



# Social Dimensions of Climate Change: Adaptation, Water, Energy and Green Employment

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## POLICY BRIEF



## SOCIETY AND CLIMATE CHANGE

This Policy Brief arises from a workshop organised by the Asian Development Bank (ADB), the Global Green Growth Institute (GGGI), and the Ministry of Foreign Affairs and Trade of the Republic of Korea (MOFAT). The event was one of the first of its kind to focus on the social dimensions of climate change regarding water, energy, and green employment and was particularly timely given that the upcoming Fifth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) will place greater emphasis on the socio-economic aspects of climate change.

The workshop was designed to contribute to assessing how climate change will impact upon the Millennium Development Goals (MDGs) and the likely achievement of MDG targets by the 2015 deadline. Particularly relevant here are targets 1.C, 7.A, 1.B, 7.C, and 3, dealing respectively with hunger, environmentally sustainable development, employment, access to safe drinking water, and gender equality and women's empowerment. Climate change and sustainable development have to be integrated into international development goals.

This event should be seen as a starting point for the analysis of the links between climate and these global commitments, and an attempt to define practical policy recommendations which specifically address their social dimensions. Sessions were themed around adaptation, water management, renewable energy, green jobs, and future pathways for Asian and Pacific development. The event brought together experts and senior policymakers, many from ministries of planning and finance from the developing member countries of ADB.

The workshop focused on constructive ways forward, making use of the human capital and social solidarity which often come to the fore as communities build resilience in the face of threats to their livelihoods and way of life. Successful adaptation to the effects of climate change is possible with the right policy tools in place, strong political will, participation, effectively targeted funding, access to information, and productive dialogue between communities and policymakers. Similarly, successful water management is possible by bridging the various gaps that exist among and between experts, officials, and the public.

Social, economic, and ecological development need to be considered together. Society has to cope with climate change, which also involves political and ethical issues, and needs to start adapting to, for example, falling agricultural yields, loss of productive land, and other manifestations of global warming already affecting people (especially in rural areas). Governments need to be active in promoting and supporting social resilience. Participatory approaches which empower people assist in enabling them to cope with adaptation and mitigation.

The workshop affirmed that we can achieve economic growth while addressing climate change issues. Humans have always reacted to natural events, but our capacity to think ahead and adapt, to interact actively with our destinies, has grown over time. Growth based on renewable energy is a way of minimising the adverse and maximising the positive social impacts of climate change. The key to climate change adaptation is increasing human capacity to react to anticipated changes.

## ADAPTATION

### *Food Security*

MDG target 1.C is to reduce hunger by half by 2015. But climate change is increasingly threatening food security. If this target is to be reached, agricultural adaptation is key.

Climate change has a major impact on food security in terms of lower agricultural production and yields, due to higher temperatures, changes in precipitation patterns, and more frequent extreme weather events. Asia suffers most: in the case of rainfed wheat in South Asia, a 44% drop in average crop yields is estimated. Lower availability of agricultural land is also predicted, due to rises in sea level: with a rise of 1 meter, 30% of the rice growing area of Viet Nam will be affected. Higher food prices are likely to be another result, with dramatic impacts on, for example, higher rates of child malnutrition.

Climate finance has a crucial role to play but the gaps are very large. They include investment in agricultural adaptation, such as more resilient crop varieties, changes in planting dates, and use of crop residues and appropriate fertilizers; soil and water

management (there is great scope for more efficient water use in particular); rural infrastructure investment for improved access to markets; and social infrastructure such as productive social protection schemes, credit, and risk insurance.

In addition there are significant knowledge gaps, such as the need for comprehensive climate risk assessments that policymakers can actually use (especially when downscaled from the global level to country or locality), and for cost–benefit analysis; governance gaps in cross-governmental coordination and accountability; and communication gaps including access to information for poor and marginalized people, especially women.

Adaptation needs to be carefully and systematically planned, including assessment of risks (probability, location, and intensity) and of which assets are at risk and how vulnerable they are; estimation of damages and losses; agreement on which adaptation options are cost-effective and the highest priority; and a clear adaptation plan whose implementation can be monitored.

## *Water*

The major reasons used to raise public concerns over climate change are water-related events such as floods, droughts, storms and rising sea levels. Yet relatively little attention and resources have been devoted to helping people deal with these events. Water investments should be among our priority measures to help build community resilience to climate change.

The relationship between climate and human activity is not static: both systems are dynamic and ever changing. Water-related interventions have long been the major actions taken by human societies in response to natural disasters and inclement weather. Debates on climate change are now adding to the uncertainty around water resources management, and with little specificity of time and place. One of the major challenges is to reduce and manage these uncertainties and to provide more practical and usable analyses to guide interventions.

