the project aims to contribute to the design of the operational procedures of the TM and more specifically the CTCN by testing a regional CTCN approach for Asia-Pacific. The project will be feeding lessons learned and experience in the UNFCCC discussions on the TM in general as well as its links to the Green Climate Fund, it is expected that further agreements on the operationalization of the TM and the Green Climate Fund will provide sustainability to the pilot initiatives undertaken under this joint AsDB-UNEP pilot Asia-Pacific Climate Technology Network Secretariat and Finance Center.

3.9. Replication

195. The CTNFC pilot project in Asia-Pacific is an initiative to develop knowledge tools and guidance to facilitate investments in ESTs and to build experience and design procedures for the operation of regional CTCNs. The project offers an important replication potential for other regions such as Latin America and the Caribbean which also counts a huge number of islands and a high level of climate change vulnerability. Besides, the networks already operating in the region will serve as a channel to disseminate lessons and experience across the entire region.

196. At a sub-regional level, there are many networks already operating both on the mitigation side and on the adaptation side. For instance, the SEAN-CC network, with its stronger focus on mitigation during its phase 1 (2009-2011), or APAN, with a main focus on adaptation, are already operating in the region.

3.10. Public Awareness, Communications and Mainstreaming Strategy

197. The main strength of the proposed project relies on the strong institutional momentum and the participatory approach used by UNEP during the project preparation through its existing Climate Change networks in the region. During implementation, the project will pursue a participatory approach based on regular communications with decision makers and international partners. To keep in line with its objective of fostering investment in ESTs through regional and national readiness building, the project will develop and implement a communication strategy to disseminate results to target audiences to ensure that maximum benefits can be gained. The project management unit will be responsible for the development of the strategy and implementation plan capitalizing on the existing channels and periodic monitoring reports.

198. The progress and results of the activities will regularly made available through reports and through websites, etc. Periodic monitoring reports will be used to prepare memos for decision makers and discussion during project steering committee meetings. Thematic reports and newsletters will also be prepared and diffused to reach out scientific and professional audiences.

199. A dedicated website, jointly developed by the ADB and UNEP, will be launched and used as a communicational tool targeting the many constituencies interested and engaged in Climate Technology Transfer in the Asia-Pacific region. The website will host publications and tools developed under the project, including a publication addressing the best practices and lessons learned, making sure that any gained experience can be applied to a number of targets. Existing websites and publications of key agencies as well as the national media (newspapers, TV, and radio) will be encouraged to contribute to the awareness and communication strategy.

3.11. Environmental and Social Safeguards

200. The project components 1 (Facilitating a network of national and regional technology centers, network organisations and initiatives) and 3 (Design, develop and implement country driven EST policies, programs, demonstration project and scale-up strategies) offer the opportunity to ensure the ‘strengthening of’ and ‘compliance with’ environmental and social safeguards in the environmentally sound technologies market. In addition, adaptation actions promoted and supported by the project will have a direct impact on the reduction of risks related to climate disasters and the reduction of the number of climate-induced human losses. Moreover, mitigation efforts contribute to give access to new sources of energies that are less pollutant. Finally, the combined actions in mitigation and adaptation will lead to the enhancement of living condidtions and will strengthen environmental and social safeguards.

201. The environmental and social safeguards are part of the policy framework to be developed under project component 3. The main elements of the adapted policy will be derived from the UNEP experience and country driven initiatives. Activities at the regional and country level, under component 3, will ensure that environmental and social safeguards are included in the relevant policies, regulations, standards and good practice

guidelines. Similarly, information provided by the networks and centers under components 1 (Facilitating a network of national and regional technology centers, networks organisation) and 2 and component 2 (Building, strengthening center of excellence and institutions at national and regional level) will ensure the proper dissemination of environmental and social safeguards through tools and technical guides and newsletters.

202. Moreover, UNEP will ensure that each step of environmental and social aspects integration in the project is strictly in line with UN environmental and social safeguards principles and the Millennium Development Goals for sustainable poverty reduction.

SECTION 4: INSTITUTIONAL FRAMEWORK AND IMPLEMENTATION ARRANGEMENTS

203. The project will be overseen by two implementing agencies: ADB and UNEP. ADB and UNEP will take the lead on their respective activity components, while at the same time holding active communication and consultations. Both organizations are expected to assume the responsibilities for their respective components of the project, and to submit required reports to the GEF-SEC.

204. For the UNEP led components, the Regional Office for Asia-Pacific (ROAP) will act as implementing agency while the Division of Technology, Industry and Economics (DTIE) will act as the executing agency. In ROAP, the project will be assigned to a task manager based in Bangkok reporting to a manager from ROAP as its first reporting officer. While the Climate Technology Secretariat will be based in Bangkok, its overall coordinator/head will be the Head of the Technology Transfer Unit, Energy Branch based in DTIE, Paris.

Project Management Unit

205. Each agency will retain a core team to coordinate the overall Project and implement activities for which it has lead responsibility. Each Agency will be responsible for administering and reporting on the use of GEF grant resources allocated to their respective components as indicated in section 3.3.

206. ADB will establish a Climate Technology Finance Center in its headquarters in Manila, Philippines, and will engage expert consultants and secondees from partner organizations. The ADB core team will consist of management level staff, technical staff, secondees and consultants with climate change-related expertise in the energy, transport, water, health, and agriculture sectors.

207. UNEP will establish a Regional Climate Technology Network Secretariat in Bangkok to implement activities for which it has lead responsibility as outlined above. The UNEP core team will comprise the overall coordinator/head of the Climate Technology Secretariat and Head of the Technology Transfer Unit, Energy Branch based in DTIE in Paris, a technical advisor and a technical expert to be recruited and to be based in Bangkok, two program officers and an administrative and financial assistant already working for the Southeast Asia Climate Change Network Secretariat in ROAP based in Bangkok: these six staff will form a light structure refered to as the Climate Technology Secretariat. The project will also draw on other staff supporting UNEP's Climate Change Networks in the region (Southeast Asia and Central Asia CC Networks as well as APAN and Adaptation Knowledge Platform for Asia) and staff from the headquarter divisions coordinating and supporting UNEP's Climate Change and technology transfer activities.

208. The Regional Technology Network Secretariat will provide day-to-day support for the implementation of the various Network activities at regional and national level. It will be supported technically and methodologically by relevant staff at the UNEP Division of

Technology, Industry and Economics (DTIE, Paris) which provides back stopping services to staff, as well as a link between the Southeast Asian Network activities and the broader UNEP DTIE climate change programmes, and projects.

209. While UNEP project components will primarily be implemented and managed under the Technology Network Secretariat in Bangkok and ADB components will be implemented and managed under the Climate Technology Finance Center in Manila. The coordinator of the Climate Technology Network Secretariat and the coordinator of the Climate Technology Finance Center will form a joint project management unit (PMU) to ensure that the project as a whole is adequately coordinated. The PMU will hold virtual meetings once a month at the minimum. For details on the PMU refer to Annex I in the CEO endorsement document.

Asia-Pacific CTNFC Steering Committee

210. To guide strategic project planning decisions and to oversee the overall implementation of the project, a Steering Committee (SC) will be established. The SC will be composed of members from the GEF Secretariat, UNEP and the ADB. While the aim is to keep the SC as small as possible to allow it to work effectively, other organizations may be invited to join in SC meetings and discussions as deemed appropriate on an ad hoc basis. These are likely to include project staff, UNFCCC secretariat staff, project implementation partners such as WRI, IGES and participating country governments, and other stakeholders, including UNDP, World Bank, UNIDO, technical experts and staff from other related initiatives with UNEP and ADB.

211. The SC will meet face-to-face at least once a year and use other communications (e.g. email, phone) as necessary to decide on key operational matters such as work plans and resource allocation priorities. The SC also will address project coordination issues that may arise. For details on the SC refer to Annex H in the CEO endorsement document.

212. The project organizational chart of the project is illustrated in figure 13 below:

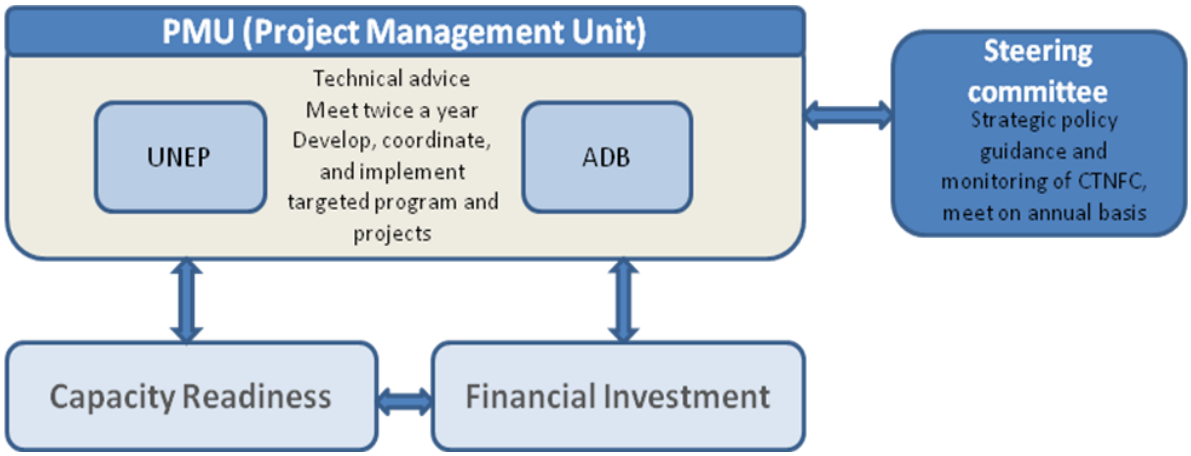


Figure 12: Project Organizational Chart

SECTION 5: STAKEHOLDER PARTICIPATION

213. The main stakeholders of the pilot Asia-Pacific Climate Technology Network and Finance Center are outlined in the table below.

