



# Energy Technology Perspectives Programme

*45<sup>th</sup> Executive Committee Meeting  
IEA Demand Side Management Programme  
26 March 2015*

*Daniele Poponi, ETP Project Manager  
Energy Technology and Policy Division  
International Energy Agency*

[www.iea.org](http://www.iea.org)

**ETP 2014**

**ETP 2015**

**ETP 2016**

**ETP 2017**

## *Part 1. Setting the Scene*

Global Outlook, Tracking Clean Energy Progress

## *Part 2. Driving the Change (Thematic Focus) \**

Harnessing  
Electricity's  
Potential

Mobilising  
Innovation to  
Accelerate  
Climate Action

Building Urban  
Energy Systems

TBD

- Securing sustainable resources
- Investing in sustainable infrastructure

## *Partner Country*

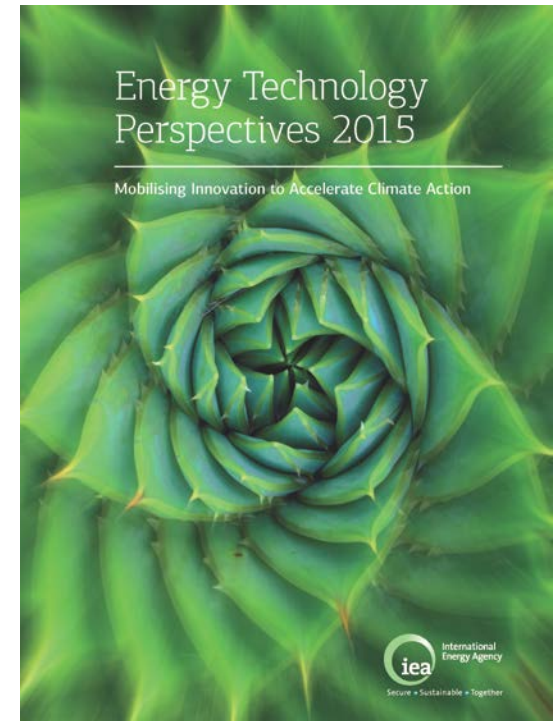
India

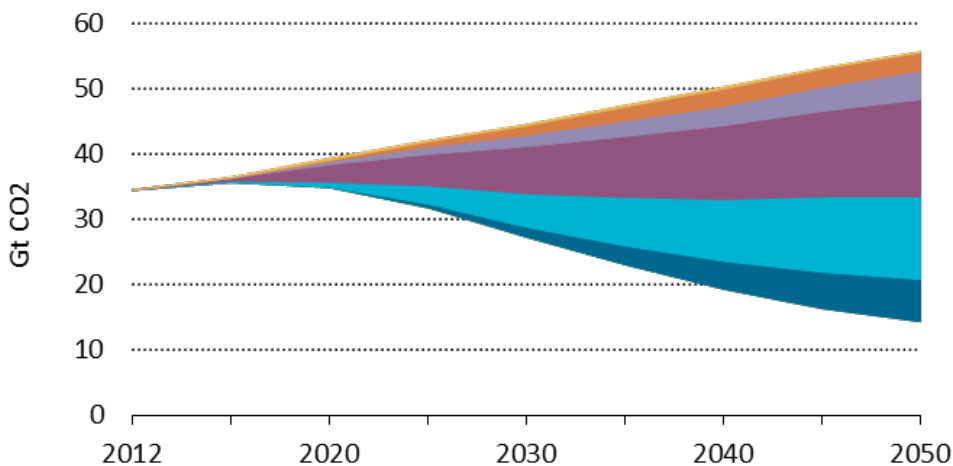
China

Mexico

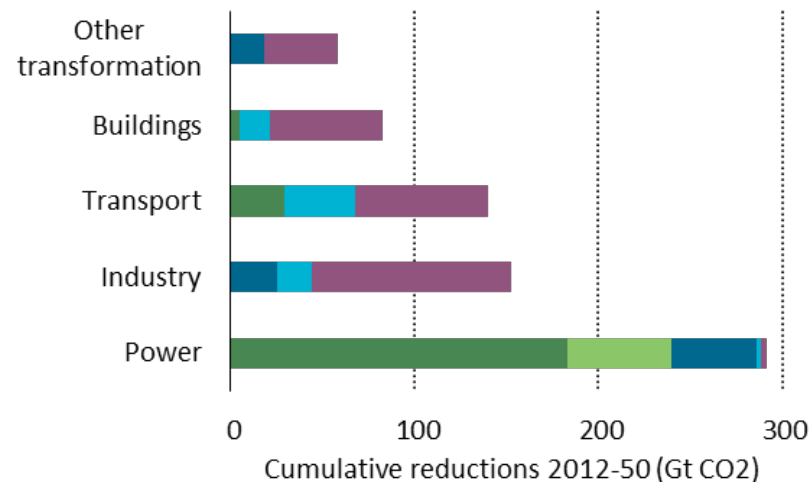
TBD  
