



DEEP DIVE LATERAL LEARNING PROGRAM ON INCLUSIVE ENERGY SOLUTIONS

August 29 to September 2, 2016

The University of Melbourne

Organised by the Department of Electrical and Electronic Engineering

Venue: Melbourne Business School, The University of Melbourne

PROGRAM AT A GLANCE

of interactive lectures and cases from the field

Keynote Address

Ross Garnaut

Melbourne Institute of Applied Economics and Social Research,
Faculty of Business and Economics, The University of Melbourne

Carbon, Renewables and Regional Opportunities

September 1, 10:30-12:30

Day 1

August 29

Opening Session

8:30-9:00

Welcome remarks by; *Iven Mareels, Dean, Melbourne School of Engineering (MSE), The University of Melbourne (UoM)*

Opening remarks by; *Margaret Sheil, Provost, The University of Melbourne*

Messages of greetings from the Asian Development Bank by;
Priyantha Wijayatunga, Principal Energy Specialist, Sustainable Development and Climate Change (SDCC) Department, Asian Development Bank (ADB)

Francesco Tornieri, Principal Social Development Specialist, South Asia Department (SARD), ADB

Moderator: *Reihana Mohideen, Assistant Dean, Diversity and Inclusion, MSE, UoM*



Day 1: Setting the Context

This session will provide a historical context, outlining how modern energy development revolutionised society and transformed life in the 20th century, positing that the lessons of this history are important to meeting the challenges of energy demand and development today. It will then analyse the implications of technology innovation for gender relations. The feature presentation will provide an overview of the national electricity market in Australia. The main technical and social features of the Asian Development Bank energy portfolio will be outlined.

9:00-10:30

Interactive lecture

1. New technologies have a past: A historical view of energy development

Rob Evans, Head of Department, Electrical and Electronic Engineering (EEE), UoM

10:30-11:00 BREAK

11:00-12:30

Interactive lecture

2. The shaping of technology and our technological futures: A gender perspective

Reihana Mohideen

12:30-13:30 LUNCH

13:30-15:00

Feature Presentation

3. Overview by an independent systems operator: Australia's National Electricity Market – planning to operations

Speaker: Nicola Falcon, General Manager, Australian Energy Market Operator

15:00-15:30 BREAK

15:30-16:30

4. Overview of the ADB energy portfolio

Speakers: Priyantha Wijayatunga; Francesco Tornieri

16:30-18:30

University Tour, with *Billibellary's Walk*



DAY 2: The Energy Transition

August 30

This session will identify the main features of the energy transition pathways for the countries of the Asia Pacific Economic Cooperation region -- demand, supply and choices made -- and their global impacts. It will focus on the push towards low-carbon economies based on renewable energy sources, as well alternative small-scale systems, such as minigrids. Examples will be drawn from Timor-Lest, Australia, the United Kingdom and Nepal. Experiences from India, Sri Lanka and China will also be discussed. The Nepal 'case from the field' will present the technical and social inclusion-gender equity challenges faced in the ongoing development and integration of small-scale, distributed off-grid systems, posing a 'problem-solving' exercise for the relevant experts. The session will also include an assessment of initiatives towards zero carbon in Australia, the Maldives and Bhutan.

9:00-10:30

Interactive lecture

5. The energy transition and implications for energy access

Roger Dargaville, Deputy Director, Melbourne Energy Institute, UoM

How much energy does a community need? The Timor-Leste case.

Speaker: Roger Dargaville, on behalf of the research team

10:30-11:00 BREAK

11:00-12:30

Interactive lecture

6. Decarbonising Australia: Socio-economic implications and challenges

Michael Brear, Department of Mechanical Engineering, UoM

Cohorts Response: S.K. Baswal, Additional Director, Rajasthan Renewable Energy Corporation, India; Harsha Wickramasinghe, Deputy Director General, Sri Lanka Sustainable Energy Authority; Zhaohong Bie, IEEE Power and Energy Society, School of Electrical Engineering Xi'an Jiaotong University, Peoples Republic of China

12:30-13:30 LUNCH

13:30-15:30

7. Alternative Small-scale Energy Systems -- Minigrids

7a) Interactive lecture

Grid Independent Customers: Challenges and Opportunities of PV and Storage

Luis (Nando) Ochoa, EEE, UoM

7b) Cases from the field -- Nepal

Minigrids for remote disadvantaged communities: 'System' challenges in Nepal

Speakers: Narayan Adhikari, Assistant Director, Alternative Energy Promotion Centre, Nepal; Rabindra Chaudhari, Manager, Nepal Electricity Authority; Suman Subba, Senior Social Development Officer [Gender], Nepal Resident Mission (NRM), ADB; Pushkar Manandhar, Project Officer [Energy], NRM, ADB.



15:30-16:00 BREAK

16:00-17:00

Panel presentation

8. Towards Zero Carbon

Speakers: Peter Seligman, Research Engineer/Mentor, Melbourne Energy Institute, UoM; Akram Waheed, Maldives Energy Authority; Satchi, Chief Engineer, Department of Renewable Energy, Bhutan

18:30-22:00

PROGRAM DINNER

Harbour Room, Royal Melbourne Yacht Squadron, St Kilda

Welcome and dinner address

by Rob Evans, Head of Department, EEE

DAY 3: Running the Grid

August 31

This session will present an overview and identify some of the key challenges faced in running the grid, with a focus on distribution networks. Cases from the field will outline the specific challenges – technical, social and cost-based – faced in India, Bangladesh and in the ADB energy projects in Central and West Asia. The session will also consider potential smart grid solutions in relation to improving energy efficiency, renewable energy integration and the future evolution of the grid.

