



cutting through complexity

IDAS ISSUES MONITOR

A greener agenda for international development

The nexus between climate
change and development

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Foreword

The link between development and climate change is undeniable. On the one hand, there is ample evidence that the worst effects of climate change have a direct impact on the poorest and most vulnerable populations in the world.¹ At the same time, we have also seen many examples where investment in climate change adaptation has encouraged growth and opened up new avenues of development for poor and underdeveloped nations.

The development community is keenly aware of the influence that climate change has on the development agenda and is searching for new opportunities to act as a positive force for change.

In this *Issues Monitor* we outline a clear and compelling argument for greater alignment between development and climate change goals.

As a global network, KPMG has long been at the forefront of the climate change agenda. Just last year, KPMG International brought together more than 600 senior executives and top policy makers (including the Secretary-General of the United Nations, Ban Ki-Moon, and the Mayor of New York City, Michael Bloomberg) as well as

leading sustainability authorities such as Yvo de Boer, KPMG's Special Global Advisor on Climate Change and Sustainability, to address one of the fundamental challenges of our time: driving sustainable growth in a resource-constrained world.²

To help catalyze real and sustainable change, we have also articulated our views and opinions on the issue of climate change through our thought leadership program, including the influential *Expect the Unexpected: Building business value in a changing world*, which introduced 10 key sustainability 'mega forces' that will shape future growth and economic development over the next 20 years.

For this edition of *Issues Monitor*, we have brought together some of our leaders from around the world to offer their insight into how development and climate change strategies may be integrated to achieve positive and lasting change; we explore the 10 key sustainability mega forces and their impact on the achievement of development goals; and we offer three case studies that clearly illustrate the opportunity for the development community.

We hope this edition of *Issues Monitor* inspires the development community; highlights ways in which public, private sectors and civil society can better collaborate in promoting sustainable development; and enriches the debate about the interplay between climate change, sustainability and progress in the achievement of development goals.



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Table of contents

04

The climate change and development nexus

06

Case study – Investing in climate innovation: the REACT (Renewable Energy and Adaptation to Climate Technologies) window of the African Enterprise Challenge Fund

08

The role of the development community

10

Case study – Organizing the waste-pickers: sustainable waste resource management in Brazil

12

New opportunities for green development

14

Case study – India climate change preparedness: tackling water resource management and resilient infrastructure investment needs in Madhya Pradesh

16

Conclusions

18

Endnotes





DEVELOPMENT IMPERATIVE

Many of those most vulnerable to the impacts of climate change are among the poorest of the world.⁴ From crops destroyed by drought and homes lost to rising water levels through to increased levels of heat-related mortality, loss of economic security, and flooding and inundation of low lying islands and regions, climate change will deeply and disproportionately impact those at the bottom of the development pyramid.

Rising energy and fuel prices impact negatively on development agendas by driving up the cost of living and cost of production in developing nations. Highly polluting energy sources exacerbate climate change. Competition over increasingly scarce fuel resources can also drive conflict, reduce security and create regional tension, an issue that may become exacerbated by the growing competition for agricultural products between bio-fuels and food.

Increasing resource prices tend to make development investments – particularly in infrastructure assets – more expensive. However, resource scarcity has also created opportunities for the development of ‘greener’ substitute materials and the recycling of waste.

Access to clean and potable water is an absolute necessity for health, growth and development. Areas already suffering from drought and poor access to water will be particularly affected by the rising cost of water resources needed for food, agriculture and manufacturing production.

As populations grow, governments will come under increasing pressure to provide more efficient and effective infrastructure and services to support development and economic growth. At the same time, the protection of the local ecosystem will be critical to ensuring the sustainable growth of populations.

While a definite connection can be made between climate change adaptation and successful long-term development, it is also clear that – currently – ‘green’ development is often a more expensive option, putting more sustainable strategies out of reach of developing nations without the aid and support of the development community and international funding.

