MEETING REPORT

Sustainable cities*

An article in the *Bangalore Mirror* (22 October 2010) featured Suchith Kidiyoor talking about the 'green massacre' in Bangalore. He states: 'As per state government records, more than 10,000 trees have been axed between 2006 and 2010 for developmental projects like metro and road-widening, and 8 lakh vehicles have been registered in the city during that period'. Environmentalists have put the figure at 2.75 lakh trees!

Do the costs of development justify its benefits? And are these benefits sustainable in the long run? In this regard, a conference was organized to discuss current and future developments in the fields of urban infrastructure, transportation and planning, and to suggest sustainable avenues. The programme included parallel sessions on transportation planning, operations and road safety/ environment, pavements, infrastructure development and urban planning, each of which comprised content befitting a mini-conference on the topic.

During the inauguration, N. Balakrishnan (Indian Institute of Science (IISc), Bangalore) pointed out that a sign of growth/prosperity has been related to the movement of people from rural to urban areas, leading to an overload on the latter with time. Consequently, there has also been a craving for rural areas in urban cities, resulting in the growth of farmhouses. A. P. J. Abdul Kalam (the former President of India) had earlier proposed the '*Pura*' model, in which urban facilities can be provided in rural areas.

Gaurav Gupta (Karnataka State Road Transport Corporation (KSRTC), Bangalore) highlighted that in India, town planning has been separated from transport planning. However, according to Jamie von Klemperer (Kohn Pederson Fox Associates, USA), in a film screened during the 'urban vision' session: if a traffic planner were to design a city, it would be the best traffic diagram leading to wide roads and more cars!

Sanjeev Kumar Lohia (Ministry of Urban Development, Government of India) pointed out that the focus has been on roads and not road networks, a result of disjointed planning. While Lohia spoke on transportation planning from the viewpoint of a policy-maker, Chandra Bhat (The University of Texas at Austin, USA) did so from the traveller's perspective.

Solomon Benjamin (National Institute of Advanced Studies, Bangalore) mentioned out how flyovers harm the economy structurally below the flyover and how planning pushes people to the urban periphery, which is away from jobs, water supply and other resources. K. S. Subba Rao (IISc) said that dominance in the city's periphery areas has increased the housing, transportation and other infrastructure needs.

Don Carter (Carnegie Mellon University, USA) mentioned that Indian city planners are making a mistake by following Western countries in transport infrastructure design. He shared his group's experience in the US as a lesson to be learnt by India for practising smart growth that offers equitable, affordable housing and transportation choices. He suggested citizen participation, development decisions being made open, predictable and fair, and strengthening existing communities as measures that India can follow.

Two of the six plenary speakers focused on public–private partnerships (PPP). Dimitrios A. Tsamboulas (National Technical University of Athens, Greece) said that the basic principle behind the partnership was the trade-off between public interest (requiring a balance between socio-economic costs and benefits) and business interest (requiring a minimum interest on invested capital). Ashwin Mahesh (Indian Institute of Management, Bangalore) described some aspects of PlanBengaluru 2020 (Box 1), which he said must identify 'who should do what', 'must have the force of law', 'must deliver value to citizens' and 'must measure progress regularly'.

K. V. Gururaja (IISc) used amphibians, particularly frogs, as an example to explain their sensitivity to changes in the environment. The population of amphibians has been decreasing in the last two decades due to barriers in their movement (roads, buildings), pollutants and other factors. He emphasized that additional studies on monitoring of amphibians are needed. Ulhas Rane (Envirodesigners Pvt Ltd, Mumbai) said that biodiversity is an indicator of a healthy environment and stressed on a holistic strategy for ecologically sensitive city planning. P. P. Majumdar (IISc) discussed the hydrological impacts of climate change. He mentioned how urbanization alters the hydrology of a region, peak flows and the rainfall–runoff pattern. Climate change studies are of value as they sensitize the government to policy action.

Changes that occur in concrete give rise to issues such as CO_2 emissions, permeability, shrinkage, hydration, cracking and process control. Ananth Ramaswamy (IISc) highlighted the need for new materials and spoke of 'nanocement' that can help reduce CO_2 emissions. K. S. Reddy (Indian Institute of Technology (IIT), Kharagpur) explained the requirement for structural evaluation of pavements in India and presented a proposal for the same. He also outlined the research activities in this area at his institute. Shashi Nambisan (Iowa State University, USA) delivered a talk on road safety and suggested the use of mass media to spread awareness about it. He presented two case studies of Iowa and Las Vegas metro areas to describe safety strategies which include identifying, minimizing and mitigating risks, involving stakeholders, and using education and outreach programmes.