9:00-11:00

9. Challenges in running the grid

9a) Interactive lecture

Challenges in running the grid: An overview

Iven Mareels

9b) Cases from the field: India, Bangladesh, Central and West Asia

Addressing system challenges: Integration, synchronisation and cost

Speakers: I.C.P. Keshari, IAS, principal secretary, Energy Department, Government of Madhya Pradesh, India; Mohammad Rahman, Deputy Secretary, Power Division, Ministry of Power, Energy and Mineral Resources, Bangladesh; Adnan Tareen, Senior Energy Specialist, Central and West Asia Department, ADB

Additional contributions from: Bhadreshkumar Mehta, Chief Engineer State Load Dispatch Center, Gujarat Energy Transmission Corporation Limited, India; Akash Tripathi Managing Director Madhya Pradesh, Paschim Kshetra Vidyut Vitran Co. Ltd., Indore, India

11:00-12.30 BREAK & EARLY LUNCH



12:30-18:00

FIELD TRIP: Hepburn Community Wind Farm Co-operative

Australia's first community wind farm has been built on farmland at Leonards Hill, near Daylesford, north-west of Melbourne. Despite many challenges, overwhelming support from the community has made it happen – inspiring similar projects to explore the co-operative model for community-owned renewable energy projects.

DAY 4: The Market, Regulation, Equity and Access

September 1

How can market imperatives be balanced with equity and affordability considerations to enable modern energy access to poor and low-income communities in developing countries? How can regulation assist this goal? What are some of the innovative and effective planning methodologies and tools to cope with uncertainty and improve grid resilience and service delivery? How are local economies built up and women and men empowered in the process? This session will address these issues. The policies, strategies and experiences of the ADB energy portfolio will be outlined. Examples of community participation and participatory processes empowering remote mining communities in Australia and women's empowerment through 'gender and energy' programs in Africa and Sri Lanka will be discussed. Advanced planning methodologies and tools to cope with uncertainty and improve service delivery and resilience, drawing from experiences in Europe, Senegal and Chile, will be presented. The planning challenges and experiences from India, Sri Lanka and Indonesia will be reflected upon.

8:30-10:00

10. The ADB outlook

Speaker: Priyantha Wijayatunga

10:00-10:30 BREAK

10:30-12:30

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12:30-13:30 LUNCH

13:30-15:00

11. Growing local economies and community empowerment

11a) Interactive lecture

Community participation and participatory policy processes

*Sara Bice, Director, Research Translation and Westpac Bicentennial Foundation
Research Fellow, Melbourne School of Government, UoM*

11b) Cases from the field: Africa and Sri Lanka

'Energising' women's economic empowerment

Speakers: Stella Mandago, Senior Energy Officer, Department of Energy and Climate Change, African Development Bank; Sohna Ngum, Gender Expert, Office of the Gender Envoy, African Development Bank; Ranishka Wimalasena, Senior Project Officer [Energy], Sri Lanka Resident Mission, ADB



15:00-15:30 BREAK

15:30-17:00

Interactive lecture

12. Planning under uncertainty: Addressing the energy trilemma

Pierluigi Mancarella, EEE, UoM

Cohorts Response: Jayasinghe Jayawardena, Director [Development], Ministry of Power and Renewable Energy, Sri Lanka; Vivek K.Porwal, Managing Director, Madhya Pradesh Madhya Kshetra Vidyut Vitran Company Ltd, Bhopal, India; Pradeep Tharakan, Senior Energy Specialist [Climate Change], South East Asia Department, ADB

DAY 5: Institutional Challenges

September 2

Institutional challenges to meet the demands of the energy transition are varied. A key issue, however, is capacity building. This includes anticipating and planning for the skills that will be needed in the coming decades, that is education and training, with a focus on adapting to technological change. This session will identify and discuss these issues, including the skills gap, both technical and social -- the gender-based skills gap and the training of women in the Sciences, Technology, Engineering and Mathematics (STEM). It will also examine how governments and educational institutions are responding to address the skills gap. The topic "Improving project effectiveness", poses the need to learn from experience, both good and bad. Cases from the field examine two ADB projects from India and the Inner Mongolia Autonomous Region. The feature presentation on ethics, introduces a discussion taking place in IEEE, and is an attempt to provide a framework to guide IEEE and engineering practice.

9:00-10:30

13. Keeping up with the energy transition: Addressing the skills gap

Speakers: Brajesh Panth, Technical Advisor [Education], SDCC, ADB; Marilys Guillemín, Project Lead, Science in Australia Gender Equity (SAGE) Athena SWAN initiative, UoM; Rob Evans

10:30-11:00 BREAK

11:00-13:00

14. Improving project effectiveness: Or why and how institutions need to learn from practice

14a) Interactive lecture

Impact assessment: Social, technological and health systems

Peter Annear, Nossal Institute for Global Health, UoM

14b) Cases from the field: India and the Inner Mongolia Autonomous Region

Speaker: Prabhjot Khan, Social Development Officer [Gender] ADB, India Resident Mission; Nawon Kim, Senior Environment Specialist, Energy Division, East Asia Department, ADB





13:00-14:00 LUNCH

14:00-15:00

Feature Presentation

15. Human-centred engineering: What is it and the ethics behind it?

Speaker: Greg Adamson, President, IEEE Society on Social Implications of Technology

15:00-15:30 Closing Session

Closing remarks by; Rob Evans, Head of Department, EEE