The ability of cities to absorb newcomers and sustain their populations is critical to the development agenda. Cities will require extensive improvements in infrastructure and greater capacity and capability for service delivery if the problems of the urban poor are to be addressed in a sustainable and environmentally-friendly way.

Rising food prices threaten to plunge millions more into food poverty and, as we saw in the food price crisis of 2007, can create instability and political volatility in developing nations. Rising food prices also place renewed pressure on national support networks, which frequently lack resources and capability to effectively target social protection of the most needy.

The loss or reduction of ecosystem diversity (particularly declining fish stocks, damaged maritime environments and shrinking rain forests) will have a significant impact on the rural poor who tend to rely on small-scale farming, gathering or access to natural resources. Ecosystem decline often leads to increased migration in rural areas and urbanization.

Forest conservation offers a viable approach to managing carbon emissions at relatively low cost and, therefore, creating incentives and markets to encourage conservation should be a long-term priority for the development community.¹⁰ The shorter-term implications of deforestation such as fuel scarcity, loss of employment opportunities and disaster response planning and mitigation also underpin the importance of forestry conservation.

The climate change and development nexus

While climate change is clearly a global issue, all signs suggest that the brunt of the burden will fall on the world's poorest and most vulnerable sections of society. Those already in a precarious position due to lack of water, food or land will be pushed to the brink while developing nations will likely achieve less growth as the impacts of climate change worsen.

Making the connection

The connection between climate change and the achievement of development goals is hard to deny. Increasing global temperatures (which, in realistic scenarios, are expected to rise by between 3 to 4 degrees Celsius by 2100¹¹), will make parts of the currently populated world uninhabitable, forcing new waves of migrants into cities and across borders as environmental refugees. The scale of the challenge will be massive: according to a UN Environment Programme Report, there may be up to 1 billion climate-related migrants by 2050.¹²

Without a significant change in the current climate change trajectory, the outlook for some in the developing world may be bleak. Agricultural output in water scarce regions will decline¹³ and hunger and malnutrition will be endemic, impacting some 600 million more people in Africa alone.¹⁴ Rising water levels from the melting of ice could submerge or partially submerge many of the world's small island developing states (SIDS) and least developed countries (LDCs).¹⁵ Extreme weather events will test the resilience of local infrastructure and force millions to leave marginal land in river deltas and coastlines.¹⁶

While these impacts are starting to be addressed by development agencies, most would agree that far more will need to be done over time. Influenced by events such as the food price increases of 2007-08, many leading donors are recognizing the need to invest more in climate adaptation in order to help poor countries not only become more resilient to the impacts of climate change, but also reduce their vulnerability to the increasing frequency of natural disasters and adapt to the longer-term changes in the environment which impact on livelihoods, especially of poor people.

An unbalanced impact

Climate change implications could have a disastrous effect on the achievement of development goals. According to the World Bank, developing nations will bear somewhere between 70 to 80 percent of the costs of climate change damage¹⁷ which would force developing country governments to reprioritize their investments to mitigate some of the most significant impacts of climate change.

According to a recent study, climate change already contributes to the death of nearly 400,000 people a year and costs the world more than 1.2 trillion US dollars (USD), wiping 1.6 percent annually from



Clearly, the carefree and often excessive path to growth that propelled the West cannot be repeated in the developing world, but nor can we deny their desire to grow and develop; indeed we must be encouraging sustainable growth and development that not only aligns with the principles of climate change mitigation but also creates new opportunities for the developing world to mold their own growth trajectory. ”

Lord Michael Hastings,
KPMG's Global Head of Citizenship



Development is seriously impeded by climate change, which threatens to reverse the gains made towards the achievement of the Millennium Development Goals (MDGs)...I am convinced that climate change, and what we do about it, will define us, our era, and ultimately the global legacy we leave for future generations. ”

Ban Ki-Moon, Secretary General of the United Nations¹⁸

global GDP.¹⁹ The Stern Review suggests that – without immediate action – the overall costs and risks of climate change could be equivalent to around 5 percent of global GDP each year; 20 percent or more if a wider range of potential risks and impacts are taken into account.²⁰

Taking action to protect development

Economic growth and dealing with climate change are not a dichotomy. “Clearly, the carefree and often excessive path to growth that propelled the West cannot be repeated in the developing world, but nor can we deny their desire to grow and develop; indeed we must be encouraging sustainable growth and development that not only aligns with the principles of climate change mitigation but also creates new opportunities for the developing world to mold their own growth trajectory” said Lord Michael Hastings, KPMG’s Global Head of Citizenship.