(Indonesia; Russia;  
Brazil)

- **Part 1: Setting the Scene**
  - Global Outlook
  - Tracking Clean Energy Progress
- **Part 2: Mobilising Innovation to Accelerate Climate Action**
  - Innovation as an engine for energy system transformation
  - Mainstreaming variable renewables in power systems and markets
  - CCS: Building on early opportunities
  - Global innovation for more sustainable industry
  - Low-carbon innovation in emerging economies
  - Energy technology innovation in China





- CCS 12%
- Renewables 30%
- End-use fuel and electricity efficiency 39%
- End-use fuel switching 10%
- Nuclear 8%
- Power generation efficiency and fuel switching 1%



- Renewables
- Nuclear
- CCS
- Fuel switching
- Energy efficiency

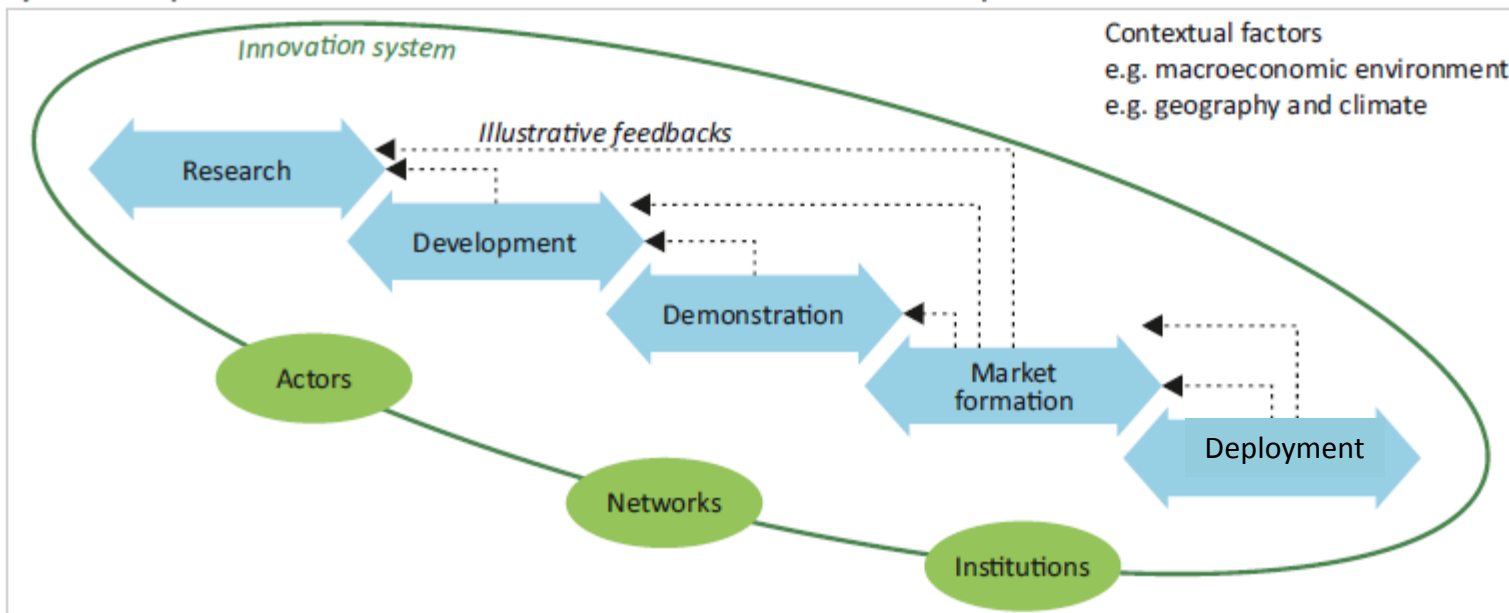
*A portfolio of low-carbon technologies is needed to reach the 2DS and varies between various sectors*

