



Financing Climate Change Mitigation and Adaptation Role of Regional Financing Arrangements

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ABBREVIATIONS

ADB	–	Asian Development Bank
APCF	–	Asia Pacific Carbon Fund
ASEAN	–	Association of Southeast Asian Nations
CAREC	–	Central Asia Regional Economic Cooperation
CCF	–	Climate Change Fund
CDM	–	clean development mechanism
CEFPF	–	Clean Energy Financing Partnership Facility
CO ₂	–	carbon dioxide
DMC	–	developing member country
FCF	–	Future Carbon Fund
GEF	–	Global Environment Facility
GHG	–	greenhouse gas
GMS	–	Greater Mekong Subregion
kWh	–	kilowatt hour
PRC	–	People's Republic of China
SAARC	–	South Asia Association for Regional Cooperation
UNFCCC	–	United Nations Framework Convention on Climate Change

NOTE

In this paper, "\$" refers to US dollars.

Abstract

The financing needs of climate change mitigation and adaptation are uncertain and large. In response, an extensive architecture of financing for climate change mitigation and adaptation has started to develop around the world. Is there a role for a regional approach in this developing financing architecture? This paper examines the issue in the context of the Asia and Pacific region. The paper argues that, while climate change is a global public good, it has strong regional features, and, consequently, regional institutions and financing arrangements play an important role. In particular, regional financing arrangements have a special role in climate change adaptation. Regional financing arrangements complement and strengthen the global collective action on climate change. They should be treated as essential elements of the overall strategy for fighting climate change globally, and be supported accordingly. Moving ahead, a first priority should be to scale up and expand existing regional financing arrangements. Another important priority is to create specialized regional funds to address key region-specific climate change adaptation needs. Finally, opportunities for private sector financing in a regional setting should be promoted through appropriate policy and regulatory support.

1. Introduction

The financing needs for climate change mitigation and adaptation are uncertain and large. Reflecting the uncertainties associated with potential climate change scenarios and their likely impact, various estimates of financing needs for climate change mitigation and adaptation show wide diversity. According to the United Nations Framework Convention on Climate Change (UNFCCC), mitigation measures needed to return the global greenhouse gas (GHG) emissions to current levels in 2030 require investment and financial flows of \$200 billion to \$210 billion per annum (World Bank 2008a).¹ Investment needs for adaptation in developing countries in 2030 are estimated at \$28 billion to \$67 billion.² Estimates made by other agencies add to the diversity.

An extensive architecture on financing for climate change mitigation and adaptation has started to develop at the global level, although the earmarked funds fall far short of the requirements. The main dedicated sources of financing for mitigation at the global level include the Clean Development Mechanism (CDM) and various dedicated funds managed by the Global Environment Facility (GEF) and the World Bank. In 2007, the value of primary CDM transactions was \$7.4 billion, which is estimated to have leveraged \$36 billion of flows to developing countries. GEF has about \$250 million per annum in grants available for mitigation during 2006–2010. The Adaptation Fund (financed through a 2% levy on revenue generated by the CDM and through voluntary contributions), is a key fund dedicated for adaptation to climate change and is estimated to be \$80 million to \$1 billion per annum by 2012. Other main adaptation funds include UNFCCC Special Funds (about \$270 million) and a portion of the GEF Trust Fund (\$50 million until 2010). The Global Facility for Disaster Risk Reduction, with \$48 million during 2007–2008, is another source of financing for adaptation. Dedicated funds that support both mitigation and adaptation include the World Banks' Climate Investment Funds (about \$6 billion) and the European Commission's Global Climate Change Alliance (GCCA). In addition to these dedicated funds, most global multilateral development organizations and several bilateral agencies have started to emphasize climate change mitigation and adaptation in their regular operations, which is making available more funds for relevant activities. Similarly, many other international organizations—such as the Consultative Group on International Agricultural Research (CGIAR), World Health Organization (WHO), United Nations Development Programme (UNDP), and World Meteorological Organization (WMO)—have or are developing programs mainly to finance climate change adaptation in the areas pertinent to their activities.