Stakeholder role	Agencies	Comments
Lead agencies	ADB, UNEP, GEF	The two agencies responsible for the design and implementation of the project and GEF
Implementing partners	WRI, IGES, Venture Capital Funds, Technology market place operators, technology buyers/sellers, Project developers (public and private), DMC line agencies/ministries, Technology centers/institutes. Regional agencies, ASEAN, APERC.	Stakeholders who have an active role in implementing the project and are an integral part of project activities.
Active cooperation	Other ADB/UNEP projects and programs in related fields in the region, UNFCCC, IEA	Stakeholders with whom the project will seek active cooperation and coordination (e.g. in avoiding duplicating research or other work)
Communication only	Other IGOs, NGOs: USAID, World Bank, IFC, Bilateral Agencies	Stakeholders who will be the targets for knowledge dissemination activities.

214. All these stakeholders will be involved in project planning and implementation by using appropriate mechanisms and channels. While direct consultations, specific workshops and associated public awareness raising events and trainings are envisaged to be the main channels for the involvement of institutional stakeholders, broader consumer surveys and public media are expected to be the channels for reflecting the views of individual consumers. This is seen as a fundamental and essential element for a successful implementation.

215. A number of relevant international and regional entities which will be involved in supporting CTNFC activities in different countries have been identified. They are indicated in section 2.5. Close co-operation with these entities will be sought both in terms of exchanging the experiences and lessons learnt as well as through the development of joint activities.

216. In providing technical backstopping for country specific activities and working with international experts, major emphasis will be placed on making sure that the work will be done jointly and in close co-operation with local experts and interest groups, thereby facilitating associated on-the-job training.

217. Moreover, the private sector is a key element in building an adequate market place for EST's and to foster investments and Research and development funding. Private sector could also play an important role in knowledge sharing and as an information channel for disseminating information through the training of professionals and the delivery of information campaigns.

SECTION 6: MONITORING AND EVALUATION PLAN

218. The project will follow all standard GEF procedures for monitoring and reporting; this includes a mid-term evaluation and an end of project evaluation. The designated lead agency for reporting to GEF is ADB. UNEP will closely monitor the indicators for outputs and outcomes for the UNEP led components (components 1,2 and 3) against the Logical Framework (See appendix 4) to establish global and local benefits, financial and environmental, accrued from the capacity readiness components and submit progress reports and expenditure reports to ADB. ADB will prepare consolidated reports and communicate them to GEF once approved by both UNEP and ADB. For an outline plan and budget for the M&E activities to be conducted please refer to table 1 of the CEO endorsement document.

219. The M&E Plan will be presented and finalized for the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Monitoring and Reporting Events

Project Inception Phase

220. The Project Inception Workshop will be conducted with the participation of up to 2 representatives of each participating country, representatives of the two GEF implementing agencies and other co-financing partners and the executing agencies and/or representatives of other institutions participating on the specific components of the project.

221. The objective of this Inception Workshop is to help the global, regional and national project teams understand and take ownership of the project's goals and objectives, as well as finalize the preparation of the first annual, component and national sub-component specific work plans on the basis of the project's logframe matrix. This will include reviewing the logframes (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plans (AWP) with precise and measurable performance indicators, and in a consistent manner in regard of the expected outcome and outputs for the project.

222. Additionally, the purpose and objective of the Inception Workshop will be to: (i) introduce the key actors to each other; (ii) detail the roles, support services and complementary responsibilities of each entity; (iii) provide a detailed overview of the GEF reporting and M&E requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation as well as mid-term and final evaluations. Equally, the Inception Workshop will provide an opportunity to inform the participating entities on the project's financial management issues.

223. The Inception Report for the overall project will be prepared by the joint ADB-UNEP CTNFC Project Management Unit.

Progress and Financial Report

224. For the UNEP components a unified half-yearly "Progress & Financial Report" will be submitted to the relevant Programme Framework Coordinating Division and ADB in electronic format with a copy to QAS by:

- July 31 for the period between January 1 and June 30 or parts thereof for any given year.
- January 31 for the period between July 1 and December 31 or parts thereof for any given year.
- The last Progress & Financial Report (Final Report) must be submitted within 60 days of project closure.

Periodic Progress Reports

225. A detailed schedule of project review meetings for the overall project will be developed by the joint ADB-UNEP CTNFC Project Management Unit, in consultation with project implementation partners and stakeholder representatives, and this schedule is incorporated into the Project Inception Report. The schedule should include: (i) tentative time frames for the Project Management Unit meetings, Steering Committee meetings (and any other relevant advisory and/or coordination mechanisms) and (ii) project related Monitoring and Evaluation activities.

226. The implementation progress will be reported to the Implementing Agencies, the Project Management Committee (PMC) and GEF, as applicable, by the Quarterly Progress Reports (QPRs) and through annual Project Implementation Reviews (PIRs). The PIRs typically need to be prepared in July-August each year. ADB will be responsible for preparing the consolidated QPRs and overall PIR for the project - the schedule and requirements of which have been elaborated in the M&E sections of each country program document.

227. The performance and impact indicators along with their corresponding means of verification presented in the project's logframe matrix provide the basis for PIR reporting and associated progress assessment of the project concerning the proposed targets.

228. These reporting requirements will be complemented by annual or bi-annual project review meetings of the PMC. Additional PMC meetings can be organized when needed. The management should also inform the SC immediately of any delays or difficulties faced during implementation so that appropriate support or corrective measures can be adopted in a timely and remedial fashion.

229. Annual Project Report (APR): The format of the APR is flexible, but should include at least the following points: (i) an analysis of project performance over the reporting period, including outputs produced and, where possible, information on the status of the outcome,

(ii) the constraints experienced in the progress towards results and the reasons for these, (iii) the major constraints to achieve results, (iv) Annual Work Program (AWP), and (v) lessons learned, and clear recommendations for future orientation in addressing key problems in lack of progress. ADB will be responsible for preparing the overall APR for the project

230. Project Implementation Review (PIR): The GEF monitoring procedures and policies require a PIR, which is an annual monitoring process. The scope and content (template) of the PIR are already defined and are provided by the GEF M&E unit. It has become an essential management and monitoring tool for project managers and it offers the main vehicle for extracting lessons from ongoing projects. Once the project has been under implementation for a year, a PIR must be completed. The PIR can be produced any time during the year, and it should be agreed upon by the project management team and the GEF.

Terminal Report

231. During the last three months of the project, the AsDB-UNEP PMU will prepare the Project Terminal Report for the project as a whole. This comprehensive report will summarize all activities, achievements and outputs of the project, lessons learned, objectives met, or not achieved structures and systems implemented, etc. and will be the definitive statement of the project's activities during its lifetime. It will also lay out recommendations for any further steps that should be taken to ensure sustainability and replicability of the project's activities.

Independent Evaluations

232. A joint AsDB-UNEP midterm assessment will be conducted based on the M&E indicators to inform mid-course progress as per the logframe and to advise on any needed modifications to maximize the impact during the remaining implementation process. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions; and it will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The details of organization, terms of reference and timing of the project's overall mid-term evaluation to summarize and complement the country program specific mid-term evaluations will be decided in consultation with the PSC.

233. A joint AsDB-UNEP independent Final Evaluation will take place before the preparation of the terminal report and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the executing agency in consultation with the PMC.

SECTION 7: PROJECT FINANCING AND BUDGET

7.1 Overall Project budget – (see Appendix 1)

234. The total cost of UNEP components in the project is 9.09 million USD (excluding agency fee) of which 3.575 million USD (incl. 325,000 agency fee) is being requested from the GEF, 1 million USD will be financed in-kind by UNEP DTIE and the remaining will be in the form of in-cash contributions from Governments of Denmark (1.0 million USD), Finland (2.6 million USD in relation to SEAN-CC and earmarked for SEA) and Korea (0.84 million USD in relation to CAN-CC and earmarked for CA). The overall project budget is shown in the following table. The detailed GEF budget is annexed in Appendix 1 in UNEP budget line format.