ETP  
2015

## Linear model of innovation process



## Systematic representation of innovation with chain-linked model of innovation process



Understanding innovation

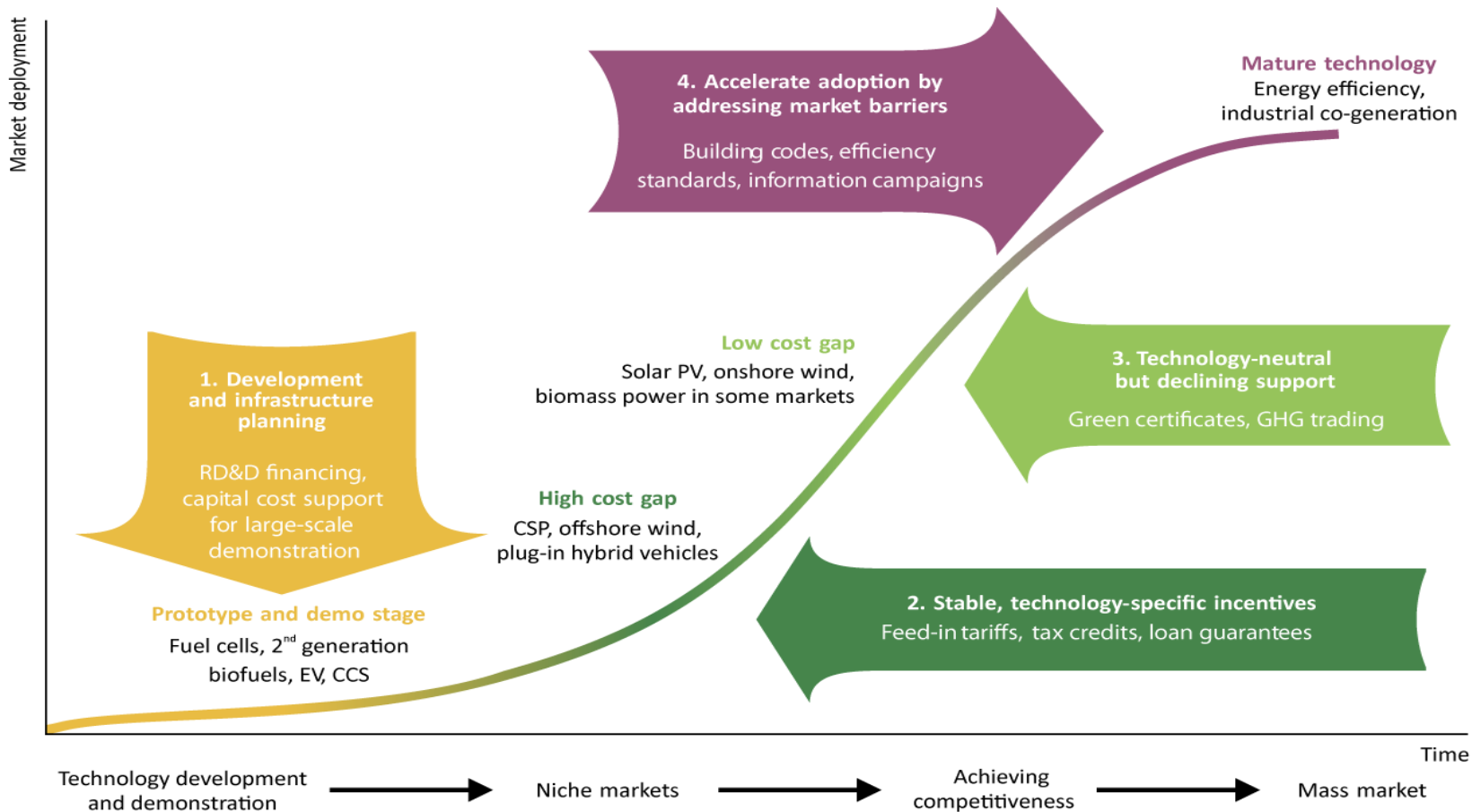
From this

To this

*Innovation is iterative, interactive and involves a range of stakeholders from research – to deployment*