Not surprisingly, the relationship between climate change and development has become clearer to the development community over the past few years with organizations such as the Intergovernmental Panel on Climate Change,²¹ and the United Nations Development Programme²² taking various initiatives to drive awareness and address the issue. The issue has taken center stage at many of the recent climate change talks – particularly the UNFCCC Conference of Parties – where developing nations have lobbied for mature markets to shoulder a greater burden of the

climate change response in order to allow less developed nations to prioritize poverty reduction and economic growth over longer-term sustainability objectives.

Advocating for change

Our experience in both the development and climate change sectors suggest that more could be done to factor environmental costs and benefits into the traditional project planning process. For example, opportunities exist at the national and regional level to build capacity, share best practices and create structures to help adaptation and resilience programs. Increased stringency at the project level would help to ensure that investments reflect environmental best practices.

Ultimately, the ability to achieve long-term development goals will depend on how developing countries and their funders and backers respond to the issue of climate change. Achieving lasting change, however, will require an unprecedented level of cooperation between national governments, as well as more locally between government, private sector, and civil society.

It is also important to spread the lessons of any ‘win-win’ solutions that emerge, and so – throughout this report – we have identified and explored a few examples of where these different institutions have been collaborating effectively to bring about positive change in areas which help progress the goals of both environmental sustainability and development.



Case study – Investing in climate innovation: the REACT (Renewable Energy and Adaptation to Climate Technologies) window of the African Enterprise Challenge Fund

Opportunities for green development

New technology	✓
Private sector participation	✓

The challenge

The drive to encourage more robust growth and development in Africa is often inhibited by three key challenges: the need for greater investment in – and adoption of – innovation; the demand for greater access to electrical power, particularly within rural areas; and the increasing awareness of the link between climate change mitigation and economic development.

At the same time, there is a growing recognition among development agencies that locally-grown and commercialized ideas tend to generate the most value, not just because they are tailored to the unique characteristics of the population and geography, but because they offer opportunities to generate ‘spin off’ industries that, in turn, drive economic activity.

With a strong history in agribusiness and rich renewable energy resources in the solar, wind and bio-fuel sectors, Africa has a unique opportunity to capitalize on the global demand for more efficient and effective renewable energy by creating and commercializing new innovations.

The solution

Jointly funded with an investment of USD205 million by UKAid (Department

for International Development (DFID)), the Danish International Development Agency (DANIDA), the International Fund for Agricultural Development (IFAD), Swedish International Development Cooperation Agency (Sida), and the Netherlands Ministry of Foreign Affairs (NMFA), the African Enterprise Challenge Fund²³ (AECF) has created a fund (USD47 million) dedicated to investing in African renewable energy and adaptation technologies, which is managed on their behalf by the KPMG practice in East Africa.

The fund, which has been active for just 2 years, has already invested in more than 30 companies with funding periods of up to 6 years. By far the majority of the companies – more than 70 percent – are classified as ‘start ups’ and would likely struggle to secure financing from the traditional market.

A key objective of the REACT window is to help new enterprises in this sector develop capabilities and resilience in order to create a self-sufficient business cluster. As such, the fund plans to closely monitor the progress of funded companies and share some of the leading practices and lessons learned with other challenge funds or similar mechanisms.

The AECF and REACT have also developed partnerships with local organizations to help foster a wider cross-section of companies. In cooperation with Kenya’s Climate Innovation Center, for example, companies that do not quite meet the REACT criteria are provided incubation space to help develop their concepts further. Efforts are also underway to develop relationships with investors who might be willing to help fund recipient companies through late-stage development and commercialization.

