Climate & Development Knowledge Network

SPECIAL ISSUE

November 2010

Regional implications of the AGF recommendations: Asia

Key messages

- The AGF report identifies many opportunities for Asia, for example low-carbon investment from the private sector.
- Building on a good track record, the private sector can finance much of Asia's emission-reduction needs.
- The AGF's recommendations to use public resources to leverage private investment are important for Asia.
- Adaptation to climate change will typically require public revenues.
- Some of the revenue sources identified by the AGF may have negative impacts on Asia, although it will be possible to devise compensation arrangements for these.
- The Copenhagen Accord target of US$100 billion per year is unlikely to be sufficient to meet Asia's needs.

Authors:

Sam Fankhauser
Director, Vivid Economics

John Ward
Principal, Vivid Economics

The Advisory Group on Climate Finance (AGF) was set up to identify an additional US$100 billion in climate finance from developed countries, to support climate change adaptation and mitigation actions in developing countries. The recent AGF report concluded that finding the extra money was "challenging but feasible"[1]. However, turning the AGF recommendations into tangible flows of new finance will require political leadership at a senior level. This report aims to alert senior policy-makers to the importance of the AGF recommendations and the opportunities (and challenges) they create for Asia.

This report was written by Vivid Economics and funded by the Climate and Development Knowledge Network (CDKN). It was requested by AGF members to help developing country decision-makers to respond to the AGF's recommendations. CDKN would like to thank all the other reviewers who contributed their time and valuable insights to help shape this series of regional briefing reports.

The AGF report

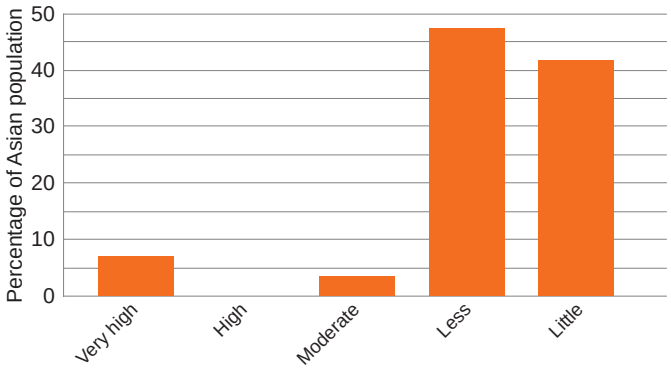
Building on the Copenhagen Accord, the United Nations Secretary's High-Level Advisory Group on Climate Change Finance (AGF) was set up in February 2010 to identify how industrialised countries could mobilise US$100 billion of resources per year by 2020, to support climate-resilient development in the developing world. The Group consisted of 21 members, from the public and private sectors and from the developed and developing worlds. It was co-chaired by the Meles Zenawi, Prime Minister of Ethiopia, and Jens Stoltenberg, Prime Minister of Norway. Working through most of 2010, it has analysed a wide range of options for raising this money from both public and private sources. The AGF reported in November 2010 that reaching the goal of US$100 billion was "challenging but feasible".

Table 1: A climate change profile of Asia

Climate exposure profile

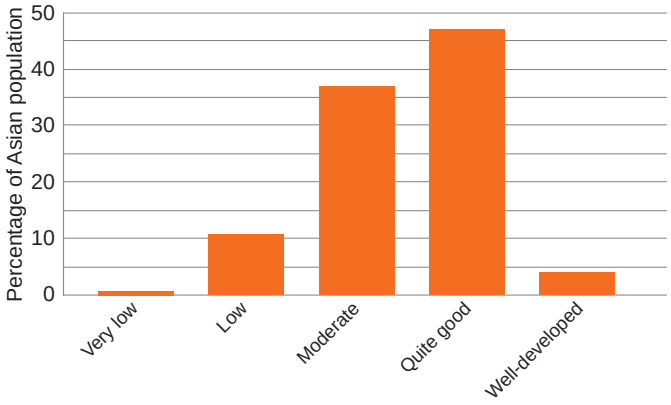
Physical exposure

Most of Asia is less vulnerable to climate change than other parts of the developing world; around 90% of Asia's population lives in developing countries that are among the least exposed (relatively) to climate change. This is partly because agricultural production is less likely to be affected than in other regions. However, both Bangladesh and Vietnam, where more than 5% of the continent's population live, are 'very highly exposed'.