Project Components	GEF Financing (a)		Co-Financing (b)		Total ($) (c=a+ b)
	(Million $)	%	(Million $)	%	
1. Facilitating a network of national and regional technology centers, networks organizations and initiatives	1,000,000	37	1,688,266	63	2,688,266
2. Building, strengthening center of excellence and institutions at national and regional level	1,000,000	75	328,366	25	1,328,366
3. Design, develop and implement country driven EST policies, programs, demonstration project and scale-up strategies	1,250,000	46	1,448,367	54	2,698,367
4. Project management (Staff, Evaluation...)	0	0	2,015,000	100	2,015,000
Total project costs	**3,250,000**	**37**	**5,480,000**	**63**	**8,730,000**

7.2 Project co-financing by component for the UNEP-executed part of the project - (see Appendix 2)

7.3 Project cost-effectiveness

235. As indicated in subsection 3.7 above, in general the country consultations conducted so far have confirmed that the barriers faced by different countries share much in common and that the efforts to overcome these barriers with GEF support would benefit from a global approach, both in terms of promoting knowledge sharing and exchanging the experiences and lessons learnt as well as by being more cost-effective than stand-alone national activities. On the technical assistance side, among others, consolidated technical backstopping, shared help-desk functions, shared experiences and lessons learnt as well as public awareness raising and marketing material, the preparation of which does not need to be started for every country from scratch.

APPENDICES

Appendix 1: Budget by Project Components and UNEP Budget Lines

UNEP Budget Categories		Budget by Project Component							
		1	2	3	Total	2012	2013	2014	Total
10	**PERSONNEL COMPONENT**								
1100	Project personnel				-				-
1101	Technical expert - Adaptation (P3)	133 333	133 333	133 333	400 000	80 000	160 000	160 000	400 000
1102	Technical Advisor - Mitigation (P4)	98 333	98 333	98 333	295 000	95 000	100 000	100 000	295 000
1103	Programme Officer (P3 - ROAP)	-	-	-	-	-	-	-	-
1104	Programme Officer (P3 - ROAP)	-	-	-	-	-	-	-	-
1105	Programme Officer (cf.P3x0.5 - DTIE)	-	-	-	-	-	-	-	-
1106	Programme Officer (cf.P3x0.25 - DEPI)	-	-	-	-	-	-	-	
1106	Regional CC coordinator (cof. P4x0.2 - ROAP)	-	-	-	-	-	-	-	-
1107	Head of Branch and Global CC coord. (2xcof.D1x0.02 - DTIE)	-	-	-	-	-	-	-	-
1105	Coordinator (cof.P5x0.4 - DTIE)	-	-	-	-	-	-	-	-
1199	*Sub-total*	231 667	231 667	231 667	695 000	175 000	260 000	260 000	695 000
1200	Consultants								
1201	Mitigation consultant	8 333	128 333	118 333	255 000	50 000	105 000	100 000	255 000
1202	Adaptation consultant	-	-	50 000	50 000	5 000	25 000	20 000	50 000
1299	*Sub-total*	8 333	128 333	168 333	305 000	55 000	130 000	120 000	305 000
1300	Administrative Support								
1301	Admin/Finance Assistant (Bangkok)	-	-	-	-	-	-	-	-
1302	Admin/Finance Assistant (Paris)	-	-	-	-	-	-	-	-
1399	*Sub-total*	-	-	-	-	-	-	-	-
1600	Travel on official business								
1601	Travel (Bangkok)	-	-	-	-	-	-	-	-
1602	Travel (Paris)	-	-	-	-	-	-	-	-
1699	*Sub-total*	-	-	-	-	-	-	-	-
	Component total	**240 000**	**360 000**	**400 000**	**1 000 000**	**230 000**	**390 000**	**380 000**	**1 000 000**
20	**SUB-CONTRACT COMPONENT**								
2100	SSFAs/PCAs								
2101	Sub-contracts with Government institutions	96 667	106 667	186 667	390 000	80 000	160 000	150 000	390 000
2102	Sub-contracts with NGOs/Centres	200 000	220 000	400 000	820 000	120 000	350 000	350 000	820 000
2199	*Sub-total*	296 667	326 667	586 667	1 210 000	200 000	510 000	500 000	-
2999	***Component total***	**296 667**	**326 667**	**586 667**	**1 210 000**	**200 000**	**510 000**	**500 000**	**1 210 000**
30	**TRAINING COMPONENT**								
3300	Meetings/Conferences								
3301	Network Meetings	450 000	-	-	450 000	150 000	150 000	150 000	450 000
3302	Technology Transfer Trainings	-	300 000	250 000	550 000	50 000	300 000	200 000	550 000
3399	*Sub-total*	450 000	300 000	250 000	1 000 000	200 000	450 000	350 000	1 000 000
3999	***Component total***	**450 000**	**300 000**	**250 000**	**1 000 000**	**200 000**	**450 000**	**350 000**	**1 000 000**

40	**EQUIPMENT AND PREMISES COMPONENT**								
4100	Expendable equipment								
4199	*Sub-total*	-	-	-	-	-	-	-	-
4200	Non-expendable equipment	-	-	-	-	-	-	-	-
4299	*Sub-total*	-	-	-	-	-	-	-	-
4999	***Component total***	-	-	-	-	-	-	-	-
50	**MISCELLANEOUS COMPONENT**								
5100	Operation and maintenance of equipment								
5199	*Sub-total*	-	-	-	-	-	-	-	-
5200	Reporting costs								
5299	*Sub-total*	-	-	-	-	-	-	-	-
5300	Sundry								
5399	*Sub-total*	-	-	-	-	-	-	-	-
5400	Hospitality and entertainment								
5499	*Sub-total*	-	-	-	-	-	-	-	-
5500	Evaluation								
5501	UNEP evaluation	-	-	-	-	-	-	-	-
5502	Midterm independent evaluation (joint AsDB-UNEP)	6 667	6 667	6 667	20 000	-	20 000	-	20 000
5502	Terminal Evaluation Report (TER) - (joint AsDB-UNEP)	6 667	6 667	6 667	20 000	-	-	20 000	20 000
5599	*Sub-total*	13 333	13 333	13 333	40 000	-	20 000	20 000	40 000
5999	***Component total***	**13 333**	**13 333**	**13 333**	**40 000**	**-**	**20 000**	**20 000**	**40 000**
99	**GRAND TOTAL (without Agency fee)**	**1 000 000**	**1 000 000**	**1 250 000**	**3 250 000**	**630 000**	**1 370 000**	**1 250 000**	**3 250 000**
	Agency fee (10%)	100 000	100 000	125 000	325 000	63 000	137 000	125 000	325 000
	GRAND TOTAL (with Agency fee)	**1 100 000**	**1 100 000**	**1 375 000**	**3 575 000**	**693 000**	**1 507 000**	**1 375 000**	**3 575 000**

Appendix 2 – Co-financing Table

UNEP Budget Categories		Total GEF	UNEP (in kind)	Denmark (in cash)	Finland SEAN-CC (in cash)	Korea CAN-CC (in cash)	Total co-financing	Total budget
10	**PERSONNEL COMPONENT**							
1100	Project personnel	-						
1101	Technical Expert - Adaptation (P3 - ROAP)	400 000	-	-	-	-	-	400 000
1102	Technical Advisor - Mitigation (P4 - ROAP)	295 000	-	90 000	180 000	-	270 000	565 000
1103	Programme Officer (P3 - ROAP)	-	-	-	320 000	55 000	375 000	375 000
1104	Programme Officer (P3 - ROAP)	-	-	-	320 000	55 000	375 000	375 000
1105	Programme Officer (cf.P3x0.5 - DTIE)	-	240 000	-	-	-	240 000	240 000
1106	Programme Officer (cf.P3x0.25 - DEPI)	-	120 000	-	-	-	120 000	120 000
1106	Regional CC coordinator (cof. P4x0.2 - ROAP)	-	90 000	-	-	-	90 000	90 000
1107	Head of Branch and Global CC coord. (2xcof.D1x0.02 - DTIE)	-	22 000	-	-	-	22 000	22 000
1105	Coordinator (cof.P5x0.4 - DTIE)	-	200 000	-	-	-	200 000	200 000
1199	*Sub-total*	695 000	672 000	90 000	820 000	110 000	1 692 000	2 387 000
1200	Consultants							
1201	Mitigation consultant	255 000	-	-	30 000	100 000	130 000	385 000
1202	Adaptation consultant	50 000	-	-	30 000	100 000	130 000	180 000
1299	*Sub-total*	305 000	-	-	60 000	200 000	260 000	565 000
1300	Administrative Support			-				
1301	Admin/Finance Assistant (Bangkok)	-	30 000	-	120 000	-	150 000	150 000
1302	Admin/Finance Assistant (Paris)	-	70 000	-		-	70 000	70 000
1399	*Sub-total*	-	100 000	-	120 000	-	220 000	220 000
1600	Travel on official business						-	-
1601	Travel (Bangkok)	-	-	-	90 000	100 000	190 000	190 000
1602	Travel (Paris)	-	-	-	30 000	-	30 000	30 000
1699	*Sub-total*	-	-	-	120 000	100 000	220 000	220 000
	Component total	**1 000 000**	**772 000**	**90 000**	**1 120 000**	**410 000**	**2 392 000**	**3 392 000**
20	**SUB-CONTRACT COMPONENT**							
2101	SSFAs/PCAs							
2101	Sub-contracts with Government institutions	390 000	-	210 000	365 000	100 000	675 000	1 065 000
2102	Sub-contracts with NGOs/Centres	820 000	-	200 000	300 000	90 000	590 000	1 410 000
2199	*Sub-total*	1 210 000	-	410 000	665 000	190 000	1 265 000	2 475 000
2999	***Component total***	**1 210 000**	**-**	**410 000**	**665 000**	**190 000**	**1 265 000**	**2 475 000**
30	**TRAINING COMPONENT**							
3300	Meetings/Conferences							
3301	Network Meetings	450 000	23 000	-	450 000	140 000	613 000	1 063 000
3302	Technology Transfer Trainings	550 000	-	500 000	402 000	100 000	1 002 000	1 552 000
3399	*Sub-total*	1 000 000	23 000	500 000	852 000	240 000	1 615 000	2 615 000
3999	***Component total***	**1 000 000**	**23 000**	**500 000**	**852 000**	**240 000**	**1 615 000**	**2 615 000**