Water management is traditionally aimed at minimizing risks and costs to society at the watershed level. The climate models currently used do not yet address the phenomena

which are prominent in public concern about climate change—droughts, floods, rainfall, storms, rising sea levels, water quality, etc. Thus, improved collaboration between climate specialists and hydrologists would bring many benefits, especially in characterizing risks (so that we understand better to what we are trying to adapt). This gap needs to be closed if, for instance, we are to determine the costs and benefits of water infrastructure investments for public debates on national tradeoffs.

Greater synergy between these disciplines also has the potential to bring together the perspectives of richer and poorer countries. Investment in water infrastructure can assist in simultaneously achieving the objectives of both, reducing poverty and managing climate uncertainties for social resilience, stability, and security.

Studies show that investment by wealthier countries in water infrastructure brings disaster damages down to around 5% of gross domestic product (GDP), as opposed to 25%–30% in the poorer world. These investments reduce poverty, increase social capacity to react to disasters while minimizing social disruption, and are crucial to the establishment of resilience and sustainability. Disaster risk reduction is an important component of climate change adaptation and should be integral to development planning.

Investment in water infrastructure buys time and space for people to continue living with climate change, recovering, and adapting. Without such infrastructure it is difficult to respond to the distributional effects of climate change and disasters, to the disadvantage of poor people. The social impacts of climate change may be driven by relative deprivation more than by absolute scarcity—including impacts on women, the marginalized, and the elderly. The risk is that existing inequalities may be accentuated under the stress of climate change impacts. Many poor people already live in floodways and other highly vulnerable areas.

Adaptive water resources strategies in particular will require various forms of storage to assist societies to adapt. Other priority investments include improved early warning systems, the reuse of waste water (every \$1 invested in water treatment is estimated to produce returns worth \$9), and appropriate application of modern technology in local environments, such as small hydro plants or rubber dams for agricultural water. Designing agricultural infrastructure to cope with climate change requires a holistic

approach, based on an understanding of the social, economic, and environmental dimensions of water, allied to strong commitment from government and full participation of the communities affected.

### *Governance and Participation*

Adaptation to climate change cannot succeed without the full participation of the communities affected, especially the most vulnerable members including women and the poor. We should support these groups, build on their local knowledge, provide access to new information, and enable them to implement the strategies they choose.

Because of its centrality to many people's lives, the way adaptation is addressed will impact on broader political and governance structures and cultures. A top-down, directive approach risks alienating people and accentuating existing equity issues. Instead, participatory approaches are required which empower people, and ensure their involvement in assessing and choosing levels of risk rather than just being onlookers or passive recipients of instructions. Accountability of officials in implementation, including clear responsibilities for improving cross-government coordination and mainstreaming adaptation into development at multiple levels, will make a big difference.

We need collectively to describe better the risks and uncertainties to the public. Confusion may lead to rejection of apparently feuding experts, and to doubts as to the credibility of science. There will always be residual risk, and systems can be overwhelmed by events even when performing as designed. Better information and communication will encourage community involvement in local risk management.

### *Preparedness and Insurance*

The increased number of climate change-related natural disasters now occurring has focused attention on their national economic impact as well as the threat to individuals and communities and their livelihoods. Japan will lose 4%–5% of its GDP in 2011 because of the 11 March tsunami (while the earthquake and ensuing tsunami cannot be linked to climate change, the incident has revealed the extent of possible damage

following a natural disaster), and developing countries suffer much higher economic and environmental costs. Poorer countries lack social safety nets and other defences or safeguards for the population, and consideration should be given to “public insurance” schemes for crops and other forms of micro-insurance. There are now numerous examples to draw upon and from which to learn lessons, including those in India and the Philippines.

Experience suggests that similar approaches can be used as for micro-credit, and indeed this fits with the recent focus in the development finance sector not just on micro-credit but also on micro-savings and micro-insurance. Such initiatives should be accompanied by “insurance literacy” awareness and training programmes to educate people about their benefits. A large population base appears to be necessary for success, and smaller countries like the ones in the Pacific may need to consider a regional mechanism.

Governments, donors and non-governmental organizations need to work with the private sector to develop such instruments, as companies have found the risk too great at first. However, success has been achieved through collaborative work (often with international companies) to develop a product for each country and pilot it, which private enterprises then take forward. This type of initiative is often consistent with companies’ policies and statements on corporate social responsibility. Piloting should be through groups rather than with individuals. In some schemes relief is automatically triggered by certain levels of wind and rain.