Adaptive capacity

Asian countries have a reasonably strong 'adaptive capacity' – the ability to respond to the physical impacts of climate change, to reduce its social and economic consequences. Afghanistan, Lao PDR and Nepal are among the states with the weakest adaptive capacity.



Emissions profile

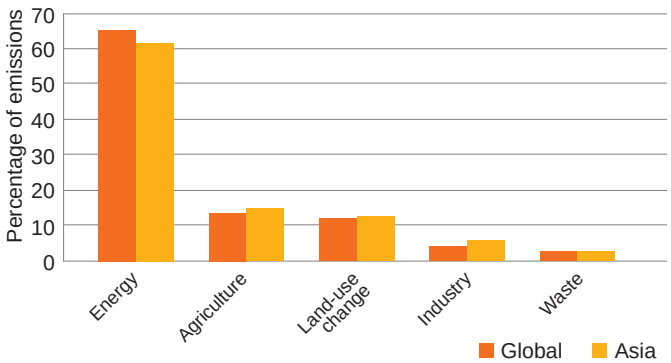
Contribution to global greenhouse gas emissions (CO_2e)

Asia contributes around 34% of current global emissions, although its historic contribution is much lower. Between 1990 and 2005, around 75% of the growth in global emissions came from Asia, mostly from China. However, while China and India contribute over 20% of global emissions, Asia's ten least developed countries (LDCs) only contribute 1.3% combined. Emissions per capita are 4.2 tCO_2e (tonnes of CO_2 equivalent) – lower than the world average (6.7) and non-Annex I country average (4.8). However, Asia's emissions are still above the average estimated to be required by 2050 to limit global warming to 2°C (2.5).

Share of global emissions (2005)	34%
Contribution to growth in emissions 1990–2005	75%
Emissions per capita (tCO_2e)	4.2

Sectoral breakdown

Asia's emissions profile is similar to the global profile. The energy sector dominates, accounting for just under two-thirds of emissions. However, this masks the considerable diversity across the continent; agriculture emissions are very important in South Asia and land-use change emissions dominate in South-East Asia.



Source: Barr, Fankhauser and Hamilton, 2010[2]; WRI CAIT v7.0[3]; Vivid Economics

Climate change investment requirements

How much investment does Asia need and in what areas?

By 2030, Asia's annual investment requirements for climate change mitigation may be around US$90–180 billion. This figure includes the estimate by Nicholas Stern[4] that 1–2% of global gross domestic product (GDP) may need to be invested in low-carbon technologies in the medium term. And given Asia's relatively high – and growing – emissions, the figure may be towards the top of this range.

This investment will primarily reduce emissions from the energy sector, although there will be variation across Asia. The greatest potential to reduce emissions in Asia comes from the energy sector (see Table 1). However, China accounts for almost half of Asia's total emissions, with the energy sector accounting for 73% of China's total emissions. Elsewhere in Asia, the pattern of emissions is diverse:

- Agriculture accounts for 26% of emissions in South Asia, compared with a global average of 14%.
- Land-use change emissions in South-East Asia are more than 60% of the total; these are relatively costly emissions to mitigate[5].
- Eurasia resembles China, with emissions from the energy sector forming 86% of the total.

Asia's annual adaptation costs may be around US$40–45 billion by 2030[6]. This is around half of the total required by the developing world and equates to around 0.5% of Asia's current GDP. The bulk is required in India and China, which together may have an annual requirement of US$20–24 billion. Asia's LDCs are estimated to require US$5–6 billion per year, which equates to 2.5–3.3% of their GDP.

Priority adaptation investments in Asia include climate-proofing existing and new infrastructure. The World Bank[7] estimates that this will account for around 50% of Asia's total adaptation investment, compared with a global average of less than one-third. Improving coastal defences will also be important; a recent study[8] found that the eight cities with the largest populations exposed to sea-level rise are all in Asia.

Asia's LDCs will require a different focus to the rest of the continent. In LDCs, the pressing adaptation needs are to build up basic adaptive capabilities, for example in public health, literacy, institutional development and micro-credit institutions. Once this has been achieved, the same World Bank analysis suggests that investments in the water sector will be particularly important.