40	**EQUIPMENT AND PREMISES COMPONENT**							
4100	Expendable equipment	-	30 000	-	2 000	-	32 000	32 000
4199	*Sub-total*	-	30 000	-	2 000	-	32 000	32 000
4200	Non-expendable equipment	-	70 000	-	1 000	-	71 000	71 000
4299	*Sub-total*	-	70 000	-	1 000	-	71 000	71 000
4999	***Component total***	**-**	**100 000**	**-**	**3 000**	**-**	**103 000**	**103 000**
50	**MISCELLANEOUS COMPONENT**							
5100	Operation and maintenance of equipment	-	10 000	-	-	-	10 000	10 000
5199	*Sub-total*	-	10 000	-	-	-	10 000	10 000
5200	Reporting costs	-	15 000	-	-	-	15 000	15 000
5299	*Sub-total*	-	15 000	-	-	-	15 000	15 000
5300	Sundry	-	30 000	-	-	-	30 000	30 000
5399	*Sub-total*	-	30 000	-	-	-	30 000	30 000
5400	Hospitality and entertainment	-	-	-	-	-	-	-
5499	*Sub-total*	-	-	-	-	-	-	-
5500	Evaluation							
5501	UNEP evaluation	-	50 000	-	-	-	50 000	50 000
5502	Midterm independent evaluation (joint AsDB-UNEP)	20 000	-	-	-	-	-	20 000
5503	Terminal Evaluation Report (TER) - (joint AsDB-UNEP)	20 000	-	-	-	-	-	20 000
5599	*Sub-total*	40 000	50 000	-	-	-	50 000	90 000
5999	***Component total***	**40 000**	**105 000**	**-**	**-**	**-**	**105 000**	**145 000**
99	**GRAND TOTAL (without Agency fee)**	**3 250 000**	**1 000 000**	**1 000 000**	**2 640 000**	**840 000**	**5 480 000**	**8 730 000**
	Agency fee (10%)	325 000	-	-	-	-	-	325 000
	GRAND TOTAL (with Agency fee)	**3 575 000**	**1 000 000**	**1 000 000**	**2 640 000**	**840 000**	**5 480 000**	**9 055 000**

Appendix 3: Incremental Cost Analysis

Strategy	Baseline	Alternative	Increment
Overall project outcome: Diffusion of technologies that promote low-carbon and climate-resilient development enhanced (overall objective, ADB/UNEP combined)	• Fossil fuel based economy in place • Very few entrepreneurship and investments in ESTs • Increasing CO2 emissions.	• More RE and EE implemented • Up to 7 Mt CO2 avoided • Increase number of green jobs	• **GEF Increment:** Technical assistance and financial support through intensive capacity building activities and pilot project implementation Total GEF cost: US$ 3,250,000 • **Estimated global benefits:** Direct post project emissions reductions resulting from CTNFC activities equivalent to a total of 13,457,309 tCO2e (9,891,958 tCO2e from investments in energy efficiency, 1,839,600 tCO2e from investments in renewable energy and 645,000 tCO2e from investments in sustainable transport solutions)

Strategy	Baseline	Alternative	Increment
Outcome 1: Increased collaboration in the region for transfer of climate technologies between thematic or sector/technology specific centers/institutions (Component 1: UNEP)	• Near zero	• Institutions and individuals identified contract • Active network	• **GEF Increment:** Technical assistance, coordination and organization of collaboration and dialogues GEF cost: US$ 1,000,000 • **Estimated global benefits:** Direct: Enhancing of dialogue and technology transfer between national and regional stakeholders Indirect: connected to the successful initiation and implementation of clean energy technologies projects as a result of the creation of a conducive environment.
Outcome 2: Thematic and technology specific institutions and centers are strengthened (and/or created) (Component 2: UNEP)	• Few technology specific institutions with no country balance within a region	• Strengthen existing institutions and networks in specific technologies and create institutions in key sectors whenever sectoral or geographical gaps are identified	• **GEF Increment:** Technical assistance and coordination GEF cost: US$ 1,000,000 • **Estimated global benefits:** Capacity building and strengthening of dialogue and partnership. National and international thematic experts groups working with both public and private sector

Strategy	Baseline	Alternative	Increment
Outcome 3: Support and opportunities for national, regional and global investments in ESTs are explored (Component 3: UNEP) **Outcome 4:** Enabling policy environment and mechanisms created for transfer of climate technologies (Component 3: UNEP)	• BAU scenario	• Increase the share of RE use and adaptation technologies with a rational use of energy	• **GEF Increment:** Technical assistance to remove the barriers to the development of a full-fledged EE and RE policy and to establish a regulatory framework for legislative support and financial incentives to EE and RE GEF cost: US$ 1,250,000 • **Estimated global benefits:** Policy framework ready to enhance the development of ESTs in the region (regulations, feed in tariffs...), Demonstration projects successfully operating and scale-up in action

