

Low Carbon Society Research: Activities in India in FY 2013-14

Summary of Presentation made at:

'The 19th AIM International Workshop, NIES, Tsukuba, Japan: December 13-14, 2013

P.R. Shukla, Indian Institute of Management, Ahmedabad, INDIA

This presentation is about 'Low Carbon Research Activities' by the Indian team from IIMA in the fiscal year (FY) 2013-14. The presentation focuses on: i) Low Carbon Modeling in India, ii) Dissemination of Research and iii) the Way Forward in FY 2014-15. The low carbon research activities in India were closely aligned with the missions proposed in India's National Action Plan on Climate Change. Indian team used a soft-linked integrated assessment modeling system using a suite of models including various AIM models (AIM/CGE, AIM/EXSS and AIM/End-use), PNNL's GCAM model and MARKAL model. Whereas the low carbon policy assessment includes entire Indian economy, the focus of the policy assessment includes national transport sector and urban applications (in three cities).

A new scenario framework was proposed (Figure 1) which links to India's mission on 'Sustainable Habitat'. The assessment done for a time horizon till 2050 delineates the least cost measures and related changes in energy and technology mix for low carbon transport in India (Figure 2). The assessment shows that sustainable LC measures can reduce transport emissions in India in 2050 to a third compared to BAU. The city level modeling (Figure 4, Udaipur City), following the same scenario storylines, show that the LCS can deliver significant co-benefits in terms of reduction of local air pollutant loads.

Figure 1: Scenarios Framework

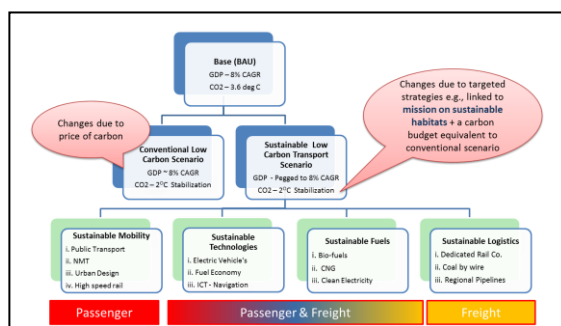


Figure 2: Transport Energy Mix BAU vs. SLC Scenario

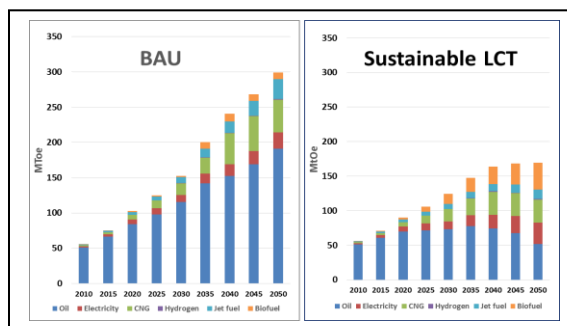


Figure 3: Wedges of Low Carbon Transition (Transport)

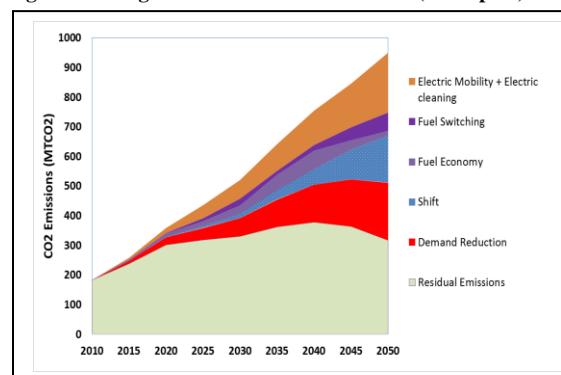
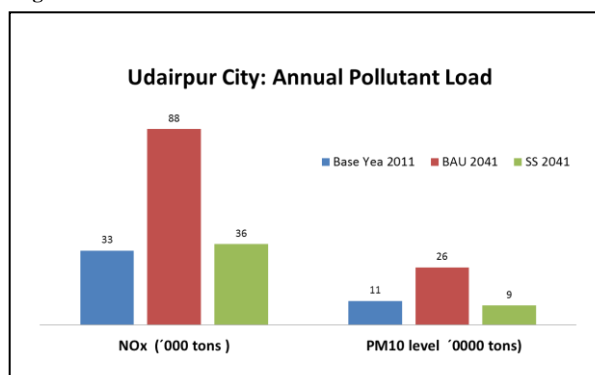