Governments in many countries have also started to provide financial support for climate change mitigation and adaptation activities within their territories. These are resulting in national programs and activities, which are the key building blocks of the global collective fight against climate change. However, national and global efforts alone are not sufficient to address the climate change challenges comprehensively. Regional institutions and regional financing arrangements too have a critical role, without which the collective global fight against climate change will not be complete. Indeed, financing arrangements on climate

¹ World Bank 2008a is also the source of most other data mentioned in this section.

² Global investment needs for adaptation are estimated at \$49 billion to \$171 billion.

change have started to develop at the regional level. However, as climate change is a global public good, the current global debate on the subject seems to be paying inadequate attention on the important role that regional financing arrangements will play in this area. Why regional financing arrangements are important for effective action on climate change is explained further in section 3, which discusses both strengths and weaknesses of regional financing arrangements. However, before proceeding to discuss these, it is important to define some key concepts.

2. Definitions and the context

In this paper, a regional³ financing arrangement refers to a financing facility or mechanism with two key features: (i) the activities it funds are limited to the region, and (ii) the arrangement's member countries or governments from within the region have a substantial role in the decision making. The second feature, which refers to a political dimension, is the distinctive feature of a regional financing arrangement. Examples of regional financing arrangements on climate change include a dedicated financing facility on climate change in a regional development bank or a regional organization, a portion of a regional development bank's normal financing that is devoted to climate change mitigation and adaptation activities, and any other financing facility or mechanism on climate change having the two key features. In this paper, a regional office of a global or bilateral financing facility is not considered to be a regional financing arrangement, although it may have some features of the latter.

That the headquarters of a facility or mechanism is in the region is a likely but not necessary feature for considering it a regional financing arrangement. The source or amount of funding or the type of activity supported by a regional financing arrangement is also not considered a requirement for this purpose. A regional financing arrangement can raise funds from various sources globally as well as regionally. Similarly, a regional financing arrangement can support a regional program as well as a global program within the concerned region.

This paper discusses regional financing arrangements for climate change mitigation and adaptation mainly in the context of the Asia and Pacific region, which is the most important developing region for climate change mitigation because of its rapidly growing economies and rising energy consumption. The region is equally important from the perspective of climate change adaptation because it is home to over half the world population and about two thirds of the world's poor. From the region's perspective, addressing climate change mitigation and adaptation is an integral part of its primary concern for sustainable development.

³ In the context of financing arrangements, the term "region" refers to an area conventionally known as a region (e.g., Asia, Europe) or subregion (e.g., East Asia, South Asia), or any subregion comprising more than one country. However, the paper also uses the term "subregion" in general discussions.

3. Rationale for regional financing arrangements on climate change

While global financing arrangements are necessary to address climate change, regional financing arrangements play an equally essential role. The main reason for strengthening or establishing regional financing arrangements for climate change mitigation and adaptation are summarized below.⁴

- (i) **Need for regional collective action and specialization.** Kenneth Arrow notes that global climate change is a public good par excellence (Arrow 2007). However, global climate change has strong regional dimensions as well. Sources of GHG emissions and impacts of climate change are not homogenous across the world. For example, prevention of deforestation (in the Amazon) is a more important mitigation issue in Latin America than it is in Australia. On the adaptation side, the projected impact of climate change shows large variations across different regions of the world. Thus, all regions do not require identical mitigation or adaptation measures. Moreover, each region has some distinct and/or unique features (e.g., Asia's heavy dependence on coal, Africa's high potential for generating solar thermal energy), and often countries in a region share common but specialized resources and constraints. These determine the mitigation and adaptation options available to the region's countries. For the same reasons, countries in a region are likely to respond to climate change in a common but specialized manner. For example, the development of carbon capture and sequestration technology may be pursued more actively by Asian countries (and in North America and Australia) given their high dependence on coal, than by other countries.

Climate change also needs regional action because most impacts of climate change are unlikely to remain confined to the boundaries of one country. For example, the melting of Himalayan glaciers will mainly affect Asia, and not be confined to one country. One country will not be able to address such impacts alone. Thus, most impacts of climate change will be neither global in nature nor confined to one country. Essentially, most impacts of climate change are regional public goods, which should be addressed accordingly.