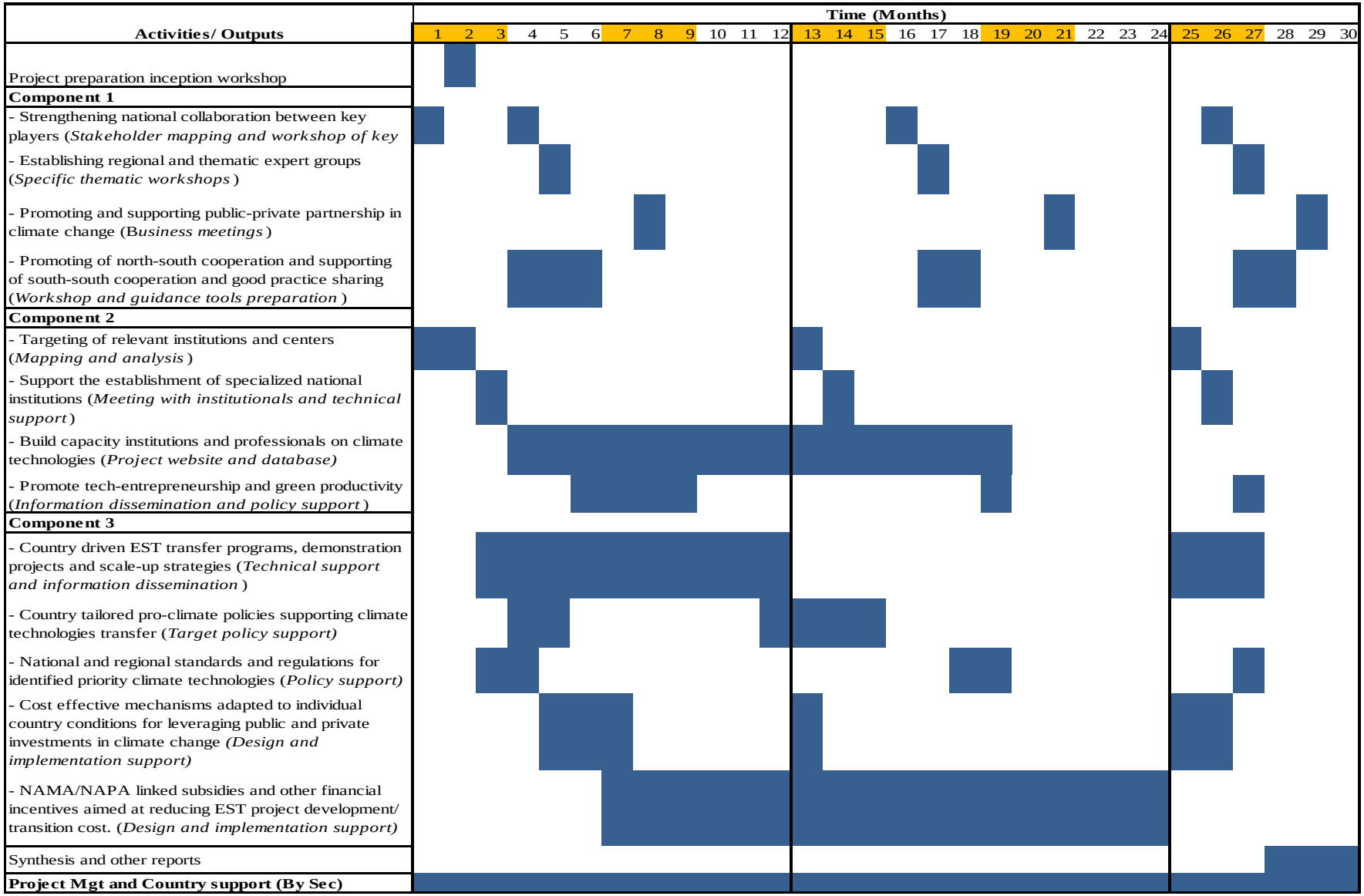
Appendix 4: Results Framework

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
		Start of Project (2012)	End of Project (2015)		
Overall project outcome: Diffusion of technologies that promote low-carbon and climate-resilient development enhanced (overall objective, ADB/UNEP combined)	Total investment in low-carbon and climate resilient technologies in participating DMCs increases by more than 10% from 2012 to 2020 (baseline 2012: to be determined) Direct investment in climate resilient and mitigation technologies realized.	(baseline 2012: to be determined) $180 million investment for climate technologies mobilized leading to $480 million leveraged from co-financiers	More than 10% increase in investment from 2012 to 2020 TA progress reports (ADB)	DMC reports to the United Nations Framework Convention on Climate Change DMC and ADB investment portfolios, market surveys Industry and market reports Reporting requested by ADB	Lack interest of governments due to other competing demands and more urgent priorities Weak national institutions and limited human and financial resources Governments are committed to foster climate technology transfer for low carbon and climate resilient development Strong engagement from public and private sector professionals and operators
Outcome 1: Increased collaboration in the region for transfer of climate technologies	Number of climate technology networks linking public and private	Near zero	5 new regional or sub-regional sector-specific or technology specific climate technology networks	Reports from the new regional or sub-regional sector-specific or technology specific climate technology networks	Public and private stakeholders are willing to exchange, partner and synergize for accelerating climate technology transfer

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
		Start of Project (2012)	End of Project (2015)		
between thematic or sector/technology specific centers/institutions (Component 1: UNEP)	professionals on climate technology transfer in the region Improved cross-sectoral and cross regional coordination for climate technology transfer at national and regional levels	Limited cross-sectoral coordination and cross-regional for climate technology transfer	6-8 countries and 2 sub-regional associations/economic organizations (ASEAN, CAREC) have officially made steps to improve coordination for climate technology transfer	Reports/strategies/plans/statements from national and sub-regional climate change coordination entities on climate technology transfer (e.g. National Climate Change Councils, ASEAN working group on Climate Change…)	
Outcome 2: Thematic and technology specific institutions and centers are strengthened (and/or created) (Component 2: UNEP)	Level of support provided to thematic and technology institutions and centers with a view to improve the quality and availability of climate technology transfer services at regional and national level	Baseline to be established	At least 12 institutions/centers supported 70% of the supported institutions and/or centers respond that the support provided meet their needs	Feedback from institutions/centers on tailored technical support/assistance received (survey, letters/written communications…) Reports training workshops delivered or other capacity building events and workshop Evaluation forms by participants	Existing government agencies and private sector institutions dealing with in EST's are willing to cooperate for the successful establishment of climate technology transfer services/facilities

	Indicator	Baseline	Targets	Source of verification	Risks and Assumptions
		Start of Project (2012)	End of Project (2015)		
Outcome 3: Support and opportunities for national, regional and global investments in ESTs are explored (Component 3: UNEP)	Number of new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies developed	BAU scenario	5-8 new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies submitted for funding	National and regional country-driven EST transfer programmes, demonstration projects and scale-up strategies	Existing government agencies and private sector are willing to engage and collaborate to design, develop and implement climate technology transfer initiatives
Outcome 4: Enabling policy environment and mechanisms created for transfer of climate technologies (Component 3: UNEP)	Number of new legal and regulatory instruments to promote sustainable EST market development	Limited number of enabling policies for climate technology transfer	New enabling policies to foster climate technology transfer are established in 6-8 countries	National policy documents	Governments are committed to foster climate technology transfer for low carbon and climate resilient development

Appendix 5: Work plan and timetable



Appendix 6: Key Deliverables and Benchmarks

The main deliverables of the Project are:

- Climate technology transfer barriers analysis and policy recommendations for barrier removal illustrated by case studies and lessons learnt from policy instruments for climate technology transfer used in different countries.
- Tools for analyzing the impact of the different policy instruments at the national macroeconomic level.
- Improved capacities for mitigation and adaptation technology transfer policy formulation
- Practical guidelines for mitigation and adaptation actions developed and disseminated (e.g. on building codes, sustainable transport, climate resilient buildings and infrastructure, etc.).
- Technical support guidebooks for Energy Efficiency codes and new standards for Energy Efficiency, renewable energies and adaptation actions.
- EST pilot projects, programmes and scale-up strategies for climate change technology transfer.
- New and strengthened national and regional Centres of Excellence in charge of promoting climate technology transfer and R&D.
- Improved capacities to leverage investment in ESTs.
- Knowledge and information sharing tools for enhancing awareness of climate mitigation and adaptation good practices (including an online knowledge platform).
- Guidelines, materials, tips, examples, experiences and lessons learned from other countries for the design, implementation and financing of marketing campaigns and other actions that have the goal to stimulate and initiate market transformation of EST products.
- A list and description of the national, regional and international experts and associations working on mitigation and adaptation technologies.

Benchmarks for the project will be based on the assessment of the existing climate technologies in mitigation and adaptation approaches, conditions of operations, efficiency costs, readiness of use and implementation and associated efficiency indicators such as CO_2 emissions avoided, energy consumed, percentage of Renewable energy and energy efficiency, and adaptation codes implemented. They will be established in studies to be performed by consultants recruited under the Project.

Appendix 7: Costed M&E Plan, Results-Based Monitoring and Evaluation Framework, and Costed M&E Work Plan Summary (also refer to CEO document Table 1)

Intervention Logic	Indicators	Baseline	Target	Sources of Verification	Means of Verification[28] Monitoring / sampling (frequency / size), location or group	Responsibility, timeframe, and budget (object of expenditure and cost)
		Start of Project (2012)	End of Project (2015)			
Overall project outcome: Diffusion of technologies that promote low-carbon and climate-resilient development enhanced (overall objective, ADB/UNEP combined)	Total investment in low-carbon and climate resilient technologies in participating DMCs increases by more than 10% from 2012 to 2020 (baseline 2012: to be determined) Direct investment in climate resilient and mitigation technologies realized.	(baseline 2012: to be determined) $180 million investment for climate technologies mobilized leading to $480 million leveraged from co-financiers	More than 10% increase in investment from 2012 to 2020 TA progress reports (ADB)	DMC reports to the United Nations Framework Convention on Climate Change DMC and ADB investment portfolios, market surveys Industry and market reports Reporting requested by ADB	Analysis of DMC and ADB investment portfolios, market surveys, Industry and market reports, and TA progress reports	ADB Climate Technology Finance Center
Outcome 1: Increased collaboration in the	Number of climate technology	Near zero	5 new regional or sub-regional sector-specific or technology specific	Reports from the new regional or sub-regional sector-	Analysis of reports, strategies, statements from	AsDB-UNEP PMU UNEP Climate

[28] The means of verification is the source of data that the project team will use to track the indicator (e.g., if the indicator is "forest cover diversity", the means of verification could be "field surveys data" and "satellite imagery). Reviewing of project reports alone is insufficient.

region for transfer of climate technologies between thematic or sector/technology specific centers/institutions (Component 1: UNEP)	networks linking public and private professionals on climate technology transfer in the region Improved cross-sectoral and cross regional coordination for climate technology transfer at national and regional levels	Limited cross-sectoral coordination and cross-regional for climate technology transfer	climate technology networks 6-8 countries and 2 sub-regional associations/economic organizations (ASEAN, CAREC) have officially made steps to improve coordination for climate technology transfer	specific or technology specific climate technology networks Reports/strategies/plans/statements from national and sub-regional climate change coordination entities on climate technology transfer (e.g. National Climate Change Councils, ASEAN working group on Climate Change…)	Networks, Governments and regional economic organizations; Periodic project monitoring reports, Meeting/workshop reports, and project Website	Technology Secretariat Joint AsDB-UNEP Mid-term evaluation: 5000 USD UNEP end of project evaluation: 12,500 USD Joint AsDB-UNEP Terminal evaluation: 5000 USD
Output 1.1: Collaboration is strengthened between key stakeholders at national level	Number of inter-sectoral meetings on climate technology transfer	Near zero	6-8 national and 2 sub-regional inter-sectoral meetings on climate technology transfer	Meeting/workshop reports Government/regional bodies websites	Periodic project monitoring reports, Meeting/workshop reports, and project Website	UNEP Climate Technology Secretariat Quarterly
Output 1.2: Regional and thematic expert groups are established to provide guidance	Number of thematic expert groups operating	Near zero Not balanced between sub-regions	3-6 active regional (and/or sub-regional) thematic expert groups	Project monitoring reports Meeting/workshop reports Tools/ guidebooks Research papers/policy briefs	Available list of national and international experts with all the contact details. Feedback from	UNEP Climate Technology Secretariat Quarterly

and support to private and public actors for climate technology transfer				developed	expert group advice beneficiaries	
Output 1.3: Public-private partnership on climate technologies are promoted and supported	Number of subsidies or enabling policies that support public-private partnership and/or private investment	Limited exchange between Public and private sector on technology transfer for low carbon and climate resilient development	1-2 new enabling policies that support public-private partnership and/or private investment	Policy documents	Analysis of policy documents	UNEP Climate Technology Secretariat Quarterly
Output 1.4: North-South cooperation is promoted and South-South cooperation supported for sharing know-how, knowledge and good practices	Online knowledge management platform Number of regional network meetings	Limited exchange between actors, sub-regions and countries on technology transfer for low carbon and climate resilient development	CTNFC online knowledge platform 3 regional network meetings	Project monitoring reports Meeting/workshop reports Website	Evaluation of the knowledge Management website Available website statistics generated from web-reporting software/ services.	UNEP Climate Technology Secretariat Quarterly
Outcome 2: Thematic and technology specific institutions and centers are strengthened (and/or created)	Level of support provided to thematic and technology institutions and centers with a view to improve	Baseline to be established	At least 12 institutions/centers supported	Feedback from institutions/centers on tailored technical support/assistance received (survey, letters/written	Analysis of surveys, workshop/activity reports Summary of main messages from	AsDB-UNEP PMU UNEP Climate Technology Secretariat Joint AsDB-UNEP