Mitigation investment is substantial in parts of Asia, but lacking elsewhere; adaptation investment flows will need to be scaled-up throughout the continent. Asia has attracted 87% of the investment generated by the Clean Development Mechanism (CDM) – US$62 billion. However, the bulk of this has been in China and India; elsewhere, cumulative investment has been less than US$4 billion. Future adaptation needs will be US$40–45 billion; however, the cumulative total disbursed from climate funds between 2003 and 2010 was around US$75 million.

What sort of funding does Asia need?

Private finance can be expected to deliver the bulk of mitigation investment in China, India and much of South-East Asia. Elsewhere, this will need to be complemented with concessional public resources. The success of China and India in attracting private capital for mitigation illustrates the power of carbon markets in leveraging investment. Given the high savings rates in these countries, much of the capital has come from domestic and regional sources, with an emphasis on developed countries to provide skills and/or technology transfer. This pattern is likely to continue.

Elsewhere in Asia, efforts to generate private capital flows have not been as successful. The remaining countries captured only 10% of CDM investments, despite having 19% of the potential. Concessional public finance – to improve the business environment, to make direct investments, or to leverage private-sector investment in specific projects – will help overcome these problems.

Emissions from deforestation in Indonesia – the world's fifth largest total emitter in 2005 – illustrate the importance of a mechanism to reduce emissions from deforestation. Forestry emissions are also significant in Malaysia, Myanmar, Papua New Guinea and The Philippines. The Reduced Emissions from Deforestation and Degradation (REDD+) strand of the United Nations Framework Convention on Climate Change negotiations is being developed to tackle this issue. Public resources may be required for this initially, with private resources flowing once the market and institutional framework is established.

Grant funding for adaptation in Asia is important, but may be scarce. Adaptation funding is likely to focus strongly on those countries most vulnerable to climate change, for example low-income countries in Africa and small island developing states. With a few exceptions, Asian countries do not fall into this category, and adaptation grants may therefore be scarce. To accelerate and deepen adaptation investments, some Asian countries may choose to combine

Table 2: Climate change investment needs in Asia by 2030

Investment type	Possible amount required (annual, US$)	Priority investments	Type and source of finance
Adaptation	40–45 billion	• Climate-proof infrastructure • Build adaptive capacity in LDCs	• Adaptation grants, especially in LDCs • Lending from multilateral institutions • Own resources
Mitigation	90–180 billion	• Reduce the carbon intensity of energy use throughout Asia, especially in China and India • Agriculture, especially in South Asia • Reduce emissions from land-use change, especially in South-East Asia • Energy efficiency, especially in Eurasia	• Private flows from carbon markets • Public/private co-investment • Lending from multilateral institutions • Concessional finance in LDCs

Source: Stern, N., 2009[9]; World Bank, 2010[10]; World Development Indicators[11]; Vivid Economics

climate finance with their own resources, borrow from multilateral banks, or encourage private adaptation. For example, Bangladesh recently created a Climate Change Fund using US$45 million of its own resources.

Table 2 summarises Asia's investment needs, priority investments and potential types and sources of finance.

Opportunities provided by the AGF recommendations

Public sources

The AGF report emphasises three potential public funding instruments.

- *Auction emission allowances in developed countries/new carbon taxes*. Under the Kyoto Protocol arrangements, developed countries have their emission targets expressed as Assigned Amount Units (AAUs). To date, AAUs have been provided to countries for free. This proposal would involve countries paying for a proportion of these allowances and the money being committed to international climate finance[12]. An alternative arrangement, which would have a similar effect, would be to introduce a carbon tax in the developed world. The AGF report suggests that this could raise about US$30 billion annually.
- *Redirect fossil fuel subsidies*. These policies would mean developed countries no longer subsidise fossil fuel production and consumption, and divert the revenues saved to international climate finance. The report estimates that this may raise US$10–15 billion per year[13].
- *Carbon pricing of international transport*. This would involve a fuel levy or an emissions trading scheme in the international aviation or maritime sectors, with a proportion of the allowances in the scheme being auctioned in the case of a trading scheme. Alternatively, an international ticket tax (a tax paid on each ticket sold) could be introduced in the aviation sector. The report estimates that this could generate around US$10 billion per year (after adjusting for any incidence on developing countries).

The high revenue potential of these options makes them attractive for Asia. This is especially true for less well-developed countries, and those with significant adaptation requirements, such as Bangladesh, Nepal and Vietnam, which will require grants and public finance. These public revenue sources will also create a welcome financial incentive for developed countries to reduce emissions.