T. G. Sitharam (IISc) spoke on the use of underground space for infrastructure development. M. S. Sudharshan (Civil Aid Technoclinic Pvt Ltd, Bangalore) explained the rehabilitation of bridges. Sreesha Malayil (IISc) talked about the sustainable disposal of banana leaf waste by converting it into fibre, biogas and compost. Rajasekhar Bangaru (IISc) dealt with the use of plastic waste in road

*A report on the Conference on Infrastructure, Sustainable Transportation and Urban Planning (CISTUP@C*i*STUP 2010) held at the Indian Institute of Science (IISc), Bangalore during 18–20 October 2010, and organized by the Centre for infrastructure, Sustainable Transportation and Urban Planning, IISc.

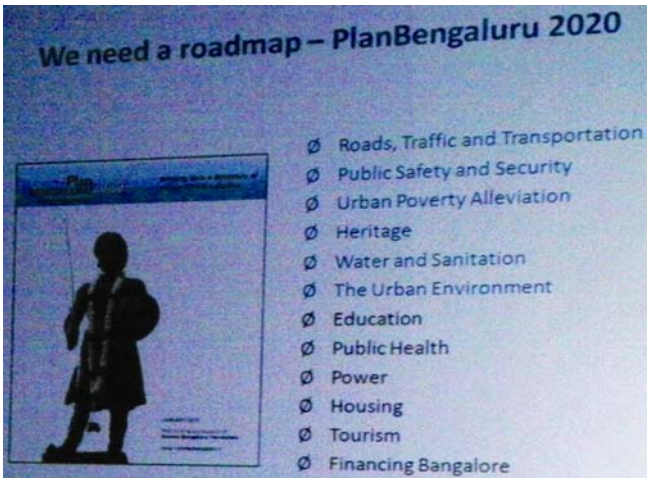
construction and Ambika Behl (Central Road Research Institute (CRRI), New Delhi) with warm mix asphalts for sustainable pavements. Tom V. Mathew (IIT Bombay, Mumbai) spoke on vehicle-type-dependent driving behaviour and S. Velumurugan (CRRI, New Delhi) described the development of free speed equations and speed flow models for high-speed corridors through traditional and microscopic approaches.

A video conference workshop was held as a joint venture of the Centre for infrastructure, Sustainable Transportation and Urban Planning (C*i*STUP), India, with the Labaratoire Central des Ponts et Chausées (LCPC), France. The session included presentations by experts from both countries on geographic information systems for urban modelling, simulation and planning; measurement of road skid resistance; simulation of accident scenarios of two-wheeled vehicles; reliability-based design of pavements; evaluation of psycho-physical traits of drivers and seismic vulnerability of transport network.

Two sessions were organized in collaboration with the Karnataka State Council for Science and Technology (KSCST), Bangalore. The 'water infrastructure' module comprised presentations on urban water supply management through rainwater harvesting, low-temperature thermal desalination applications, sustainable urban drainage infrastructure, and the impact of lakes and their status in the urban context. The 'data infrastructure' session covered spatial data infrastructure and technologies for physical infrastructure development and maintenance. Exhibitions were also put up at the conference venue by the Bangalore Metropolitan Transport Corporation, KSRTC, KSCST and C*i*STUP.

Overall, this three-day event acquainted the participants with information on recent research and possible pathways for a sustainable future.

Box 1. PlanBengaluru 2020.



PlanBengaluru 2020 recommendations
(From the presentation by Ashwin Mahesh)

Traffic and transport
– Emphasize public transport – improve bus and taxi systems.
– Create a separate budget for pedestrian infrastructure.
– Improve design of public spaces.
– Use existing infrastructure fully; new projects can wait.

Housing
– Promote work-at-home solutions like Smart Work Centres.
– Co-locate social infrastructure in housing developments.
– Promote group housing instead of single family sites.
– Identify locations for economically weaker sections (EWS) housing in each ward.
– Promote wider range of housing options and access to finance.

Governance
– Establish metropolitan planning committee – one plan, one planner.
– City agencies to execute planning works.
– Introduce elected ward and neighbourhood committees in Bruhat Bengaluru Mahanagara Palike (BBMP).
– Longer term for office of mayor – based on direct/indirect election.
– BBMP One centres in every ward.
– Competitive hiring of BBMP commissioner.

Geethanjali Monto* and **Richa Malhotra** (*S. Ramaseshan Fellows*), Current Science Association, Bangalore, India.
*e-mail: geethum@hotmail.com