(Component 2: UNEP)	the quality and availability of climate technology transfer services at regional and national level Number of climate technology trainings		70% of the supported institutions and/or centers respond that the support provided meet their needs	communications…) Reports training workshops delivered or other capacity building events and workshop Evaluation forms by participants	letters/written communications	Mid-term evaluation: 5000 USD UNEP end of project evaluation: 12,500 USD Joint AsDB-UNEP Terminal evaluation: 5000 USD
Output 2.1: Appropriate institutions and centres for supporting climate technology transfer are identified	Number of institutions and centers identified and engaged in activities Technical expertise of the centers Geographical coverage	N/A	12-15 appropriate institutions/centres identified for providing climate technology transfer services in the region	Project monitoring reports		UNEP Climate Technology Secretariat Quarterly
Output 2.2: The establishment of specialized national climate technology transfer institutions is supported	Number of country requests for setting-up or strengthening specialized institutions for climate technology transfer	Limited number of specialized national institutions to support and foster climate technology transfer	3-6 country requests supported 3-6 studies audits /assessments/business plans developed	Project monitoring reports Institutional audit reports and capacity assessments Business plans		UNEP Climate Technology Secretariat Quarterly

	Number of studies/audits/assessments/business plans supported					
Output 2.3: The capacities of climate technology institutions and professionals are strengthened	Number of trainings designed and implemented Number of people trained and level of satisfaction	Lack of expertise in the different areas of climate technology transfer	10-15 trainings designed and implemented 300 – 450 people trained with 95% satisfaction	Training material Training workshop reports Feedback and evaluation forms from training participants	Analysis of available material and information from the training workshops that took place	UNEP Climate Technology Secretariat Quarterly
Output 2.4: Tech-entrepreneurship development and green productivity is promoted	Number new of organizations/institutes playing an advisory role for tech-entrepreneurship	BAU scenario: limited interest and engagement in green productivity initiatives	3-6 of the organizations/ institutes supported are playing an advisory role for tech-entrepreneurship	Business plans and reports from organizations and institutes Feedback from the beneficiaries of their services	Analysis of business plans and reports from the organizations and institutes, and feedback on services provided	UNEP Climate Technology Secretariat Quarterly
Outcome 3: Support and opportunities for national, regional and global investments in ESTs are explored (Component 3: UNEP)	Number of new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies developed	BAU scenario	5-8 new high quality bankable country-driven EST transfer programmes, demonstration projects and scale-up strategies submitted for funding	National and regional country-driven EST transfer programmes, demonstration projects and scale-up strategies	Analysis of feedback on submitted proposals from potential funders to whom the project was submitted	AsDB-UNEP PMU UNEP Climate Technology Secretariat Joint AsDB-UNEP Mid-term evaluation: 5000 USD

						UNEP end of project evaluation: 12,500 USD Joint AsDB-UNEP Terminal evaluation: 5000 USD
Output 3.1: The design, development and implementation of country-driven EST transfer programs, demonstration projects, and scale-up strategies is supported	Number of EST transfer programmes, pilots or scale-up strategies designed through the project	Limited number of climate technology demonstration projects, EST transfer programmes and scale-up strategies	12 demonstration projects EST transfer programmes and scale-up strategies in key technologies designed by the end of the project	Project concepts/documents	Quality assessment and review of project concepts/documents	UNEP Climate Technology Secretariat Quarterly
Outcome 4: Enabling policy environment and mechanisms created for transfer of climate technologies (Component 3: UNEP)	Number of new legal and regulatory instruments to promote sustainable EST market development	Limited number of enabling policies for climate technology transfer	New enabling policies to foster climate technology transfer are established in 6-8 countries	National policy documents	Analysis of national policy documents	AsDB-UNEP PMU UNEP Climate Technology Secretariat Joint AsDB-UNEP Mid-term evaluation: 5000 USD UNEP end of project evaluation: 12,500 USD

						Joint AsDB-UNEP Terminal evaluation: 5000 USD
Output 4.1: The design and establishment of country-tailored pro-climate policies supporting climate technology transfer is supported	Number of improved policies for climate technology transfer	Limited number of enabling policies for climate technology transfer	3-6 country tailored policies for climate technology transfer are improved/established	Policy documents	Quality assessment and review of policies	UNEP Climate Technology Secretariat Quarterly
Output 4.2: The design and establishment of national and regional standards and regulations for identified priority climate technologies is supported	Number of new climate technology Regulations and standards developed	Limited specific regulations for EST standards certification or quality control mechanisms in place	3-6 new regulations for EST standards are adopted	Policy documents	Quality assessment and review of policies	UNEP Climate Technology Secretariat Quarterly
Output 4.3: The design and establishment of cost-effective mechanisms adapted to individual country conditions for leveraging increased public and private investment	Number of new financing models/mechanisms specifically tailored for EST market needs	Limited financing models/mechanisms for fostering EST markets	1-2 new financing models/mechanisms specifically tailored for EST market needs developed	Financing models/mechanisms	Quality assessment and review of financing models/mechanisms	UNEP Climate Technology Secretariat Quarterly

in climate technologies is supported						
Output 4.4: The design and establishment of NAMA/NAPA-linked subsidies and other financial incentives aimed at reducing EST project development/transaction costs is supported	Number of new financial incentives to foster climate technology transfer	Limited financial incentives to foster climate technology transfer	1-2 financial incentives to foster climate technology transfer developed	Financial incentive mechanisms	Quality assessment and review of financial incentive mechanisms	UNEP Climate Technology Secretariat Quarterly

3. Cost of project inception workshop (please include proposed location, number of participants):
UNEP GEF contribution: 75,000 USD (Joint ADB-UNEP Inception meeting, additional ADB funding will be allocated);
Proposed location: ADB Headquarters Manila, Philippines / Number of participants: 50-60

4. Cost of Mid-Term Review/Evaluation:
UNEP GEF contribution 20,000 USD (Joint ADB-UNEP Mid-Term Review/Evaluation)

5. Cost of Terminal Evaluation:
UNEP GEF contribution 20,000 USD (Joint ADB-UNEP Terminal Evaluation)

6. Any additional M&E costs [29]:
End of project evaluation (UNEP funded): 50,000 USD

[29] Please describe the activity and included the expected cost. Additional M&E costs could be related to the following: (i) Additional reviews and evaluation processes for phased and tranched projects; (ii) application & validation of tracking tools.

Appendix 8: Summary of Reporting Requirements and Responsibilities

Project Inception Phase

The Project Inception Workshop will be conducted with the participation of all potentially interested stakeholders as they have been identified in the previous sections as well as other GEF implementing agencies and the GEF Secretariat.

The purpose and objective of the Inception Workshop (IW) will be to: (i) introduce the key actors to each other; (ii) detail the roles, support services and complementary responsibilities of each entity; (iii) provide a detailed overview of the GEF reporting and monitoring and evaluation requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation as well as midterm and final evaluations.

This workshop will also provide the opportunity to fine-tune the definition and exact content of the various activities as presented in the project's logical framework matrix (logframe). This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed and, on the basis of this exercise, finalize the Annual Work Plans (AWP) with precise and measurable performance indicators and in a manner consistent with the expected outcomes of the project.

The project's Inception Report, by building on the outcome of the Inception Workshop, will be prepared by the CTNFC Project Management Team.

Periodic Progress Reports

A detailed schedule of review meetings for the project will be developed by the Project Management Unit (PMU), in consultation with project implementation partners and stakeholder representatives, and this schedule will be incorporated into the Project Inception Report. The schedule should include: (i) tentative timeframes for the PSC meetings, (or other relevant advisory and/or coordination mechanisms) and (ii) project-related M&E activities.

The implementation progress will be reported to the PSC and GEF, as applicable, through the Quarterly Progress Reports (QPRs) and through annual PIRs. The PIRs typically need to be prepared in July-August of each year - the first one reporting from 12 months after commencement of the project. ADB will be responsible for preparing the overall PIRs for the project by drawing from the specific component progress reports - the schedule and requirements of which have been elaborated in the M&E sections of each component.