ETP  
2015

# Supporting Energy Innovation: The right policy at the right time

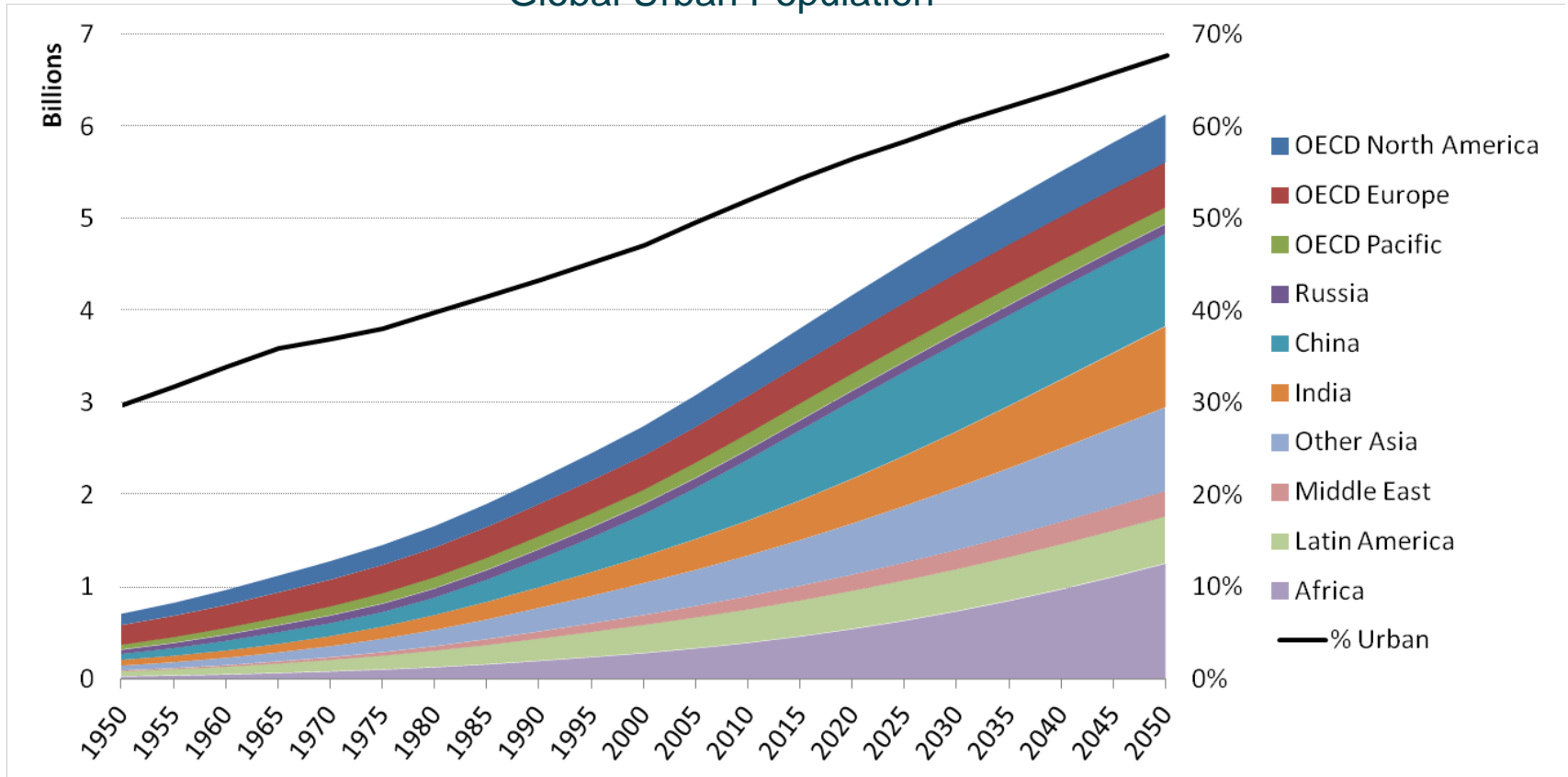


*The right support depends on the maturity of the technology and the degree of market uptake*

- **Expert review process complete – thank you**
- **Manuscript completion: early March**
- **Production Process March-April**
- **Book launch: First week of May**
  - Paris, TBC
- **Dissemination Roadshow**
  - Paris Business Climate Summit 20-21 May
  - CEM 27-28 May
  - ACEF 15-19 June (tbc)
  - ICEF 7-8 Oct. (tbc)
  - Cop 21
  - ...
  - Looking for interest from CERT members