There are two main implications of the above features. First, regional collective action is needed on climate change. The common needs of countries in a region can be better handled regionally. Most impacts of climate change are regional public goods requiring regional collective action. By addressing a key shared challenge and having the issue on the main agenda of regional organizations, a regional financing arrangement will also build consensus for actions and strongly contribute to regional cooperation on

⁴ Some of the following apply to other development efforts at the regional level as well.

climate change issues. Thus, a regional financing arrangement will greatly strengthen the overall global collective action to fight climate change. Second, there is a need for specialization in financing climate change mitigation and adaptation in each region due to some common but specialized needs, resources and constraints facing the countries in each region. Compared with a global arrangement, a regional financing arrangement is better positioned to specialize and offer tailor-made solutions. Compared with individual country action, regional collective actions have greater potential for harnessing the benefits of economies of scale. Hence, in addition to global financing, separate regional institutions and financing arrangements are needed to address climate change effectively. A regional approach also offers proximity benefits such as closer interaction and learning, lower transaction costs, and co-benefits from many actions.

Role in mitigation versus role in adaptation

Regional financing arrangements have a special role in climate change adaptation. There is a lack of symmetry between climate change mitigation and adaptation. The two involve different issues and need different financing schemes. Mitigative activities have almost perfect global externalities while most adaptation activities are limited to a smaller geographical area or population. Mitigation relates to a global public good while most adaptation measures relate to regional public goods. Reflecting these, mitigation evokes global interest while adaptation measures are region- or even country-specific with limited direct interest of the global community other than from a philanthropic perspective. Accordingly, global action for adaptation will be weaker than global action for mitigation. On the other hand, because of the strong regional nature of climate change impacts (e.g., climate refugees in Asia, Himalayan glacier melting), a regional financing arrangement will be more responsive and relevant than a global one. Thus, while a regional financing arrangement complements global financing arrangements for mitigation, it has a very special and even unique role in adaptation.

- (ii) **Local knowledge, proximity, and operational advantages.** As is true of all regional arrangements, a regional financing arrangement on climate change benefits from sound knowledge of local conditions and opportunities, and close linkages with local academia, research institutions, and nongovernmental organizations based in the geographical focus of its activities. Such an arrangement will also have the normal advantages of decentralization of administration and decision making because of independence and flexibility below the global level. These translate into several operational advantages, including quick response time and low transaction cost.
- (iii) **Potential for additional resource mobilization.** A regional financing arrangement could attract additional resources especially from within the region. During the last few years, many countries, particularly in Asia, have

experienced a phenomenal rise in their external reserves backed by their high saving rates. Some of the savings could be mobilized and used advantageously for financing climate change mitigation and adaptation activities. At the global level, UNFCCC has already suggested that nations consider a voluntary allocation of up to 5% of foreign exchange reserves to a fund to invest in mitigation projects (UNFCCC 2007). It appears easier to mobilize these resources through regional financing arrangements because of the following reasons. First, because of their substantial role in the decision making of a regional financing arrangement, countries in the region are likely to be more forthcoming in providing fund for such an arrangement. Second, the success of European Union has engendered a strong move toward regionalism across the globe (ADB 2007). Given the momentum for regionalism, it may be easier to mobilize such resources for climate change first at the regional or subregional level before moving on to building consensus at the global level. Third, there is a growing desire in Asia to use the region's savings within the region. This is reflected in initiatives such as Chiang Mai agreement and Asian Bond Market Initiative to improve regional financial integration. Another dimension of the resource mobilization potential of a regional financing arrangement relates to donor contributions. Many official donors have geographical or regional preferences. While public funds are the main financiers of public goods, charitable organizations and philanthropic individuals also provide finance for public goods. Often they, too, have geographical preferences. Regional financing arrangements are well placed to mobilize such funds at the regional level. Last, as discussed in detail in section 5 of this paper, suitable regional private financing mechanisms can also catalyze additional fund flows for climate change.