REACT funds a wide range of projects including initiatives in micro-solar PV solutions for households and businesses that have little or infrequent grid access, power generation from agricultural waste, drought resistant seeds, early weather warning systems that increase resilience and reduce vulnerability, and weather insurance for smallholder farmers.

Analysis

Anjali Saini, International Development Consultant, KPMG in Kenya

Challenge funds like the REACT window can be powerful tools to help development agencies drive private sector development and simultaneously



A challenge fund is a financing mechanism to allocate (donor) funds for specific purposes using competition among organizations, mainly small and medium size companies as the lead principle. A challenge fund invites for proposals from companies, organizations and institutions working in a targeted field to submit project proposals. Challenge funds are always set up to meet specific objectives – such as extending financial services to poor people or finding solutions to a specific health problem in developing countries. ”

SIDA July 2012



achieve longer-term goals such as climate change mitigation and adaptation.

REACT – and other similar mechanisms – also provides governments and development agencies with important signals about which market segments the private sector is persistently unwilling or unable to invest in, but where they are amenable to action if the costs are shared or the risks are mitigated. This will provide clues regarding where public support is needed the most, where policies need revision, or where perhaps initiatives should be

abandoned completely. As African markets continue to emerge, it will be increasingly important for the public and private sectors to work together to bring electricity and other resources to those who need them most.

To achieve both efficiency and impact, challenge funds require existing business capacity and innovation capabilities. They also require an environment and fund structure that supports risk taking while ensuring protections exist to secure business assets and intellectual property.

The role of the development community

The issue of climate change is certainly not new to the development community's agenda. Development banks, agencies and donors have become increasingly active in the climate change and sustainability debate and have created a number of innovative and valuable programs.

A collaborative endeavor

While there continues to be much debate about the exact role that the development community should play in the response to climate change, one thing is certain: the problem cannot be solved by the development community alone.

In part, this is a matter of funding and investment. Globally, overseas development assistance makes up just 7 percent of investment in developing countries.²⁴ At the same time, development organizations are largely focused on a somewhat different – yet complimentary – objective: catalyzing prosperity and promoting well-being in developing countries.

It is also a matter of timing. Development agencies tend to focus on time horizons of 15 years or less, while climate change objectives tend to be set within much longer-term horizons. As a result, there is some debate as to how the development community might structure their programs to achieve longer-term sustainability goals.²⁵

The challenge facing the development community is how to properly allocate resources to achieve not only development and climate change objectives, but also to mobilize effective

collaboration between governments, companies, and civil society groups to achieve positive change.

A history of engagement

To date, one of the key roles played by the development community in the global climate change debate has been to draw attention to the issue and create an environment in which all key stakeholders can come together to agree on priorities. The development community played such a role in the Kyoto Protocol in 1997 and has remained active in the global dialogue ever since.

At the UN's Rio+20 Conference on Sustainable Development last year, we noted four key areas where the international donor community was already making a resounding impact on the climate change agenda:

- *Providing funding for climate change action:* The Green Climate Fund and the Global Environment Facility offer excellent examples of donor-driven initiatives that allocate funding towards developing country climate change mitigation and adaptation efforts.
- *Encouraging the development of new technology:* Some donors

are directly funding technological research to reduce climate change risks in developing countries (such as the USAID Development Innovation Ventures Program support for off grid power in India²⁶), while others are working with governments to create a supportive environment for innovation and the commercialization of new technologies.

- *Rallying support around the cause:* Influential donor agencies have been instrumental in helping bridge borders and build consensus around regional issues (due to both their ability to act as an impartial mediator and by virtue of their investment power) and often have influence over national and international policy development. Many venues for this activity already exist (such as the Africa Group of Negotiators, the Alliance of Small Island States, the G77 and the Least Developed Countries Negotiators).
- *Enhancing national capacity:* With extensive experience in project design, appraisal, implementation and funding, donor agencies and the development community are working closely with national governments to build capacity in climate change and sustainability disciplines. A strong example of this can be found in the



The development community will play a critically important role in the global response to climate change. Efforts and initiatives to help developing countries understand and adapt to the impacts of climate change are starting to bear fruit, while greater focus is being placed on projects and investments that limit and – ultimately – reduce greenhouse gas emissions.”