The performance and impact indicators along with their corresponding means of verification presented in the project framework provide the basis for PIR reporting and associated assessment of the progress of the project towards the set targets. The

performance indicators of the components are specified in the logframe and they provide a basis for monitoring the progress of each specific component activity, which in turn will provide a basis for a consolidated progress report of the project as a whole. These reporting requirements will be complemented by annual or bi-annual project review meetings of the PSC (Project Steering committee). Additional PSC meetings can be organized on a as needed basis. The management should also immediately inform the PSC of any delays or difficulties faced during implementation so that appropriate support or corrective measures can be adopted in a timely and remedial fashion.

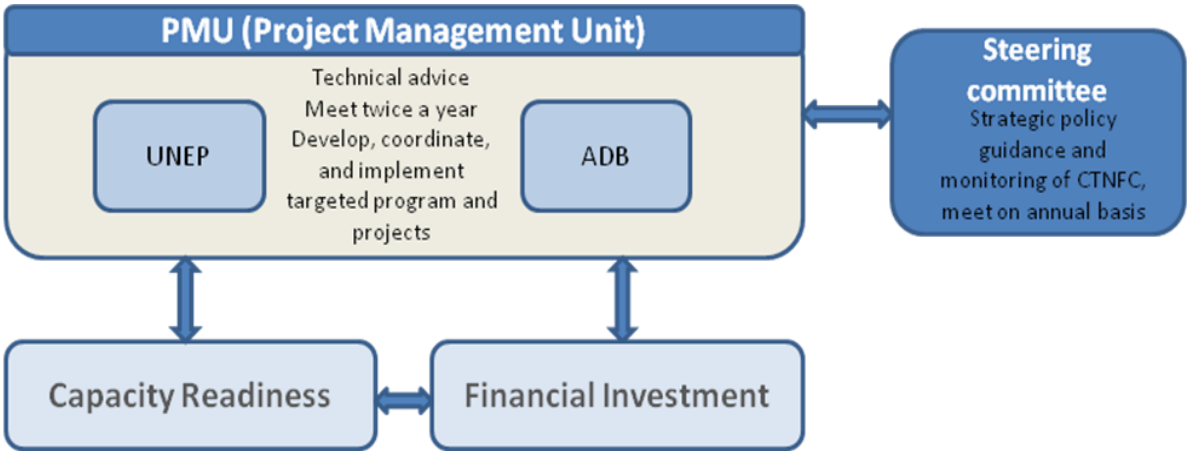
Terminal Report

During the last three months of the project, the PMU will prepare the Terminal Report for the project as a whole, by drawing from the specific terminal component reports. This comprehensive report will summarize all project activities, achievements and outputs, lessons learned, objectives met or not achieved, the structures and systems implemented, etc. and will be the definitive statement on the activities during the lifetime of the project. It will also lay out recommendations for any further steps that may need to be taken to ensure the sustainability and replicability of the project activities.

Appendix 9: Standard Terminal Evaluation ToR

The terminal evaluation will a joint ADB-UNEP evaluation and related ToRs will be developed by the ADB-UNEP PMU at the time of the joint Mid Term Review/evaluation.

Appendix 10: Decision making flowchart and organizational chart



Appendix 11: Terms of reference

CTN Coordinator – P5

Duties and Responsibilities

Under the supervision of the Chief of the Energy Branch, DTIE, the incumbent will specifically:

1. Establish the regional Climate Technology Network (CTN) of the Climate Technology Network and Finance Center (CTNFC) building on UNEP's existing sub-regional Climate Change Networks

- Act as the lead person in UNEP for liaison with the ADB Climate Technology Finance Center (FC) and overall coordination of the CTNFC.
- Lead the establishment of the Climate Technology Network Secretariat.
- Support and develop partnerships with regional and international institutes, centers of excellence and organizations.
- Coordinate strategic CTN events such as meetings of network members.
- Identify and develop funding opportunities.

2. Coordinate the implementation of CTN's support service activities

- Supervise and guide the staff of the Climate Technology Network Secretariat
- Coordinate support for national and regional activities that build capacity or strengthen skills of climate technology transfer in the network member countries.
- Oversee the quality of the technical and policy support services provided by the CTN to network members.
- Monitor project budgets and expenditures and coordinate the preparation of required financial and substantive progress reports.

3. Contribute to UNEP's Overall Climate Change and Technology Transfer Efforts

- Supervise the collection and analysis of information on the broad range of technology transfer issues, including technology and market developments, regulatory developments, new approaches and mechanisms for transfer of technologies and development of markets, political developments, and changes in public opinion.
- Prepare briefings, draft correspondence and respond to requests for information on issues related to the project and climate change technology issues in Asia-Pacific.
- Represent UNEP at conferences, intergovernmental meetings, professional seminars, and similar events.
- Ensure efficient and effective external communications on the project and its results with a range of audiences by working closely with ADB

Admin staff – G5

Duties and Responsibilities

Under the supervision of the CTN coordinator, the incumbent will support the staff of the UNEP Climate Technology Network Secretariat for administrative and financial matters related to project implementation:

1. Assist with the management and monitoring implementation of CTN activities in Asia-Pacific;
   - Assist with the preparation of the CTN's budget and work plan;
   - Maintain up to date accounts for programmes;
   - Facilitate an exchange of information between ADB FC and UNEP CTN;
   - Assist in the coordination of CTN with the implementation of UNEP's engagement in the Asia-Pacific pilot countries.

2. Support CTN administrative duties:
   - Coordinate and prepare travel arrangements;
   - Coordinate and prepare procurement processes;
   - Liaise with the Administration of UNEP to ensure all related support services for the implementation of the work plan and office activities;
   - Monitor funds maintained under UNEP accounts;
   - Organize relevant meetings, workshops, conferences related to the work of the unit;
   - Liaise with external companies/consultants that provide goods and services to the programme, ensuring their effective and timely delivery and process their payments;
   - Establish and maintain a filing system;
   - Elaborate and maintain a database of contacts of the CTN Asia-Pacific;
   - Maintain a roster of qualified experts and coordinate with the ADB FC to share information on the subject;
   - Coordinate the provision of office equipment and supplies in a timely fashion and ensure their inventory.

3. Support CTN’s Knowledge Management System:
   - Assist in the maintenance of the information dissemination platforms including its web-page, web-log and social networking account;
   - Elaborate country fact sheets.

4. Perform other related duties as assigned.

Technical Advisor Mitigation – P4

Duties and Responsibilities

Under the supervision of the the CTN Coordinator, the incumbent will specifically:

1. Support to the CTN mitigation activities and services:

- Participate in the organization of network events, providing background information and suggesting priorities for discussion in relation to low carbon technology transfer.
- Produce focused pieces of technical analysis on low carbon technology transfer of wider mutual interest for the Network countries.
- Identify the climate mitigation technologies, services and approaches that would be relevant for the targeted countries.
- Identify and establish synergies and collaboration with national, regional and international technical experts and institutes who can develop and share experience on low carbon technology transfer issues.

2. Provision of overall technical backstopping on low carbon technology transfer to Network members:

- Provide technical and strategic assistance for the CTN's Climate Change mitigation activities, including planning, monitoring, and external relations, and assuming quality control of the CTN's mitigation support services and activities.
- Support national activities that build capacity or strengthen skills of technology institutes and faculties, as well as certification and standardization bodies in the network member countries.
- Support efforts by Network member countries to acquire low carbon technologies through projects linked to the Clean Development Mechanism.
- Provide policy advice and support to network members on regulatory frameworks for low carbon technology transfer, including those related to the Clean Development Mechanism.
- Provide technical support to network members on low carbon technology transfer issues, in particular in the development or adaptation of new standards and norms and in the adoption of efficient certification and enforcement procedures
- Provide hands-on support to network members in the areas of mitigation project design, management and planning, management of site activities, information management, monitoring, and impact assessment.
- Assist the CTN in the coordination of the work of all mitigation consultants and sub-contractors, ensuring the timely delivery of expected outputs, and effective synergy among the various sub-contracted activities.

- With national and regional partners, identify opportunities for offering targeted support for low carbon technology transfer actions, particularly when successful approaches can be adopted by other countries.
- Identify the low carbon technologies that would be relevant for the targeted countries. Assist countries in identifying specific low carbon technologies that might be developed or adopted at the national /regional level, and in implementing pilot projects.
- Support development of specific programmes or approaches that hasten technology transfer and the adoption of low carbon development policies by contributing to a clear understanding of barriers existing at the national level and ways in which they can be overcome, and support the preparation (if and when needed) of Technology Needs Assessments (TNAs) and Technology Market Assessments (TMAs)
- Document lessons from project implementation and make recommendations to the Steering Committee for more effective implementation and coordination of project activities; and
- Perform other tasks as may be requested by the CTN Coordinator.

Technical Expert Adaptation – P3

Duties and Responsibilities

Under the supervision of the the CTN Coordinator, the incumbent will specifically:

1. Support to the CTN and its members:

- Participate in the organization of network members meetings, providing background information and suggesting priorities for discussion in relation to climate change adaptation.
- Produce focused pieces of technical analysis on technology transfer and adaptation.
- Identify and invite national and international climate change adaptation experts and institutes who can develop and share experience on issues of common interest to the Network members.
- Identify the climate change adaptation technologies, services and approaches that would be relevant for the targeted countries.