- (iv) **Inequality and free rider concerns.** This item relates to the political dimensions of the global climate change debate. The country perspectives on many issues related to causes and consequences of climate change vary widely across the world. This arises partly from the almost perfect global public good nature of climate change, which leads to the possibility of one country perceiving others to be “free riding” at its cost. This perception is exacerbated by inequalities in income, consumption, and GHG emissions. For example, in 2005, the per capita carbon dioxide (CO₂) emission of the United States, at 20.1 tons, was five times that of the People's Republic of China (PRC), at 4.1 tons (World Bank 2008b). In the same year, the per capita income in the United States at \$37,084 was 25 times more than the corresponding figure in the PRC at \$1,451 (World Bank 2008b). Further, the per capita electricity consumption in the United States at 13,640 kilowatt hours (kWh) was about 8 times that in the PRC at 1,781 kWh (IEA 2007). Similar differences also exist between most major regions of the world. For example, the per capita CO₂ emission and per capita electricity consumption in North America are about 6 and 8 times, respectively, the corresponding figures for Asia (IEA 2007). However, because of the almost perfect global externality of GHG emissions, the burden of reducing these falls on all regions and all countries. Irrespective of their inequalities, all countries must

contribute to climate change mitigation collectively although the level of responsibilities can be differentiated. This differentiates climate change from other development challenges, most of which do not require universal action. Further, climate change requires mitigation in a country based on its emission level rather than income level. Although it is generally agreed that the principle of common but differentiated responsibilities should apply to various aspects of the global collective fight against climate change, a detailed agreement on the exact level of responsibilities of different parties has yet to be made. Compared to the interregional differences just noted, there is much less inequality among countries within most major regions of the world, including Africa, Asia, Latin America, and North America. Thus, the free rider concern is generally not as contentious a matter within a region as it is between two regions showing wide differences in per capita CO₂ emission and electricity consumption.

Accordingly, it is easier to build consensus on climate change issues among countries within a region than countries around the world. It is also easier to first reach consensus on a contentious issue among a small group of countries in a region generally facing similar circumstances before building consensus among widely diverse countries across the world. Thus, a regional financing arrangement, in which countries in the region have a substantial role in the decision making process, has a special role in generating consensus and ownership of climate change programs among the countries within the region. In many cases, the consensus building rather than the fund mobilization may be the more important role of a regional financing arrangement. Thus, a regional institution or financing arrangement serves as an important building block of global collective action on climate change. Further, several countries have already initiated action individually to address climate change. Regional financing arrangements serve as a useful link between county-level and global actions.

The main possible weaknesses of a regional financing arrangement on climate change include capacity problems, fragmentation, lack of economies of scale, and local rivalries. The design of regional financing arrangements must overcome these to the extent possible. To begin with, this requires establishing regional financing arrangements selectively to avoid capacity problems and fragmentation of financing sources. There is also a need to assure that the operations are large enough to achieve economies of scale. Last, adequate consensus building is required before initiating a new regional financing arrangement, especially where local rivalry is a problem. However, local rivalry is a diminishing factor given the rising momentum for regionalism across the globe. Taking these considerations into account, suitably designed regional financing arrangements offer major benefits in the context of climate change.

4. Existing regional financing arrangements on climate change in the Asia and Pacific region

Establishment of regional financing arrangements for climate change adaptation and mitigation in the Asia and Pacific region has started well, but the process is still at a nascent stage. The process needs to be nurtured and supported as part of the larger concern for sustainable development in the region.

Other than ADB, there are no significant financing arrangements on climate change in the Asia and Pacific region, including subregional organizations such as the Greater Mekong Subregion (GMS), Association of Southeast Asian Nations (ASEAN), Central Asia Regional Economic Cooperation (CAREC), and South Asia Association for Regional Cooperation (SAARC). ADB provides good examples of regional financing arrangements on climate change. In addition to its regular financing as a regional development bank with increasing emphasis on climate change, ADB has several dedicated funds for financing climate change mitigation and adaptation in the Asia and Pacific region. These perform a variety of functions, including mobilizing concessional resources, catalyzing private capital, and maximizing market mechanisms. All these funds are regional in coverage (with activities limited to the Asia and Pacific region), and based on a mix of regional and global financing.

