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Urban Resilience and Adaptation for India and Mongolia:
 curricula, capacity, ICT and stakeholder collaboration to support green & blue infrastructure and nature-based solutions
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URGENT *Lecture Series*

5th Lecture

Forestry and Urban Environment

Date : 27 November 2021, Saturday
Time : 1315 – 1445 Hrs IST

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Speakers



Dr Indu K Murthy
Principal Research Scientist
Centre for Study of Science, Technology and Policy (CSTEP)

An ecologist (Forestry & Environment) by training she has worked as a Consultant Scientist with IISc. Her areas of interest include climate change vulnerability, land-based mitigation, and adaptation/resilience building or climate-proofing development to climate change. She is on the Governing Board of SaciWATERS and an expert with the UNFCCC Roster of Experts for India (for GHG Inventory), and a member of the REDD+ Cell Govt of Karnataka. She is also a member of the Technical Advisory Committee of Mahila Abhivruddhi Society, Andhra Pradesh (APMAS).



Prof. Debbie Barlett
Professor
Environmental Conservation
University of Greenwich

A Chartered Landscape Architect and Fellow of the Chartered Institute of Ecology and Environmental Management, she has worked for Local Authorities and Government Agencies. At present her interest lies in in the role of agriculture and forestry in shaping the landscape, past and present, and the impact on both natural and cultural heritage. Her current research focus is on the socio-economic aspects of the coppice industry and agricultural landscapes, and the role of Nature Based Solutions in restoration programmes and in addressing societal issues, such as climate change.

Facilitating Institution

Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir

Speaker: **Dr. Indu K Murthy**, Principal Research Scientist, Center for Study of Science, Technology and Policy, Bengaluru, India

Topic: **Carbon Offsets in Net Zero**

Dr. Indu's presentation focused on the broader concept of forestry in the net zero concept. Her presentation started with the introduction on the Paris Agreement, with focus on its initial objectives and future projections. Intergovernmental Panel on Climate Change's (IPCC) focus on the 'Net Zero' concept and its projections were discussed next. Net Zero was defined as "a state where a nation's emissions are compensated by the absorption and removal of greenhouse gases from the atmosphere". The two main strategies discussed to achieve this state were – (i) by increasing carbon sinks (natural strategies) and (ii) through use of relevant technologies for carbon capture. The net zero targets committed by different nations were also discussed, where India is said to obtain this target by the year 2070. Next, offsets through carbon sinks were discussed, emphasizing on their uncertainty over real potential. The main concern raised included the dependence of people on forest products and thus their sustenance as a permanent stock. Another concern is hard to abate industries such as cement, steel, and refineries. A key point made on carbon sinks was the limitation of carbon sequestration as it saturates overtime and plateau off. Different negative emission technologies were also listed out such as direct capture of carbon dioxide from ambient air, cloud treatment to increase alkalinity, ocean fertilisation, building with biomass etc. For each of them, the stages of development were also discussed in detail. Next, the co-benefits of carbon sink creation and its position under the umbrella term of Nature Based Solutions (NbS) was discussed. NbS was defined as the term that "encompasses a range of approaches such as ecosystem-based adaptation, natural climate solutions and eco-disaster risk reduction". Few examples of successful NbS in urban and rural areas of India were also discussed. The advantages of NbS in terms of the co-benefits spread across environmental, social and economic sectors was presented and discussed in detail. This included biodiversity conservation and watershed protection (environmental benefits), biomass for fuelwood and access to quality seedlings and markets (social benefits), and employment in forest nurseries and diversification of income sources (economic benefits) as examples among many others. A number of global initiatives where NbS are incorporated for co-benefits were also discussed, such as the Sendai framework, United Nations Framework Convention on Climate Change's REDD+, United Nations Convention to Combat Desertification etc. In this regard, the relevance of initiatives like URGENT project was reemphasized.

Speaker: **Prof. Debbie Bartlett**, Environmental Conservation at University of Greenwich, England, United Kingdom

Topic: **The role of urban forestry in adapting to environmental change: experiences from the Cool Towns project**

The focus of Dr. Debbie's presentation was on *Cool Towns* project. She started her presentation with a background on the necessity of this project, centred around the heatwaves in Europe. Her next focus was on the different global initiatives to discuss climate change concerns and actions such as the COP, Paris Agreement and National Declarations of Commitment (NDCs). Three approaches for reducing environmental changes were highlight – to prevent any further climate change, mitigate impacts and remove carbon. *Cool Towns* project was introduced as “a cooperation between 13 European partners aimed to counteract the negative effects of climate change and find attractive solutions that make cities climateproof and robust so that heat stress is prevented or limited as much as possible”. This project has a number of partners from leading European research/academic institutions, governmental organisations and industries from the climatology and climate adaptation domains. Specifically, this project is aimed “to provide cities and municipalities with knowledge and tools to become heat-resistant”. Next, the effect of urban heat island and its relation to vulnerability was discussed. Another project working on heat stress mitigation in city was introduced – *Cambridge Canopy Project*. To understand the heat stress better, the concept of thermal comfort – physiological equivalent temperature was introduced. A number of solutions to reduce heat stress were discussed such as increasing shade, evaporation, reflection and ventilation. Few examples showcasing the difference of surface temperature with different types of materials and shades were also discussed. Next, tree planting in urban areas was discussed in detail. With regard to tree planting, the factors which influence its effectiveness were listed such as the foliage shape and dimensions, leaf area density, seasonal cycle, daily transpirations and water availability. A number of benefits (evapo-transpiration cooling, shade), disbenefits (maintenance, time to grow etc.) and co-benefits (aesthetics, recreation, relaxing etc) of urban tree planting were also discussed. She also informed the availability of “Cool Towns Heat Stress Measurement Manual” that provides the details of different species suited for reducing heat stress. Next, several sustainable tree planting strategies with different co-benefits was showcased and discussed in terms of practical application. Another important point discussed with regard to successful urban tree planting was the selection of native tree species. She also emphasized on the need of the selecting well-fitting tree species in urban areas as the conditions of cities continuously change and not necessarily support native species.

REC | Indu K Murthy is presenting

What is Net Zero?
Net zero refers to a state where a nation's emissions are balanced by its removals.

Indu K Murthy

Akhlaq Wani

Sarath Babu M.G. | Debbie Bartlett

Kundan Deval | M.M. ANEES

Dr. Aparna | Nadiya Manzoor

24 others | You

1:22 PM | Urgent Lecture Series (5th)

REC | Debbie Bartlett is presenting

Debbie Bartlett

Akhlaq Wani

Indu K Murthy | Sarath Babu M.G.

Kundan Deval | M.M. ANEES

Dr. Aparna | Bhat Jamshed

27 others | You

1:43 PM | Urgent Lecture Series (5th)



Link to Lecture

<https://drive.google.com/file/d/1QVfzbooMhgoJ16CM28uXIO73S7sdOUPW/view>