Figure 4: Local Air Pollution Co-benefits of LC Scenario



LC transport sector studies are initiated in three cities in India. In India, a city seeking central government finance for transport projects is required to submit a CMP (Comprehensive Mobility Plan). The studies in three cities are aimed to develop a toolkit which may include methodology, modeling and database for the

CMP preparation. The CMP toolkit will include the methodology for scenario development, including the ‘Low Carbon Scenario’ which reflect the ambition of India’s ‘Mission on Sustainable Habitat’. Figure 5 shows a modeling framework for developing city level comprehensive mobility plan. The CMPs shall deliver the roadmap for low carbon transport and an action plan that include the projects for achieving the low carbon transport roadmap. The city level project assessment shall include the NAMAs (Nationally Appropriate Mitigation Actions) framework as proposed under the UNFCCC. This integrated framework integrates the scientific modeling assessment, framing of policies, carbon finance and project implementation.

Figure 5: CMP Modeling Framework

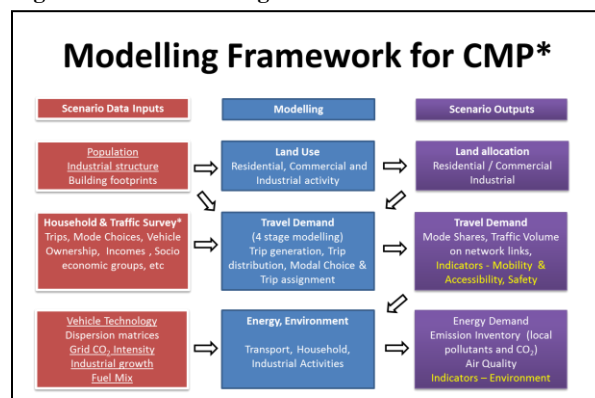
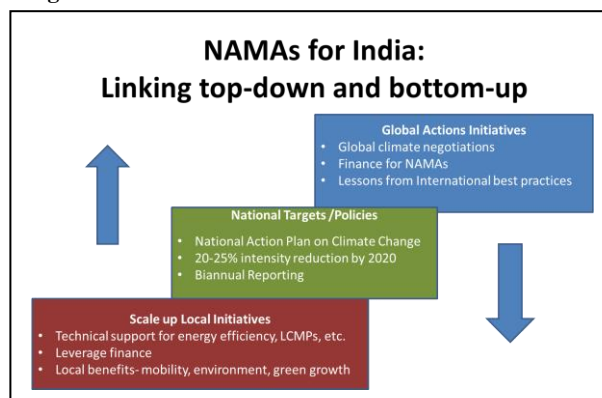


Figure 6: NAMAs Framework



AIM India team participated in several important events for dissemination of the low carbon development research. Some major events included LCS-RNet, LoCAR-Net and ISAP meetings at Yokohama, several side-vents at COP19 and participation in the scientific meetings such as organized by Energy Modeling Forum (EMF) and Integrated Assessment Modeling community.

The presentation charted out the focal areas of Low Carbon Society research work in India in the coming financial year (FY 2014-15). The key focal areas to be included shall be:

1. Low Carbon Scenario and Roadmap for India
2. State-level Low Carbon Scenarios in India
 - a) GHGs (including Short-lived GHGs)
 - b) State-level Low Carbon Roadmap
3. Energy Supply Technology Co-benefits and Risk Assessments (e.g. Renewable, Nuclear, Energy Efficiency, CCS)
4. Energy Demand Technology Co-benefits and Risk Assessments
 - a) Industry Sectors - Energy Intensive Industries (Steel, Cement, Non-ferrous Metals)
 - b) Agriculture Sector
 - c) Consumption Sectors (Building, Transport)

The India team plans to work closely with AIM, Japan team for developing tools and applications for India in the areas of:

1. Integrated / Down-scaled (Cities/Sector) Model Development
2. Policy Application and Finance - Cities and Key sectors (NAMAs)
3. Modeling Guidebook and Database
4. Capacity Building and Dissemination