The first of the following funds covers both mitigation and adaptation. The next three focus mainly on mitigation efforts. The last two are regional funds in ADB that are increasingly being used to finance climate change related activities. The final item summarizes.

4.1 Climate Change Fund (CCF)

The CCF was established in May 2008 to provide grant financing for projects, research, and other activities to address the causes and consequences of climate change in ADB's developing member countries (DMCs). The CCF invests in projects that lead to reducing GHG emissions or to adapting to climate change. It seeks to address climate change by scaling up DMC mitigation and adaptation activities in diverse areas including forest and land-use management. ADB provided an initial contribution of \$40 million to the CCF. The fund is open for further contributions from countries, development organizations, foundations, the private sector, and other sources.

4.2 Clean Energy Financing Partnership Facility (CEFPF)

The CEFPF was established in April 2007. It provides grant financing to ADB's DMCs for improving energy security and transitioning to low carbon economies through cost-effective investments in technologies and practices. In addition, CEFPF resources finance policy, regulatory, and institutional reforms that encourage clean energy development. With a target size of \$250 million, CEFPF donor commitments from Australia, Japan, and Norway amounted to \$83.5 million as of August 2008. Discussions with other donors are at an advanced stage, and more contributions are expected as DMCs identify new projects for financing.

4.3 Asia Pacific Carbon Fund (APCF)

The APCF was operationalized as a part of ADB's carbon market initiative (CMI) in May 2007. The APCF provides ADB's DMCs additional financial resources for clean energy projects. The APCF provides "upfront" finance for projects eligible for CDM in return for a proportion of certified emissions reduction to be generated until 2012. The APCF has received funding commitments of \$151.8 million from seven European countries—Belgium, Finland, Luxembourg, Portugal, Spain, Sweden, and Switzerland.

4.4 Future Carbon Fund (FCF)

ADB recently established the FCF for projects that will generate carbon credits after 2012. The FCF will enable clean energy project developers to benefit even for post-2012 GHG reductions, thereby inducing more investments into energy efficiency and renewable energy. The FCF was approved on 4 July 2008 and it is expected to be operational in early 2009. The initial target size of the FCF is \$100 million but it may be increased to \$200 million if there is sufficient demand. The fund is receiving indications of commitments from potential donors.

4.5 Water Financing Partnership Facility (WFPF)

The WFPF provides financial resources and technical support in the key areas of rural water services, urban water services, and river basin water management, including adaptation to climate change. For 2007/2008, the WFPF has secured donor commitments for a total of \$26 million from Australia, Austria, The Netherlands, and Norway.

4.6 Poverty and Environment Fund (PEF)

The PEF is a \$3.6 million multidonor trust fund administered by ADB that promotes mainstreaming of environmental considerations including climate change considerations into development strategies, plans, programs and projects.

4.7 Current experience and future arrangements

Operations of the dedicated funds on climate change amply demonstrate the special role that regional financing arrangements perform. For example, the APCF has successfully mobilized substantial funds at the regional level. Although it is difficult to accurately estimate the additional resources mobilized by the APCF beyond what would otherwise have flowed to a global facility, the entire APCF amount is unlikely to have been mobilized without the APCF. Further, the portfolio of projects supported by the CCF, APCF and FCF show a clear specialization in key mitigation and adaptation areas of the Asia and Pacific region. Moreover, the CEFPP is strongly promoting regional cooperation and building consensus on climate change in the Asia and Pacific region by supporting activities such as the Asia Clean Energy Forum, which has emerged as an important platform for exchanging views on clean

energy issues in the region. This forum annually brings together over 400 decision makers—nearly all from within the region.

The current regional financing arrangements in Asia and the Pacific are inadequate and need to be strengthened. The process of establishing regional financing arrangements should be deepened, especially to the subregional level. And, as noted earlier, region- or subregion-specific impacts of climate change—including melting of Himalayan glaciers, sea level rise, and climate refugees—could have disastrous consequences. Adaptation to these will involve wide-ranging socioeconomic issues of gigantic proportions and substantial new investments. These cannot be tackled without countries in the region having a major role and substantial say in the decision making process. As yet, there is no current regional institutional framework or financing arrangement in the Asia and Pacific region to cope with such region-specific climate change impacts. To address these, new regional financing mechanisms are needed (e.g., a regional climate refugee fund, a regional fund for adaptation to glacier melting). The mechanisms should be established soon to build, well in advance of the need, the pool of resources and capacity required to respond effectively as and when the challenges intensify.

