

LOW CARBON OPTIONS FOR SOUTH ASIAN COUNTRIES AND SECTORS

August 2014

Regional Workshop Proceedings



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1. INTRODUCTION

There has been a steady rise in the urban population of South Asia due to population growth and migration. The urban population of South Asia is estimated to grow to 1.2 billion by 2050. India and Pakistan would be among the ten countries with largest increase in their urban population. Small cities and towns are the primary locus of growth. Such economic mutations and geographic reconfiguration will result in a surge in construction activity in the region.

The construction sector plays a crucial role in the economy of South Asia. It contributes significantly to the Gross Domestic Product (GDP) of countries and is one of the largest employers. The growth in the construction sector will be fuelled by addressing the current housing shortage and meeting future demand. Add to this, the likely need for reconstruction due to property damage caused by climate change. However, the sector has a massive ecological footprint. It is also one of the primary drivers of climate change; making up for 10-24% of GHG emissions in India¹ and Pakistan². 80% of these GHG emissions can be attributed to construction materials such as steel, bricks, cement and lime. With the increase in demand of building materials for construction purposes, the impacts will only worsen. The energy consumption of the buildings will also escalate.

Cleaner technologies exist, and could substantially reduce the ecological footprint of the sector, were they dominant. The usage of clean technologies has so far remained marginal, due to a series of barriers. These include lack of coordination efforts by the various government agencies and brick stakeholders in initiating change, lack of norms and regulatory systems, and unfriendly financing systems.

Despite the barriers, there is tremendous potential for mainstreaming cleaner technologies and green building practices in the region. Given that the majority of the housing shortage in the region pertains to the Lower Income Group (LIG) and Economically Weaker Sections (EWS), any effort at reducing the ecological footprint of the sector should be aimed at affordable and social housing.

1.1. THE WORKSHOP

Development Alternatives (DA), Clean Energy Nepal (CEN), LEAD Pakistan and Climate Action Network South Asia (CANSA) organised a regional consultation on “**Low Carbon Options for South Asian Countries and Sectors**” at Hotel Soaltee Plaza, Kathmandu, Nepal on August 26-27, 2014 in association with PGVS and Christian Aid. This event was supported by Heinrich Boell Foundation (HBF), Oxfam and Asia Pacific Network (APN). The major objectives of the workshop were:

- Create awareness on low carbon development
- Share country and sectoral case studies
- Develop a long-term regional low-carbon development strategy

The workshop saw participation from across the region including Afghanistan, Bangladesh, India, Nepal, Maldives, Pakistan, Sri Lanka and even Vietnam. India, Pakistan, Nepal, Sri Lanka and Bangladesh presented their

¹ Parikh et al., 2009

² <http://www.pisd.org.pk/ClimateChangePDF/Climate%20facts%20about%20Pakistan.pdf>

research findings on the application of low carbon pathways in different sectors including construction. Subsequently, the research will be finalised and advocated after the consultation.

The workshop spanned across two days. The first day of the workshop featured three key sessions: climate science and the gigatonne gap; low carbon options in Sri Lanka and low carbon options in Nepal. The second day featured four key sessions: low carbon options in Pakistan, India, Bangladesh and South Asia (***Please refer to Agenda in Annexure I***).

1.2. INAUGURAL SESSION

The inaugural session started with a welcome address by **Hina Lotia, CANSA Board Member and Director Programmes, LEAD Pakistan**. She welcomed all the participants and reiterated the importance of low carbon development for the region. She encouraged the group to learn and reflect about low carbon development.

The inaugural address by **Ziaul Hoque Mukta, CANSA Board Member and Regional Policy Advisor, Oxfam GB Asia** highlighted the indecision and varying positions of the countries in international negotiations. He urged the participants to reflect on the methods to address low carbon development in the next three years. He emphasised the need to associate the low carbon development strategy for the region with broader National Adaptation Plans of Action (NAPAs), National Adaptation Plans (NAPs), Intended Nationally Determined Contributions (INDCs) and regional events such as *the SAARC Summit* which will take place in Kathmandu in November.