## ENERGY AND GREEN JOBS

### *Energy*

New energy supplies will be needed to lift billions of people out of poverty, but they have to be from carbon-free sources. We need to avoid the risk that phasing out fossil fuel subsidies will exclude more households from access to modern energy. One option may be targeted cash transfer programs to protect vulnerable households during the transition period—carbon-free energy will become affordable over time as technologies mature. Investment is also required to accelerate the commercialization of new technologies.

Small technological interventions can also achieve significant impact. For instance, the introduction of pre-paid meters in Samoa led to a 20% drop in demand as households became more aware of costs. Changes in the way energy is delivered can also be profoundly empowering as households are directly involved in energy production and use. Distributional issues will be pushed more to the fore as communities debate what levels of resource use and conservation are acceptable to them.

Depending on social context and decision-making roles, off-grid renewable energy can serve as an instrument for the economic empowerment of women. Energy inputs in irrigation can increase their food supply with reduced effort; reallocation of time saved from fuel and water collection can be used for productive enterprises; and small-scale manufacturing and food processing industries can be expanded. But often these roles are not recognised in climate change resilience measures, and women have less access than men to the information and funds they need for adaptation.

### *Employment Opportunities*

Employment lies at the heart of poverty reduction. Although climate change poses severe challenges to employment, the transition to low-carbon economies will have a positive effect on employment. Climate change may bring reductions in some employment opportunities, arising from the destruction of natural habitats and alterations in traditional methods of production and work. The implementation of low carbon initiatives would also reduce jobs in fossil fuel-based industries and occupations.

However, as mitigation and adaptation to climate change gather pace, new employment opportunities will also be created. On balance, experts agree that green economies will lead to net additional job creation, arising from expanded production of environmental goods and services and because many green sectors tend to be more labor-intensive than traditional fossil fuel-based industries. In the renewable energy sector that uses local resources (hydropower, wind, or solar), more jobs per kilowatt are anticipated, and the creation of jobs in this sector is likely to have a strong distributional impact, contributing to the goals of local development, inclusive growth, and poverty reduction.



Green jobs will not necessarily be taken by those who have lost their jobs in fossil fuel-based sectors, but training and reskilling of the latter group should not be problematic as the green technologies are usually less complex.

## *Skills*

Skills (especially “portable” skills) matter in realizing this potential. If countries are to reap the benefits of such additional job creation, they need to develop comprehensive skills policies in tandem with sound environmental policies in order to facilitate the transition. Skill shortages (e.g., of engineers, scientists, and green technology experts) already pose a major barrier to the transition to green economies. In addition, retraining and upskilling to meet the demands of jobs transformed through greening initiatives are required. The IPCC (2007) has estimated that the sectors most affected by retraining needs are likely to include energy supply, manufacturing, forestry, agriculture, and transport.

Education and training will contribute to creating employment. There is also a need to assess implications for educational and training institutes. Conversely, misdirected skills development systems that do not anticipate and prepare for greening economies will further exacerbate the problem by not allowing economies to match jobs to skills in the market place. Goals and objectives for sustainable employment, technology, and education need to be articulated in the Rio+20 discussions. It is particularly important that disadvantaged groups have access to training opportunities.

## *Technology Choices*

An appropriate choice of technology is important in order to maximize multiple social benefits. Alternative technology options may be available to generate the same amount of energy, but their impacts on jobs may be significantly different. Informed choices of technology will not only help to meet the goal of energy security, but also simultaneously provide distributed employment, enhance climate protection, support the local environment, and bring positive social returns. Energy planning should include analysis of the employment intensity of various technology options, and map parallel benefits in health, environment protection, energy security for the poor, and

social inclusion. This will require investment in strengthening of the analytical base, data systems, and future projections.

The greatest potential for job creation is likely to be in the cost-competitive energy efficiency, public transport, and biofuels sectors. As technology costs fall, the number of jobs created per dollar invested will rise further. Economies therefore need to take coherent action across all stages of the technology lifecycle to reap the full economic and social benefits.

## FUTURE PATHWAYS

There is a tendency for debates around the impacts of climate change to emphasise gloomy visions of the future and focus on problems rather than solutions. But while there are many extremely serious challenges to be overcome, exciting opportunities are also opening up which offer new paradigms extending well beyond the immediate sphere of climate impacts.

The transition to dispersed, localised renewable energy provides opportunities to broaden the momentum of social and political change, e.g., to strengthen regional development by adding value to the local economy. Decentralisation and democratisation of the energy supply could lead to fundamentally new relations between civil society and the private sector, a more empowering understanding of citizenship, and better-informed public dialogue. The coming together of new energy systems and new communications systems creates a powerful new dynamic for change.