5. Regional private financing mechanisms and other sources

According to UNFCCC estimates, private sector investments constitute the largest share (up to 86%) of global investments and financial flows in response to climate change. Reflecting these, specialized regional private financing mechanisms have an important role in financing climate change mitigation and adaptation.⁵ Many of the merits of regional arrangements mentioned in section 3 also apply to regional private financing mechanisms. Examples of specialized regional private financing mechanisms on climate change in the Asia and Pacific region are extant. For example, ADB is making equity investment of up to \$20 million each in three regional private equity funds focused on clean energy—the Asia Clean Energy Fund, Global Environment Fund Management Corporation South Asia Clean Energy Fund, and MAP Clean Energy Fund. Essentially, a regional private financing mechanism responds mainly to the specialized nature of the demand in a region. The current support for the funds should be continued. Based on global experience, other eminent areas for development of regional private financing mechanisms are risk transfer and insurance products, which are discussed below. The private sector has better experience in and capacity to price and share risks than does the public sector. Other new initiatives and innovations to mobilize private funds at the regional level should also be considered.

A high degree of uncertainty is associated with the nature, extent, and timing of the impact of climate change, which creates a market for risk transfer and insurance products. The Caribbean Catastrophe Risk Insurance Facility is a good example of such a regional private financing mechanism. This facility provides short-term liquidity to the participating country

⁵ A regional private financing mechanism can be loosely defined by specialization and/or geographic focus of its activities, as the role of governments in the decision making process is not an issue.

governments in the aftermath of a natural disaster. In line with the successful innovation in the Caribbean, the World Bank in collaboration with ADB is developing a Pacific Catastrophe Risk Pool Initiative, which will ensure short-term liquidity to the Pacific island states after a natural disaster. Although this facility is primarily focused on natural disasters, it is also directly related to climate change, which increasingly defines the frequency and severity of typhoons in the Pacific.

Another popular risk transfer mechanism is a catastrophe (CAT) bond, which has emerged as a useful instrument for dispersing catastrophic weather risk. Because of the specialized nature of risks facing different regions, the possible issue of region-specific CAT bonds in the context of climate change is another interesting area to explore. Issue of such bonds in the Asia and Pacific region can also benefit from existing regional mechanisms such as the Asian Bond Market Initiative.

Risk transfer and insurance products related to climate change are unlikely to succeed without suitable policy and regulatory support by the countries in the region. Government support to maintain insurability of weather-related risks despite climate change include restricting development in vulnerable areas, investments in defensive infrastructure, and provision of reliable and independent data on weather patterns (Mills 2008). In some cases, tax and non-tax incentives and other financial support (e.g., soft loans or grants) may also be required to make these mechanisms viable.

There is another area with potential for mobilizing additional resources, albeit modest, for climate change mitigation or adaptation at the regional level. Some clients (countries, organizations, and individuals) are interested in a region or subregion for special reasons, such as historic background, corporate social responsibility, or philanthropy. Because of such special interests, it may be possible to mobilize resources on concessional terms or even on a grant basis. Issue of an Asian climate change or adaptation bond targeting such investors is a possibility worth considering. An example of such fund mobilization in the Asia and Pacific region is the “cool bond”, which was issued to provide interested Japanese retail investors an opportunity to participate in efforts to reduce carbon emissions within the region (World Bank 2008c). Other instruments, such as equity or grant contributions, could also be used for mobilizing resources from such sources. Governments can promote mobilization of such funds from philanthropic individuals or charitable organizations through policy support and tax breaks.