Sanjay Vashist (Left) And Ziaul Hoque Mukta (Right) During The Inaugural Session

Ram Kishan, CANSA Board Member and Country Director, Afghanistan, Christian Aid elaborated on the objectives and the expected outcomes of the workshop. He exhorted that the discussions should focus on identifying priority sectors for development and the means for advocacy to take forth the research findings. He also emphasised the need for low carbon development to address the issues of poverty and equity. The role of various stakeholders and regional cooperation in promoting low carbon options should also be explored.

2. TECHNICAL SESSION (DAY ONE)

2.1. SESSION 1: CLIMATE SCIENCE AND GIGGATONNE GAP

The first session featured briefings of the **Fifth Assessment Report of IPCC (AR5)** by **Siddharth Chatpalliwal, Programme Manager, Vasudha Foundation** and **UNEP Gap** reports by **Raman Mehta**. The participants received a brief analysis of the climate science and IPCC AR5 report examining the vulnerability of the South Asian region to climate change. The presentation briefed participants on the highlights of the latest report and provided a brief understanding of the developments from the 4th to the 5th IPCC reports. The session also provided an analysis on the UNEP gap report, examining the causes and consequences of the gap in emissions between developed and developing countries. One of the key features of this presentation was the status of emission reductions and commitments by developed parties, where overall results are mixed. Key requisites to reducing emissions include the shift to conditional pledges, international cooperation on energy efficiency, fossil fuel subsidies, renewable energy, removal of short lived pollutants, promotion of low emission agriculture and accounting rules on land use.

The discussion afterwards focused on the definition of low carbon development. Participants expressing their views on the topic described low carbon development from their point of view, illustrating that it involves amongst other things decentralisation of power, technology, advocacy, public policy and efficiency in all things. While lacking perfect consensus, a nascent definition emerged during the discussion, defining low carbon development as a strategy, which uses the least amount of resources to achieve the highest amount of development.

2.2. SESSION 2: LOW CARBON OPTIONS IN SRI LANKA

The second session was on low carbon options in Sri Lanka. The first presentation was on Pathways to Low Carbon Development: Impediments and Opportunities by Ranga Pallawala, CANSA Board Member and Director, Janathakshan. He briefed the participants on the status of energy and development trends over the past few decades including a greater shift towards electric vehicles, greener public spaces, zero-carbon living spaces and energy sector reforms to reduce an emphasis on polluting sources of energy and enhance the profile of renewable energy. Ranga emphasised on the need to educate the community on the cost implications of current development without subsidies. This would promote a shift towards low carbon development and lifestyles.

The session featured two case studies from Sri Lanka. The first was a case study on micro-hydro energy projects in Sri Lanka by Navam Niles, Research Associate, Sri Lanka Youth Climate Action Network. He gave a detailed overview on the changing energy trends of Sri Lanka. The presentation focused on the social, economical and political facets of electrification in Sri Lanka. He also elaborated on the challenges, opportunities and recommendations that entail such projects in Sri Lanka and beyond. The second case study by Leelasena Winasa Mestri, Director, IDEA focused on the



Navam Niles Presenting the Case Study on Micro-Hydro Energy Projects in Sri Lanka

establishment of Integrated Development Association (IDEA) in Sri Lanka and its innovative advocacy methods for low-cost renewable technology. The presentation detailed non-conventional advocacy methods focusing on delivering valuable technology to communities across the economic spectrum across the island.

The discussion afterwards involved questions on the particulars of the Sri Lankan experience especially on the applicability of the case studies to other countries in the region and the practicality of certain advocacy strategies.

2.3. SESSION 3: LOW CARBON OPTIONS IN NEPAL

The final session for the day detailed low carbon options in Nepal. The first case study was on **the Status and Opportunities of Promoting Bamboo and Hollow Concrete Block as Low Carbon Construction Material by Suman Udas, Clean Energy Nepal**. He gave an overview of the existing housing scenario in the country and the different building materials used in construction. He presented two alternatives to the conventional building materials: bamboo and hollow concrete blocks. Considering the available resources in Nepal, the potential for the use of bamboo in housing is huge. It can be used for scaffolding, reinforcement, and construction of roofs, walls, doors and windows. Suman highlighted that opportunity of promoting bamboo in construction by the processing them into engineered panels. However, currently the market for such products is non-existent. There have been several instances of successful demonstration of use of bamboo in buildings, including institutional and affordable housing in Nepal. However, lack of supporting policies and the perception of consumers act as the major challenge to mainstream bamboo in construction. Hollow concrete blocks (HCBs) are a suitable alternative to the fired clay bricks. The potential of HCB housing is huge due to its cost-effectiveness. Even though the consumer awareness on the benefits of HCB is increasing, the constructed houses are still thought of as low quality. Other barriers in scaling up the technology include limited availability and lack of information about HCBs, lack of supporting codes and regulations and a quality assurance system.