The emphasis on auctioning emission allowances and redirecting fossil fuel subsidies/revenues is attractive and unlikely to have a negative effect on Asia. Auctioning emission allowances within developed countries represents a tax on emitting in these countries. Likewise, diverting fossil fuel subsidies is effectively a transfer from taxpayers in the developed world to Asia.

Private sources

The AGF report notes that enhanced private revenue flows will be essential for an economic transformation towards low-carbon growth. The report also recommends that "carbon markets are further strengthened and developed". In certain countries and sectors of Asia, the private sector has already demonstrated its ability to generate investment, create employment, and facilitate the start of the region's transition to a low-carbon economy. This is especially true for generating renewable energy and reducing industrial emissions in China and India.

For some Asian countries, increasing the demand for offsets from Annex I countries will be crucial. In countries such as China and India, which have strong offset potential, the priority will be to strengthen carbon markets through deeper commitments from developed countries to reduce emissions, coupled with liberalising the rules on offset use. The AGF analysis suggests that the market for carbon offsets could be between 1.5 and 2 gigatonnes per year; this is five to seven times its size in 2009[14]. Countries with strong offset potential will also welcome the lack of emphasis placed on offset levies as a way to raise climate finance; these levies create disincentives to undertake emission-reduction projects in their own countries.

China's faces a significant challenge to decarbonise its energy sector, currently the source of 73% of emissions.

Other Asian countries may want to place more emphasis on reforming carbon markets, so that these are better aligned with their own opportunities to reduce emissions. In South and South-East Asia, a greater share of emissions come from agriculture and land-use change. Emissions from these sectors have proved difficult to integrate into current carbon markets; these countries would gain from additional private investment in these emission-reduction opportunities.

The AGF's emphasis on public-sector mechanisms to leverage private capital is important for Asia. The report suggests that every US$1 of public resources spent in this way could generate US$3 of private investment. Other studies suggest that, on occasions, it may be as high as US$15[15]. This offers great promise for Asia, given that:

- the private sector has already shown considerable interest in many parts of Asia
- Asia's climate investment needs alone appear higher than the US$100 billion target in the Copenhagen Accord
- there is considerable enthusiasm for such public finance mechanisms, for example from the Asian Development Bank[16].

Windmills in Rajasthan. India has considerable potential to attract funds for low-carbon energy.

Challenges from the AGF recommendations and possible responses

The key challenge for Asia will be ensuring that the AGF recommendations gather momentum and result in additional financial flows. There are many steps to overcome before the scale of financial resources that the report envisages can be mobilised. These include agreeing on the appropriate sources of finance, developing clear and practical recommendations for mobilising these resources, and achieving consensus on arrangements for disbursing climate finance.

Some Asian countries will have concerns regarding transport levies; they will wish to ensure that any negative consequences can be compensated. This will be possible, but may be expensive. Export-orientated growth is crucial to many Asian economies and transport levies may be perceived as a threat to this. The AGF report acknowledges that these levies may have some negative effects on developing countries and its estimate of the revenue-raising potential is adjusted for this. However, this estimate will need to be refined and possible compensation arrangements still need to be designed. Compensation flows in Asia could potentially be substantial. Airlines registered in Asian countries account for 20% of air passengers and 29% of air freight, while 49% of container traffic movements take place in the continent.

Some Asian countries will have similar concerns about the proposed financial transaction tax. Asia as a whole accounts for just under 12% of foreign-exchange transactions, but Singapore and Hong Kong are the world's fourth and sixth largest foreign-exchange traders in the world respectively; each market trades US$240–265 billion per day. Although the impact of increasing trading costs is uncertain, they may be concerned that this proposal could reduce activity in their exchanges.

Another key challenge is the reliability of revenues from carbon-based sources. Like other commodities, the price of carbon is subject to volatility, and can be accentuated by policy influences. Asian countries will want to ensure that the AGF report's emphasis on carbon-based mechanisms does not expose the region to too much revenue volatility. This can be best achieved through robust, legally binding emission-reduction targets in the developed world. The AGF notes this and stresses that to reach the US$100 billion target, emission-reduction targets must be stringent enough to deliver a reliable carbon price of US$20–25/tonne. The ways in which policies are designed can complement this further.