Around the world energy and climate issues are coming to the forefront of popular consciousness, and the extent to which attitudes can change and governments shift policy has been remarkable, e.g., in Germany nuclear energy is to be phased out by 2022 and the share of renewable energy in electricity production to be doubled to 35% by 2020 and to 80% by 2050 (before the decision by the government was approved by parliament, the government appointed an Ethics Commission on safe energy supply). Again it is important not to emphasise the negatives: we can still achieve economic growth while addressing climate change issues.

In Asia there are rising calls to bring cultural values to bear in tackling the major challenges of our time, to seek sustainable lifestyles inspired by Asian cultures and traditions, and to build on local institutions and social solidarity. Efforts towards poverty alleviation are seriously undermined by environmental challenges.

Some national action plans make specific reference to, for example, Confucian or Gandhian traditions. At the same time there is a need to address the true costs of environmental damage (dependency on coal is a major barrier to a sustainable future, estimated to cost 7.1% of GDP in the People's Republic of China). Indonesia is now enacting a National Action Plan for Reduction of Emission of Greenhouse Gases, which aims for a 26% reduction while continuing to grow the economy by 7% per year.

The adoption by the G-20 of a “Framework for Strong, Sustainable and Balanced Growth” in 2009 has given added impetus to a development narrative which accepts the primacy of GDP but also attaches particular value to wellbeing and quality of life—and the sustainability of that wellbeing over time (e.g., 2011 Better Life Initiative of the Organization for Economic Co-operation and Development). This approach also emphasises trans-disciplinary thinking and looking beyond 2015 and the MDGs. This requires an integration of society and economy, and a sense of responsibility for the future which views climate and energy transitions as not simply technological processes but social ones.

## RECOMMENDATIONS

- Sustainability and climate resilience objectives should be integrated into the global development aims of the MDGs for 2015 and beyond.
- Social, economic, and ecological development are interlinked, and these dimensions should be taken into account by governments in all planning and funding decisions.
- Economic growth can be achieved while also addressing climate change, and the two objectives should be seen as complementary, not mutually exclusive.
- Asian and Pacific societies can build on indigenous traditions and social solidarity to reach the MDGs, and to agree on the most appropriate paths towards adaptation and resilience. Governments should take the lead in preparing for the necessary changes.
- Investment needs include agricultural adaptation; soil and water management; rural and water infrastructure; and social infrastructure such as early warning systems, social protection schemes, credit, and risk insurance.
- Poor and marginalized people (especially women) and community groups should be supported to gain improved access to information and research findings on options for adaptation (e.g. new crops and varieties); participate in adaptation planning; and implement the strategies they choose.
- Public bodies should work with the private sector to design micro-insurance products to guard against crop losses and other threats to livelihoods. Such initiatives should build on successes elsewhere and be accompanied by “insurance literacy” awareness and training programmes.
- Water resources investments should be among our priority measures to help build community resilience to climate change. The principal projected impacts of changing climate are water-related: droughts, floods, and storm surges. Means to help people adapt to these events are needed immediately.
- Investment in water management should include storage infrastructure and irrigation as an essential part of addressing the social dimensions of climate change and building social resilience.

- Models of climate change should be integrated with models of hydrological variability to address the most prominent public concerns over climate change impacts. Better models are needed to manage uncertainty in water resources and to provide more practical analyses to guide interventions.
- Robust models are essential in order to plan responses and resilience. Improved collaboration between climate specialists and hydrologists would facilitate this understanding. Particular attention should be paid to producing climate risk assessments usable at river basin and watershed levels where the events will occur.
- Consideration should be given to means of protecting vulnerable households (through social protection programs, subsidies, etc.) during the transition period from fossil fuels to carbon-free energy.
- Countries need to develop comprehensive skills and training policies in tandem with sound environmental policies, in order to protect and increase job opportunities in the transition to green economies. Retraining to meet the demands of jobs transformed through greening initiatives is also required.
- Goals and objectives for education, training, and sustainable employment should be articulated in the Rio+20 discussions. Education and training can play an important role in addressing the social dimensions of climate change.
- Employment creation can be a major additional benefit resulting from the use of renewable energy. Energy planning should include analysis of the employment intensity of various technology options, and map parallel benefits in health, environmental protection, energy security for the poor, and social inclusion.

For more information about the conference, including presentations and speeches,  
please visit GGGI's website at [www.gggi.org](http://www.gggi.org)

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