Suman Udas Talking about the Potential of Low Cost Building Materials in Nepal

The second presentation by **Bhola Shrestha, Associate Consultant, PAC** focused on the Nepali case study for low carbon energy options in Nepal, highlighting the link between the climate change and the related design and deployment changes implemented to make systems more resilient. The final presentation was on **Promotion of Sustainable Housing in Nepal by Dr. Santosh Shrestha, UN-Habitat**. The presentation detailed on the need for green and low-carbon housing in Nepal. Dr. Santosh pointed out that the current practices of the construction sector are highly resource and energy intensive. With increasing urbanisation in the country, it has become imperative to shift to sustainable building practices. The current policies like the Nepal Climate Change Policy (2011) and National Shelter Policy (2011) advocate low-carbon development in housing. However, there is a need for more specific policies and detailed guidelines on sustainable housing. He also talked about the need for provision of eco-friendly housing in National Building Codes. Other challenges that should be addressed include

lack of data and information on housing and low-carbon technologies and the consumer preference for conventional technologies.

The discussion afterwards focused mostly on the technical and engineering particulars of the presentations. Some questions focused on engineering problems in hollow concrete blocks and the sustainability of bamboo construction in the long-term. The participants also discussed the barriers to the transition to low carbon construction like the lack of awareness among people about the low carbon and resource efficient practices, lack of technical expertise and favourable policies.

3. TECHNICAL SESSION (DAY TWO)

3.1. SESSION 4: LOW CARBON OPTIONS IN PAKISTAN

The first session for the day focused on low carbon options in Pakistan. The first presentation was on **Pathways to Low Carbon Development: Impediments and Opportunities** by **Muhammad Tousif Bhatti, Practical Action Consulting**. He gave a detailed overview on the aspects of energy requirements, production, access and efficiency in Pakistan. Referring to the high dependence on fossil fuels, he emphasized on the need to shift to low carbon energy sources. However, barriers in terms of policy, institutional barriers and financial barriers need to be overcome to facilitate the transition. Through case studies on the use of biogas and hydropower in Pakistan, he explained how these barriers were overcome in these instances.

The second presentation was on **Low Carbon and Disaster Resilient Bamboo Construction and Energy Efficient Vertical Shaft Brick Kilns (VSBK)** by **Hina Lotia, CANSA Board Member and Director Programmes, LEAD Pakistan**. The current environmental impacts of the construction sector are immense. Therefore, low carbon practices need to be mainstreamed. Some of the practices include VSBK, bamboo and hydraulic lime technology. Hina pointed out that the main focus of the National Housing Policy (2001) is on cost-effectiveness. Environmental concerns are not integrated. In order to scale-up these technologies, it is essential to generate awareness among regulatory agencies, builders, architects and the end-users about the benefits of these technologies. Environmental aspects of construction and the need for low-carbon technologies should be integrated in the national policies. Academic and research work on low carbon technologies, especially bamboo is also essential. Lastly, capacities of various stakeholders should also be built to scale-up the technologies.



Hina Lotia Discussing About the Possible Low Carbon Options in Pakistan

The discussions and feedback focused on the main bottlenecks towards Pakistani low carbon development involving the investment climate, regulations and the mind-set of consumers. The speakers noted that Pakistan needed a robust enabling environment and the main obstacle was political and not technical. Specific questions towards the speakers, focused on the financial viability and social acceptance of new technology, especially those living in poverty

3.2. SESSION 5: LOW CARBON OPTIONS IN INDIA

The first session of this presentation was on the **Prospects of a Low Carbon Energy Transition** by **Raman Mehta**. He talked about the barriers to the use of renewable energy in India and the policy initiatives required to address these barriers.