Yvo de Boer, KPMG’s Special Global Advisor on Climate Change and Sustainability and former Executive Secretary of the UN Framework Convention on Climate Change



UK Department for International Development’s Ethiopia Strategic Climate Institutions Programme.²⁷

The development community has also been actively involved in environmental issues through the advancement of the Millennium Development Goals, one of which is to ensure environmental sustainability. Indeed, there are many examples of development agency programs that respond to this specific goal such as the Congo Basin Forest Fund²⁸ (implemented by the African

Development Bank) or the work that the International Development Association has been doing in countries like Vietnam (where access to safe water has increased by 34 percent in just 18 years).²⁹

Shifting priorities

We have seen a gradual increase in the priority accorded to more innovative interventions and stricter adherence to environmental principles within development agency funding and

project structures.³⁰ Greater emphasis is also being placed on the development of low-carbon infrastructure such as mass transit systems, water treatment and waste management, and the growing interdependence between cities, climate change and economic growth.³¹

As such, new models and opportunities are emerging that – with the right support and encouragement – could make a significant impact on climate change.

Case study – Organizing the waste-pickers: sustainable waste resource management in Brazil

The challenge

Following an era of massive urbanization in the 1960s and 1970s, Brazil quickly started to face a waste crisis as existing infrastructure rapidly became overwhelmed by the massive influx of new citizens.

But for many of the new urban poor, these landfills created new opportunity. Quickly, an informal sector labor-force of waste-pickers emerged in the landfills surrounding the cities, creating and then supplying a new market for recyclables and harvesting scarce resources from waste that could then be sold to manufacturers. Before long, waste-pickers began to organize themselves into cooperatives to achieve greater bargaining power, advocate for their interests and offer a form of support network to individual waste-pickers.

By 2008, there were approximately 200,000 waste-pickers in Brazil. And while almost 5 percent had

Opportunities for green development	
Policy change	✓
Private sector participation	✓
Green city development	✓

formal contracts with municipal waste management systems,³² the vast majority operated in the informal sector without meaningful support networks or opportunity for development.

The solution

Recognizing the growing problem created by waste, Brazil's government took steps to develop a modern and efficient waste management system that not only recognized the need for greater environmental stewardship, but also the contributions of the waste-pickers. In 2007, Brazil reviewed the Basic Sanitation Law to allow the hiring of waste-picker organizations in

municipal recycling schemes without formal bid processes and created a level of protection for waste-pickers within the law.

Since then, Brazil has made massive investments into its municipal waste management systems which has extended the lives of landfills and allowed scarce resources to be recycled, energy to be saved and development costs to be reduced. However, the modern systems have also had a significant impact on the livelihood of the waste-pickers who – in many instances – have seen their landfills closed or volumes dramatically reduced.



As part of a wider movement towards greater inclusion of the poorest and most disadvantaged people within Brazilian society, a range of programs have been set up by the government to encourage waste-pickers to attend school, undertake training and enter the formal sector. The government has also encouraged municipal waste systems to retrain waste pickers to fulfill new roles within the modern plants.

The development community has also been active in helping Brazil transition waste-pickers into the formal sector. In 2009, Brazil's National Banks for Economic and Social Development created a USD125 million fund to support waste-pickers and their cooperatives.³³ Other development agencies – both national and international – have been working with waste-picker cooperatives to train members for new career paths.

Analysis

Ricardo Zibas, Sustainable Risk Consultant, KPMG in Brazil

Ultimately, Brazil's new waste management system will help mitigate the impact of climate change by helping to reduce energy use, preserve scarce resources, protect the diversity of the ecosystem and reduce waste while simultaneously fostering economic growth and development for vulnerable members of society.