Asia has large absolute requirements for climate finance, and there is a concern is that the Copenhagen Accord target of US$100 billion is unlikely to meet all financing needs for climate change. The AGF report explicitly notes that its Terms of Reference excluded considering the total needs for climate financing in developing countries. Nonetheless, this is a particularly relevant issue for Asia: it has the largest absolute need for climate change investment, and its own investment requirements are projected to be 1.5–2.25 times more than the target identified in the Copenhagen Accord[17]. Asia will be particularly concerned that if resource mobilisation is too low, or if the resources mobilised are not truly additional, then its adaptation investment needs may not be met.

Next steps

- Asia should build on the momentum developed by the AGF to build consensus on the appropriate sources — and means of mobilising — new and additional revenue for climate finance, and to develop arrangements for its disbursement.
- Many Asian countries have much to gain from the strengthening and deepening of carbon markets, which the AGF recommends.
- Asian countries should build on the AGF's recommendation to combine public finance with private finance to achieve 'transformational investments' – these provide exciting opportunities for the continent.
- Asian representatives should participate in discussions to design and quantify the compensation required from raising revenue from international transport.
- Asian governments must ensure that their requirements for public revenue sources, especially for adaptation, are not overlooked. This is likely to require recognition by the developed world that the Copenhagen Accord target of US$100 billion is insufficient to meet the low-carbon investment needs of all developing countries.

Notes

1. High-Level Advisory Group on Climate Change Financing (2010) *Report of the Secretary General's High-level Advisory Group on Climate Change Financing*. 5th November.
2. Barr, R., Fankhauser, S. and Hamilton, K. (2010) Adaptation investments: a resource allocation framework. *Mitigation and Adaptation Strategies for Global Change*, 15(8): 843–858.
3. World Resources Institute Climate Analysis Indicators Tool. http://cait.wri.org
4. Stern, N. (2009) *The Global Deal. Climate Change and the Creation of a New Era of Progress and Prosperity*. PublicAffairs, New York, USA.
5. Sathaye, J.A., Andransko, K. and Ravindranath, N.H. (2006) *Land modelling using GCOMAP: Deforestation, transaction costs, regional disaggregation*. Presentation at the EMF-22 Land Modeling Subgroup, 14th December 2006.
6. This is based on national-level data prepared for the study, World Bank (2010) *Economics on Adaptation to Climate Change*.
7. World Bank (2010) *op. Cit*.
8. Nicholls, R.J., Hanson, S., Herweijer, C., Patmore, N., Hallegatte, S., Jan Corfee-Morlot, J.C. and Muir-Wood, R. (2007) *Ranking of the World's Cities most Exposed to Coastal Flooding Now and in the Future*. OECD Environment Working Paper No. 1.
9. Stern, N. (2009) *op. Cit.*
10. World Bank (2010) *op. Cit.*
11. http://data.worldbank.org/data-catalog/world-development-indicators
12. For those countries/regions that have domestic emission-trading schemes, this could be implemented by auctioning the allowances to individual companies or installations.
13. The report suggests that, as an alternative, an international financial transaction tax could raise similar funds.
14. The World Bank reports that the size of the Kyoto offset markets (and voluntary markets) was 283 $MtCO_2e$ in 2009 and 486 $MtCO_2e$ in 2008. See: World Bank (2010) *State and Trends of the Carbon Market 2010*.
15. UNEP-SEFI (2008) *Public Finance Mechanisms to Mobilise Investment in Climate Change Mitigation*.
16. The Asian Development Bank has been at the forefront of efforts to blend public and private capital to increase (mitigation) investment. Its Clean Energy Funds Equity Investment project has allocated US$100 million for co-investment in five clean-energy private equity funds in the region.
17. The AGF report contains a discussion about how the US$100 billion target should be interpreted. Some of these (narrow) interpretations would imply substantially higher gross investment flows than US$100 billion, although these are likely to still be lower than, for instance, the US$295–665 billion financing-requirement range outlined in the World Bank's 2010 *World Development Report*, on climate change investment needs in the developing world in 2030.

How can CDKN help developing countries?

The Climate and Development Knowledge Network (CDKN) aims to help decision-makers in developing countries design and deliver climate compatible development. We do this by providing demand-led research and technical assistance, and channelling the best available knowledge on climate change and development to support policy processes at the country level.

Climate & Development Knowledge Network

: vivideconomics

www.cdkn.org **e: enquiries@cdkn.org** **t: +44 (0) 207 212 4111**