The next presentation was on the **Drivers and Barriers to Scale up Low Carbon and Energy Efficient Technology in the Construction and Infrastructure Sectors of South Asia** by **Kriti Nagrath, Development Alternatives**. The presentation highlighted the need to adopt low carbon and resource efficient brick production technologies in view of rapid urbanisation of India. Policy push and market mechanisms have been viewed as crucial drivers for the uptake of technologies. Success stories of the uptake of fly ash brick technology in Bihar and Odisha illustrate the same. The potential of use of bamboo in housing was also highlighted. However, cultural stigma towards low-carbon (and low cost) technologies and the prevalent mind-set amongst policymakers remained key obstacles to implementation. Kriti also elaborated some of the key strategies that should be adopted for the uptake of these technologies. These include awareness generation, favourable policies, incentives for entrepreneurs, forging institutional partnerships, quality control systems and further innovation on the technology.



Kriti Nagrath Describing the Need to Adopt Low Carbon Technologies in the Construction Sector

Dr. Soumen Maity, Development Alternatives shared the work on development of low carbon cement and its applicability to India and other South Asian countries. Concrete is an intrinsically low energy material. However, enormous amounts of concrete used for construction purposes make cement responsible for 5-8 percent of carbon dioxide emissions. This will only increase in the coming years due to the enormous proportion of construction that is yet to happen. With the projected increase in demand, the capacity to fulfil this is currently limited. With this background, DA along with EPFL and IIT Delhi has undertaken research to develop low carbon cement (LCC). Till date, four blends of LCC have been developed with strengths similar to Portland Pozzolona Cement. Dr. Maity pointed out that LCC is a necessity for other South Asian countries as well due to its capacity to reduce carbon emissions and utilise waste materials.

Zareen Myles, WAFD touched upon the impacts of climate change in Tehri Garhwal district of Uttarakhand. In order to mitigate the negative impacts of climate change, WAFD is developing and promoting low cost affordable technologies. Some of the technologies include use of bamboo biogas plants, rainwater harvesting structures, solar dryers and compost basket. Intensive trainings and capacity building sessions helped in popularising these technologies among the villagers.

3.3. SESSION 6: LOW CARBON OPTIONS IN BANGLADESH

The third session for the day featured two presentations by **Dr. M. Rezwan Khan and Maliha Shahjahan** from **Practical Action Consulting** and **M. Shahidul Islam, Grameen Shakti** on the opportunities and impediments to low carbon development in Bangladesh. These sessions examined key public policy and technical challenges and opportunities faced by low carbon advocates. However, while



Maliha Shahjahaan Elaborating on the Impediments and Opportunities for Low Carbon Development In Bangladesh

elaborating the case study, the speaker spoke on the viability of their low carbon systems and the manner in which they addressed implementation gaps. In the discussion phase, participants quizzed speakers on the viability of their technology and the main financial and maintenance related challenges amongst poor communities in Bangladesh. Issues such as micro finance, after-sales services and quality control were cited as important elements for successful implementation.

3.4. SESSION 7: LOW CARBON OPTIONS IN SOUTH ASIA

The final session was that of low carbon options in South Asia, featuring the topic mapping low carbon opportunities for South Asia for energy and carbon security. Multiple discussants from the South Asian region gave their opinions on emerging opportunities.

All the discussants agreed that low carbon development is an opportunity and should not be viewed as a barrier. It doesn't refer only to emissions. It is important to understand low carbon development in terms of adaptation and mitigation. In this regard, public policy and public perception of such a strategy is important.

In order to shift to a low carbon development trajectory, it is necessary to draft a strategy highlighting the sectors in which the transition can be initiated. Some of the sectors include construction, energy, transport and agriculture. On one hand, technology innovation and research should be promoted. On the other hand, best practices in all the sectors should be identified. However, the challenge lies in scaling-up these best practices. Policy and regulatory measures, and advocacy will play an important role in this.

Moreover, discussants agreed technology transfer will play a crucial role in low carbon development of the region. However, the participants agreed that the technologies should be adapted to the local conditions before transfer. Regional cooperation is necessary for a successful technology transfer. Lastly, the discussants reiterated the necessity of engagement of multiple stakeholders including the private sector.



Panel Discussing the Emerging Opportunities on Low Carbon Development in South Asia