By working with the development community to achieve both development and climate change and sustainability goals, Brazil has demonstrated that – with proper policy and social support programs – positive change can be brought about at a municipal level. However, the government has also recognized that the needs of each municipality may be different and has therefore supported a variety of initiatives around the country.

In one pioneering example, the government recognized the contribution of waste-pickers at the Gramacho Landfill which – after 30 years in operation and achieving the dubious accolade of South America's largest landfill – was slated to be closed. More than 1,700 waste-pickers received 'severance packages' from Rio city officials on average of USD7,500 each.³⁴

Brazil's experience shows that cooperation between government, private enterprise and the urban poor can generate innovative approaches. Development agencies should therefore continue their work towards inclusion for the poor and vulnerable while creating platforms for greater collaboration across private, public and civil society.

New opportunities for green development

New opportunities are emerging for the development community to have a greater impact on climate change objectives within their existing mandates.

The following are just a few of the ways that the development community can add unique insights and value to the global response to climate change. We have seen growing interest within both the development and climate change communities to work together to achieve mutually beneficial goals. Some, like the case study we present on page 6 on the Renewable Energy and Adaptation To Climate Technologies (*REACT*) Window of the Africa Enterprise Challenge Fund, are funded through bilateral aid and demonstrate how the international community can help set the stage for positive change on a regional basis.

Others, such as the example of the trash pickers in Brazil (page 10) or the efforts of the Indian State of Madhya Pradesh's government to address climate change risks (page 14) illustrate how climate change and development goals can be advanced through initiatives supported by both the national and international development community. According to Lord Michael Hastings, KPMG's Global Head of Citizenship, "We need to come up with new and innovative ways to make a real and sustainable difference in the way developing nations deal with the dire impacts of climate change."

Generating new technologies

New technologies can help developing countries adapt and cope with climate change challenges, and more generally

help mitigate impacts by reducing the emissions of greenhouse gases. This will include the use of improved agricultural techniques to make crops more reliable in the face of increased drought, changing temperatures, and variable rainfall. It will also involve making improvements to energy technology to exploit renewable resources more cost effectively.

According to Yvo de Boer, KPMG's Special Global Advisor on Climate Change and Sustainability, "Developing nations and their development partners will need to assess the potential for new technologies such as renewable energy or smart infrastructure, not only to reduce greenhouse gases but also to develop new and different pathways for economic growth. This will require a level of assessment and comparative analysis that won't be easy to accomplish; it will require support from multilateral agencies and global bodies to help create applicable benchmarks and forecasts."

Supporting policy change

Building a policy environment that encourages environmental protection and climate change adaptation and mitigation initiatives will be critical for developing nations. The development community can help to achieve significant gains in greenhouse gas emission reduction, especially in those emerging markets experiencing rapid economic growth. It is also important to foster more sustainable

economic growth by helping governments develop, enact and implement supportive policy and regulation which encourages cleaner development. In terms of adapting to climate change, policy change can also help to achieve more resilient development strategies by, for example, incorporating appropriate incentives for private investors and the public sector to factor climate change into their investment decisions. This, in turn, will require more effective public private partnerships.

“Supportive policy can catalyze change in developing markets in some rather simple yet powerful ways. Helping communities take responsibility for reforestation and maintaining woodlands, for example, or educating the public about alternative methods for rural cooking, or changing the regulations governing transportation and carbon-based emissions; all of these gains can be made through the development of policy that instigates behavioral change.”

Tim Stiles, Global Chair of KPMG's International Development Assistance Services



Rapid urbanization often results in people – rural migrants in particular – being marginalized and not receiving the support or the development assistance they require to become productive members of a city. Greater opportunity must be created in both urban and rural areas. Programs that generate employment opportunities through environmental initiatives – such as ecotourism or renewable energy generation – would be especially relevant in helping to mitigate the environmental impacts of urbanization. ”

David O'Brien, Global Head of KPMG's Cities Center of Excellence

Encouraging private sector participation

Given that a significant portion of today's greenhouse gas emissions result from activities within the private sector, it seems clear that any solution must involve some form of private public partnership, as well as appropriate regulation. However, with many developing markets perceived as being high risk to private investment, few incentives exist for private enterprise to engage in a meaningful way in the national climate change debate or to invest in local adaptation measures. The development community can therefore help achieve a greater focus on climate change by supporting national and regional efforts aimed at creating greater stability, transparency and rule of law within client markets which, in turn, will better enable private sector engagement.