# ETP 2016: Building Sustainable Urban Energy Systems

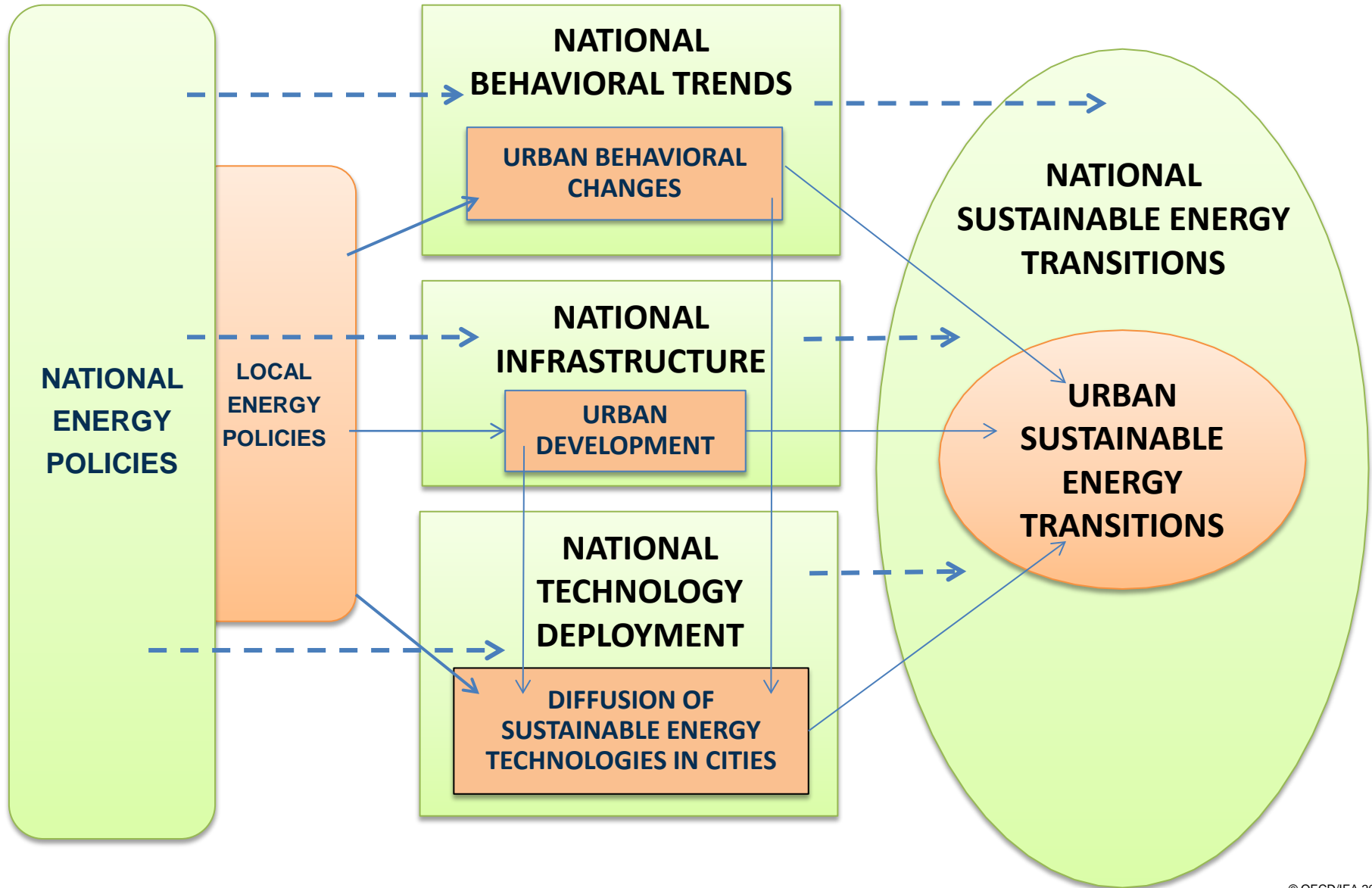
Global Urban Population