6. Conclusion

Climate change is a global public good but it has strong regional features, where regional financing arrangements have an important role. Accordingly, the success of the global fight against climate change requires a major role by institutions and financing arrangements at the regional level. In particular, regional financing arrangements have a very special and even unique role in climate change adaptation. The following are considered high priority action areas:

- (i) A top priority should be to scale up and expand existing regional financing arrangements, as they are already well accepted and well established. This can mean many things, including more resources for the arrangements, selectively deepening them to the subregional level, and creating similar new financing arrangements or suitably expanding the scope of existing arrangements to effectively mobilize resources from diverse groups with different interests. During the initial phase, some proliferation of such financing arrangements may be unavoidable to successfully mobilize resources from diverse groups. However, extreme care should be taken to avoid establishing any arrangement of suboptimal size. Further, suitable consolidation of regional financing arrangements should also be considered at an appropriate time after they become operational.

Deepening the financing arrangements to the subregional level in the Asia and Pacific region essentially means establishing new financing arrangements on climate change in organizations such as the GMS, ASEAN, CAREC, and SAARC. Such subregional financing arrangements are expected to address subregion-specific issues (e.g., clean energy markets in the GMS, sea level rise in the Pacific). However, the arrangements should be established very selectively to avoid capacity problems and fragmentation of financing sources. They should be established only for very special reasons such as a problem of a highly localized and specialized nature, need for strong ownership by the affected countries, need for very close cooperation among affected countries, and potential for mobilizing resources from affected countries.

- (ii) As noted earlier, many regions of the world face potentially catastrophic climate change impacts of a localized nature. These need to be addressed at the regional level, which is likely to be more effective than a global approach. Thus, another important priority is to create specialized regional funds to address key region-specific climate change adaptation needs. In the context of the Asia and Pacific region, this means creating regional adaptation funds for Himalayan glacier melting, sea level rise, and climate refugees. Such arrangements too should be established selectively.
- (iii) To augment the resources for fighting climate change at all levels, private sector financing operations at the regional level (e.g., a regional clean energy equity fund) should be supported in general. At the same time, there is a need to support the establishment of new and innovative regional private financing mechanisms especially for risk transfer and insurance instruments. Governments in the region should promote these through appropriate policy, regulatory, and even financial support.

Achieving the above will require strong collaboration among all key stakeholders including regional and nonregional countries and donors, regional and subregional organizations, the private sector, and regional and nonregional financial market players. Such a collaborative effort among all the stakeholders will go a long way in building stronger regional financing

arrangements to complement the global fight against climate change. Regional financial arrangements on climate change should also be promoted as a part of regional cooperation efforts, for which momentum in most parts of the world is strong, including in the Asia and Pacific region. Moreover, the role of fund transfer to regional financial arrangements from donor countries (regional and nonregional) will remain critical given the lack of equality among countries in terms of income, consumption, and GHG emissions. At the same time, regional financing arrangements are expected to add new ways of raising funds from official as well as private sources.

Globally, many new financing options to augment the flow of funds for climate change mitigation and adaptation are being considered. For example, the options mentioned by UNFCCC include application of a levy similar to the 2% share of proceeds from the CDM to international transfers of Emissions Reduction Units (ERUs), Assigned Amount Units (AAUs), and Removal Units (RMUs); auction of allowances for international aviation and marine emissions; international air travel levy; and Tobin tax. If and when one or more of these is implemented, resources so collected should be distributed appropriately between global and regional financing arrangements. Indeed, some of these taxes could be collected at the regional level.

Regional financing arrangements complement and strengthen the global collective action on climate change. They should be treated as an essential element of the overall strategy to fight climate change globally, and be supported accordingly.

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Financing Climate Change Mitigation and Adaptation Role of Regional Financing Arrangements

An extensive architecture of financing for climate change mitigation and adaptation has started to develop around the world. While climate change is a global public good, it has strong regional features, and, consequently, regional institutions and financing arrangements play an important role. Regional financing arrangements complement and strengthen global collective action and should be treated as an essential element in the fight against climate change. This paper discusses regional financing arrangements for climate change mitigation and adaptation mainly in the context of the Asia and Pacific region.

About the Asian Development Bank

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries substantially reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to two thirds of the world's poor. Six hundred million people in the region live on \$1 a day or less. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance. In 2007, it approved \$10.1 billion of loans, \$673 million of grant projects, and technical assistance amounting to \$243 million.