Supporting green city development

Cities account for approximately 70 percent of the world's greenhouse gas emissions, about 80 percent of the world's energy usage³⁵, and contribute approximately 80 percent of global economic output or GDP.³⁶ Given the rapid rate of urbanization in developing markets (in India alone, urban populations are expected to increase by 700 million, the equivalent of about 500 new cities³⁷), the influence of cities on climate change

is only set to increase. The development community could help mitigate the impact of urbanization by focusing on the greening of urban development, as well as developing employment and opportunity within both cities and rural areas.



Urban livelihoods offer the scope to be much more environmentally sustainable. High density can mean low transport costs, energy efficient housing, and environmentally efficient services. But this will require a massive step change in the volume of investment in the rapidly expanding urban areas of developing countries. ”

John Burton, Principal Adviser
in KPMG's International Development
Center of Excellence



The private sector needs to feel confident that they are investing in a country that is politically stable, that disputes are settled within a solid commercial regime, that land rights are in place and honored – essentially a country where their investments can be sustained in the long-term. Governments and development partners have a key role in creating this enabling environment for investment and sustainable growth. ”

Trevor Davies
KPMG's Global Head of
International Development
Assistance Services
Center of Excellence

Case study – India climate change preparedness:

tackling water resource management and resilient infrastructure investment needs in Madhya Pradesh

Opportunities for green development

Policy change	✓
Private sector participation	✓
Green city development	✓

The challenge

Madhya Pradesh, an Indian State situated at the heart of the country, is completely land locked and home to one of the largest agrarian populations in India. Over the past two decades, the State has seen rapid urban development and now boasts an urban population of more than 20 million people. The consequence is a growing and competing demand for resources, particularly water and energy.

Both the urban and water sectors are highly susceptible to the vagaries of climate and therefore create substantial opportunities for

mitigation and adaptation towards climate change. Factors including temperature, precipitation, wind speed and extreme events directly determine the availability, quality, distribution and productivity of natural resources. These factors also place tremendous strain on energy and water requirements for the operation and maintenance of infrastructure, as well as agricultural output.

Variability in temperature and precipitation patterns impact hydro power production in the state. Flooding can compromise water storage facilities and distributing structures, and often

lead to disease outbreaks like malaria. More frequent heat waves will drive up energy demand in residential and commercial areas of major cities, most of which are ill-equipped to deal with extreme events.

The State's action plan on climate change specifically highlights the need to address the impact on the urban poor and homeless who are subject to excessive heat exposure. It also highlights the critical need for asset modernization in the state to check inefficient water management practices and plans.



The solution

As the State embarks upon its development agenda, there is concerted effort to revise and create policies, regulations and schemes for a sustainable future. The Environmental Planning and Coordination Organisation (EPCO) in Madhya Pradesh is establishing a mechanism that facilitates management of long-term climate risks and uncertainties as an integral part of the state development planning, particularly in the urban and water sector. Within both sectors, sub-sectoral risks and opportunities have been identified and analyzed extensively through consultative processes with policy makers, project developers and implementation authorities.

However, while most stakeholders possess a general knowledge of climate change, its specific impact has – to date – not been well understood. In order to ensure robust, timely and effective policies, sector-focused customized checklists for policy makers have been created including both mitigation and adaptation aspects.

