a leadership role by thinking about resource use and its efficiency in a more general sense." He expanded on this explaining the ideas of a circular economy, "that you think about resource outputs and plugging them back into other uses in the economy." There is also a need for more creative thinking in urban design and in thinking creatively beyond renewables and efficiency. Dubash cited one example, saying, "When you have financial crises and fiscal stimulus, how about incentivizing investment in buses rather than cars?" It was felt that analytics are crucial to support the available opportunities, including analytics of co-benefits.

Looking at the international picture, he agreed that "adaptation had to be a central part of the story." Also discussed was "what one might politely call tonal issues in climate politics," to ensure that conversations are positive, constructive and logical. It is important to build a positive narrative "so climate becomes an opportunity for countries to redirect their economic trajectories." There is a need to address the concerns of developing countries, including India, reassuring them that they will not lose out through implementing cleaner energy policies.

Dubash noted that despite lots of talk about finance for clean energy, "there doesn't seem to be adequate amounts forthcoming." Perhaps deals could be made on technology as a substitute for finance, and maybe creative ways of accessing technology could be explored. There were also doubts and skepticism about China, the U.S. and the 'peaking year.' It was wryly noted that if India set a similar deadline, "we could easily ramp up our emissions for the next 10 or 15 years and then declare victory as we slowly glide back to a more reasonable level." Bapna reiterated the inadequacy of current levels of finance for technology, saying that "technology generation and collaboration internationally might help to bring…faster adoption of low-carbon technologies."

Anumita Roychowdhury, Executive Director, Research and Advocacy, Centre for Science and Environment, asserted that "India does not have to repeat China." She said, while China has "gone to the maximum they could," the country is now having to try and "unbuild and reduce." She argued that "India's opportunity is in its preventive action and the world has to recognize and incentivize that." This means considering "unique affordable solutions like the transportation sector." For example, instead of prioritizing expensive metro systems, "we can do a lot more with…walking, cycling and compact city design." Stressing the importance of "the co-benefit principle and regulations for co-benefit," she added that regulations for air pollution could also work for the climate.

In the drive to build 'smart cities' across India, what are the challenges and opportunities for addressing the nation's urban air quality problems?

Karuna Gopal, President, Foundation for Futuristic Cities, began by saying that India has already embarked on smart urbanization, adding "I think as a nation it is trying to revisit its assump-

tions, rework the strategies and also reconfigure tactical moves." Indian cities "have completely violated the city design," which is "why we have huge, unwieldy sprawls." Recently, Indian cities have begun to understand how to integrate land-use planning and transportation, believed to be two of the biggest challenges. Another key challenge is data and information, which is in its infancy and unreliable. "Forget about even modelling," he said, "we have huge data issues and unless we rectify that, I don't think we'll be able to address any other problems." Also raised was the gap in governance with "almost 25 to 35 agencies taking care of each city." Collaboration has been a major challenge. Another challenge is posed by consumer practices: "How we build our homes, what kind of materials we choose, how we buy our cars, what kind of fuel we use."

Turning to solutions, he said that they "have to be smart solutions and also smart decisions." This doesn't necessarily mean technology-driven, for example, big cities "can be shrunk by using public transportation, and that is a smart decision." India should quickly develop best-of-class public transportation to compete with private vehicles. Here it was noted that "India does have some culture issues…people don't go for small cars or public transportation."

A second important solution is to greatly increase broadband penetration for which a policy is already in place. This enables the creation of virtual workspaces, which in Amsterdam, has allowed up to 600 office buildings to be vacated as employees work from home. India should "go smart" and create "intelligent communities that basically believe in collaborating," following the examples of Tai Ching in Hong Kong or Oulu in Finland.

Moving on to the challenge of governance, Gopal suggested that the root

THE BIG ENERGY QUESTION

CLEARING THE AIR?
Challenges and Opportunities in India

The Great
Energy Challenge

NATIONAL
GEOGRAPHIC

A NATIONAL GEOGRAPHIC INITIATIVE IN PARTNERSHIP WITH SHELL

bigenergyquestion.com/airpollution