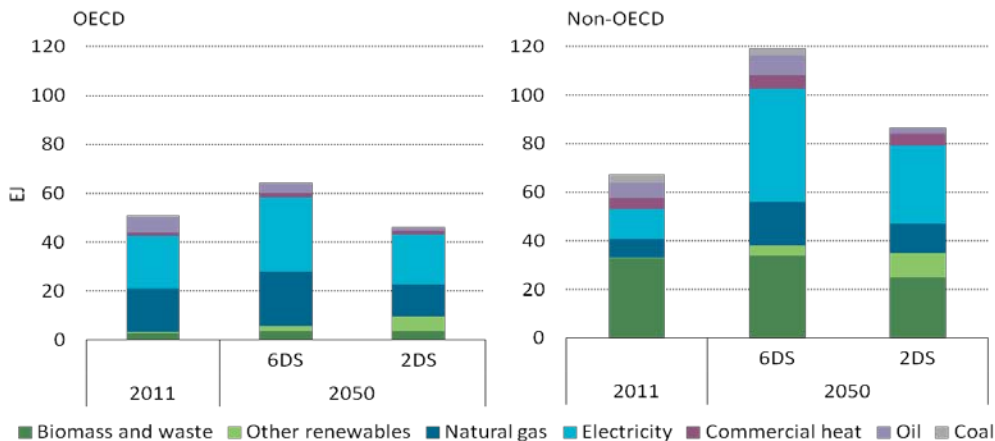
Source: UN DESA, 2012

*Global urban populations are growing rapidly, and with them demand for energy in cities*