Another key objective, in addition to ensuring the 'mainstreaming' of climate change sensitivity in infrastructure development and policy planning, has been to identify areas for technological intervention and create scope for PPP engagement in each of the areas. The State has already initiated large scale infrastructural development including buildings, waste and transport management. A total estimated investment of USD1.3 billion has been planned for City Development Plans of four major cities. A major improvement of state water resources infrastructure including canals, dam rehabilitation and information systems has been planned, and the World Bank has allocated more than USD443 million towards this. Within these sub-sectors, over 30 areas of asset modernization (through technological intervention) have been identified and many relevant stakeholders sensitized.

Raajeev Batra, Head of KPMG in India's Climate Change and Sustainability practice, said "Climate change and pressures such as changing land use

necessitate innovation and increased investment to bridge the deficit in green development. Ongoing infrastructural expansion and steady growth trajectories present an opportunity for Indian states to integrate principles of environment, social and technological inclusiveness through each stage of policy development."

Analysis

Stuti Sharma, Sustainability Consultant, KPMG in India

Despite recent advancements and substantial government and development agency spending, the use of approaches driven by climate-sensitive technology has remained in its infancy. Furthermore, the creation of standardized processes to encourage and promote private sector investment in climate resilient development has been limited.

At each stage of policy development, frameworks are required to assess and integrate emission reduction potential in development planning. Risk preparedness for extreme weather events is also a priority. Assessing risk and opportunities, using sub-sector specific check-lists, provided the impetus for encouraging investment and capacity building. The long term goal is to set up systems whereby climate change is mainstreamed across policy planning and service delivery as a matter of course.



Conclusions

As we approach the milestone of the 2015 Millennium Development Goal targets, it is timely to think about the linkages between climate change and sustainable economic and social development. Climate change, one of the 'mega forces' we have highlighted, will shape the dominant development challenges and processes for the 21st century and must therefore be carefully considered.

Development agencies and governments of rich and poor countries must succeed in reducing vulnerability to inevitable changes in climate, while also working to reduce the extent of unwelcome climate change. Otherwise it will be very much harder to achieve global ambitions to eliminate absolute poverty by 2030 and make continued social and economic progress. We therefore need to address climate risks to promote development.

Equally (and unless the livelihoods of poor people can be enhanced through actions such as investments in infrastructure, better government services, and the creation of better jobs), the poor are likely to remain particularly vulnerable to relatively modest changes in climate. So we also need to promote development to reduce climate risks.





We must be guided by the reality that inaction now will prove the costliest action of all in the long term. ”

Ban Ki Moon, UN Secretary General



This suggests the need to ‘mainstream’ climate resilience within the development agenda. We have identified four specific high-priority opportunities for further action:

- **New technology** will be required in order to provide more climate resilient livelihoods in agriculture, and better infrastructure in cities and rural areas alike. This will include greener energy to reduce the causes of climate change, as well as other technologies to cope with the impacts of more variable and severe weather conditions.
- **Policy change** is needed to put in place the right enabling environment for the development of climate-friendly initiatives and actions. This agenda spans truly global initiatives, such as measures to limit the growth of emissions, to purely local, such as measures to apply appropriate building standards to reduce climate risks.
- **Private sector participation** will be crucial to success. In part, this reflects the limited reach and capacity of governments around the world to tackle the nature of the climate change challenge. It also reflects the reality that private companies undertake most of the economic activity which causes climate change,

and that their expertise and capacity are critical to finding the right solutions.

- **Green city development** is essential as cities continue to outpace rural areas in terms of population, greenhouse gas emissions, and economic activity. At their best, cities can provide solutions in terms of greener, climate resilient livelihoods. At their worst, they represent uncontrolled urban sprawl with poor services and high levels of climate vulnerability.

Thankfully, successful models and initiatives are now underway: the Africa Enterprise Challenge Fund is working to promote technology innovation through leveraging private sector resources and initiative; in Brazil, work with waste-pickers shows that empowerment of the poor can be consistent with improved recycling services; and in the Indian State of Madhya Pradesh, a state government has taken the initiative to mainstream the climate change agenda within its development strategy.

Such examples are inspirational. But they will need to be replicated and emulated many times over to reach a scale which is appropriate and sufficiently substantial in order to address the challenges of greener development in the 21st century.

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