2. Targeted Support to CTN Activities:

- Identify suitable adaptation experts and institutes, and monitor the quality and timeliness of advisory services provided.
- Support regional and national activities that build capacity or strengthen skills of institutions and institutes working on Climate Change adaptation issues.
- Identify good opportunities for offering targeted support on climate change adaptation, particularly when successful approaches can be adopted by other countries.
- Assist governments in identifying specific adaptation technologies that might be developed or adopted at the national /regional level, and in implementing pilot projects.
- Support development of specific programmes or approaches that hasten adaptation technology transfer by contributing to a clear understanding of barriers existing at the national level and ways in which they can be overcome, and support the preparation (if and when needed) of Technology Needs Assessments (TNAs) and Technology Market Assessments (TMAs)
- Perform other tasks as may be requested by the CTN Coordinator.

Programme Officers - P3 (Mitigation and Adaptation)

Duties and Responsibilities

Under the supervision of the CTN Coordinator, the incumbent will specifically:

1. Support to the Network of Climate Change Officials:

- Participate in the organization of network members meetings, providing background information and suggesting priorities for debate in relation to climate change policy issues.
- Maintain day-to-day contact with the project stakeholders (incl. national focal points and their staff), provide information and back-up support, answer queries, and foster additional exchange among the members.
- Maintain and update a database on climate change policies through a website and/or other instruments such as a newsletter.
- Ensure high quality exchange of knowledge and experience and country to country cooperation on climate technology transfer.
- Update and ensure dynamic management of the information dissemination platforms.

2. Provide Targeted Support to National Activities:

- Identify good opportunities for offering targeted support, particularly when successful approaches can be adopted by other countries.
- Prepare Terms of Reference for consultants, identify suitable experts, and monitor the quality and timeliness of advisory services provided.
- Support the national climate change focal points and national climate change officers in improving the National Communications, Nationally Appropriate Mitigation Actions and National Adaptation Programmes of Action submitted to the UNFCCC Secretariat.

3. Contribute to UNEP's overall climate change mitigation and technology transfer efforts:

- Collect and analyze information on the broad range of climate change issues, including regulatory developments, new approaches and mechanisms for the adoption of climate change initiatives, political developments, and changes in public opinion.
- Contribute to the knowledge management process within the Technology Transfer Unit, the Energy Branch, and in other parts of DTIE and UNEP, ensuring regular sharing of information, lessons learned, experience, and knowledge on climate change and technology transfer.
- After the establishment of similar networks in other regions (e.g. Latin America, Africa, NIS), contribute to the transfer of knowledge and the network results to his or her counterparts.

Appendix 12: Co-financing commitment letters from project partners

MINISTRY FOR FOREIGN AFFAIRS OF FINLAND

HEL7271-4

9th February 2012

Maryam Niamir-Fuller
GEF Executive Coordinator, UNEP
P.O. Box 30552
Nairobi
Kenya

Co-financing for the ADB-UNEP Pilot Asia-Pacific Climate Technology Network and Finance Center

Dear Ms. Niamir-Fuller,

The Ministry for Foreign Affairs of Finland is hereby pleased to inform that we are in a process of making an agreement with the United Nations Environment Programme for the second phase of the project entitled *Southeast Asia Knowledge Network of Climate Change Offices*. Once this is confirmed the contribution of 2,000,000 million euros provided by Finland to the project implemented by the UNEP will benefit also the ADB-UNEP *Pilot Asia-Pacific Climate Technology Network and Finance Center* approved by the GEF Council in May 2010. These funds will support during 2012-2013 a climate change networking activity among ASEAN member states.

The Finnish contribution will strengthen and build capacity of climate change focal points and climate change offices in ASEAN countries, allowing them to better fulfill their UNFCCC commitments and obligations, particularly regarding the development and implementation of climate policies. Approximately one third of the Finnish grant will be dedicated to professional staff costs, one third to direct technical assistance provided in the countries through sub-contracts; and one third to various training activities and workshops.

The Government of Finland is committed to supporting developing countries in their efforts to implement decisions taken under the UNFCCC, thereby accelerating their transition onto a low carbon and climate resilient development path.

Yours sincerely,

Mr. Jukka Pesola
Head of Unit

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KOICA

KOREA INTERNATIONAL COOPERATION AGENCY

18th April 2012

Maryam Niamir-Fuller
GEF Executive Coordinator, UNEP
P.O.BOX 30552
Nairobi
Kenya

Co-financing for the ADB-UNEP Pilot Asia-Pacific Climate Technology Network and Finance Center

Dear Ms. Niamir-Fuller

This has reference to the request of United Nations Environment Programme(UNEP) Asia Pacific Office for co-financing opportunity through the GEF project in regards to the UNEP project entitled "*Capacity Building in Development of Policy Framework for Promotion of Low Carbon Emission Societies in Central Asia(2010-2012)*" with contribution of $840,000 USD funded by KOICA in 2010 under the "*East Asia Climate Partnership*" , presidential special initiative of Republic of Korea aimed to address climate challenges and promote green growth in developing countries. It is planned that approximately one third of the KOICA funding is allocated to technical assistance, one third to training/capacity building and one third to regional workshops and networking of climate change focal points for Central Asian countries

Korea International Cooperation Agency(KOICA) is much pleased to inform you that our project will help support and reinforce *ADB-UNEP Pilot Asia-Pacific Climate Technology Network and Finance Center* approved by the GEF Council in May 2010. Extending network and building capacity of climate change focal points and experts in the countries of Central Asia will significantly allow a vital platform to exchange knowledge and experience for policy and technology options for clean production, renewable energy and energy efficiency.

The KOICA on behalf of the government of Republic of Korea is committed to supporting developing countries in concerted efforts to eradicate global poverty and create climate resilient and resource efficient society by pursuing a path to greener sustainable growth for our common future.

Yours sincerely,

Mr. Hoe Jin Jeong
Head of Office
Office of Climate Change response

MINISTRY OF FOREIGN AFFAIRS OF DENMARK

M. Niamir-Fuller
GEF Executive Coordinator, UNEP
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16 April 2012

Dear Mrs Niamir-Fuller,

The Government of Denmark hereby confirms that the ADB-UNEP Pilot Asia-Pacific Climate Technology Network and Finance Center approved by the GEF Council in May 2010 will benefit from a co-financing amount of $1,000,000 in cash for 2011-2013 for Facilitating Readiness and Implementation for Mitigation in Vietnam and Indonesia.

More specifically, the Danish contribution will be committed to accelerate the implementation of public and private mitigation projects in Vietnam and Indonesia - with a focus on energy sector Nationally Appropriate Mitigation Actions (NAMAs) - through the provision of technical advice and institutional capacity-building services to national energy and environment agencies (and their stakeholders) with the aim of helping design and then implement national mitigation activities:

1. 80,000 USD will contribute to the implementation of Component 1: Facilitating a network of national and regional technology centers, networks, organizations, and initiatives through the following activities:
    - Promoting institutional cooperation in the emerging areas of Technology Action Plans (TAPs) and NAMAs and disseminating knowledge gained from the national mitigation activities in Indonesia and Vietnam [meetings and training.

2. 920,000 USD will contribute to the implementation of Component 3: Design, development and implementation of country-driven EST transfer policies, programs, demonstration projects, and scale up strategies, through the following activities:
    - Supporting policy change, strengthening enabling environments, and improving readiness for finance to foster

technology transfer for energy efficiency and renewable energy [trainings and technical assistance sub-contracts]

Denmark is committed to promote technology transfer for low carbon development and support developing countries to implement decisions taken under the framework of the UNFCCC.

Kind regards

Niels Hedegaard Jørgensen
Head of Section
Department of Environment, Energy and Climate Change

UNITED NATIONS ENVIRONMENT PROGRAMME
Programme des Nations Unies pour l'environnement Programa de las Naciones Unidas para el Medio Ambiente
Программа Организации Объединенных Наций по окружающей среде برنامج الأمم المتحدة للبيئة
联合国环境规划署
UNEP

001/JSD/MR 7 February 2012

Dear Mrs Niamir-Fuller,

UNEP-DTIE hereby confirms that the ADB-UNEP Pilot Asia-Pacific Climate Technology Network and Finance Center approved by the GEF Council in May 2010 will benefit from a co-financing amount of $1,000,000 for 2012-2014 coming from UNEP, as an in-kind contribution covering project management costs and some technical expertise costs for the design of enabling policies and projects for climate technology transfer under component 3.

Yours sincerely,

Mark Radka
Head Energy Branch

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Appendix 13: Endorsement letters of GEN National focal points

The project is financed from the GEF's global and regional funding window and the GEFSEC has agreed that endorsement letters are not needed since the project responds to a request by the UNFCCC to the GEF to finance technology transfer under the Poznan Strategy Action Plan.

Appendix 14: Draft procurement plan

A procurement plan will be developed during internalization of the project document.

Appendix 15: Tracking tools

Cf. CEO document (Annex F and Annex G)