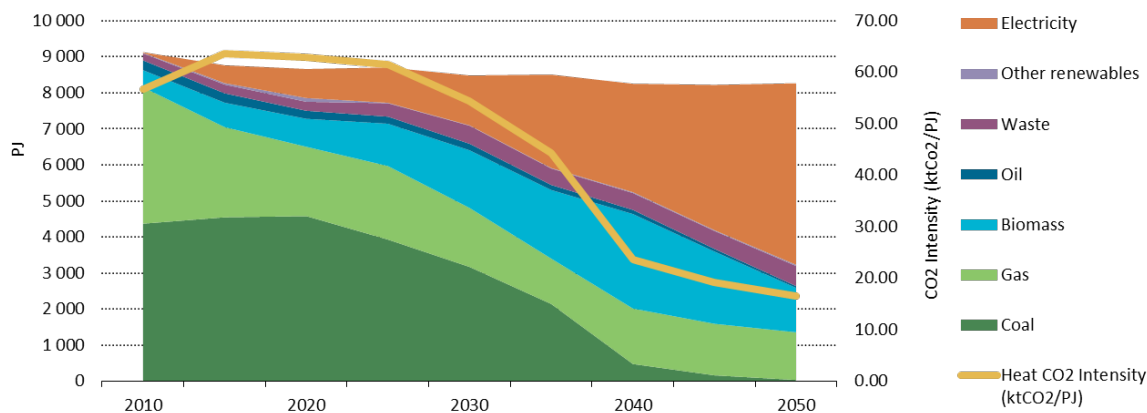


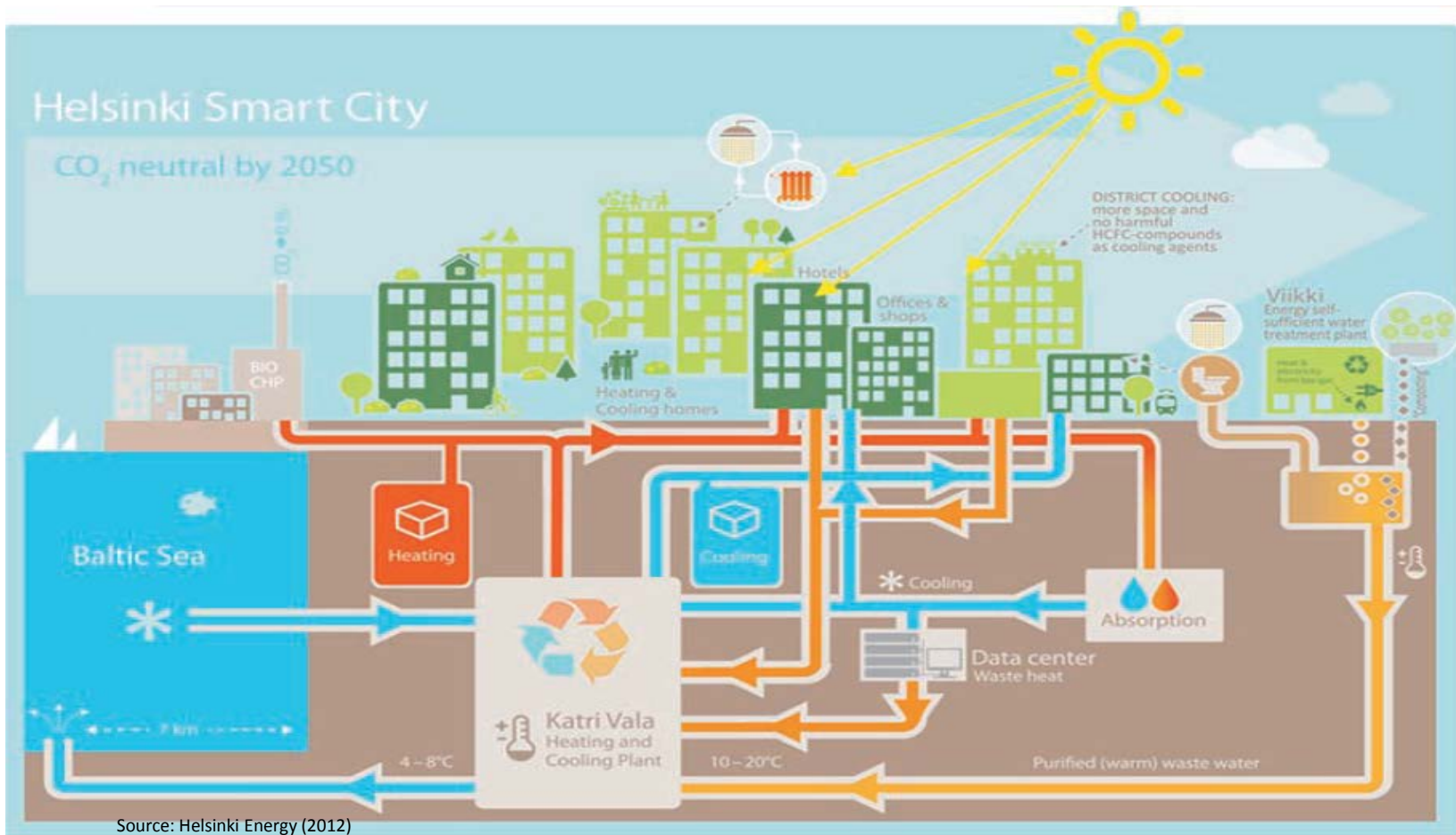


## ■ Heat demand



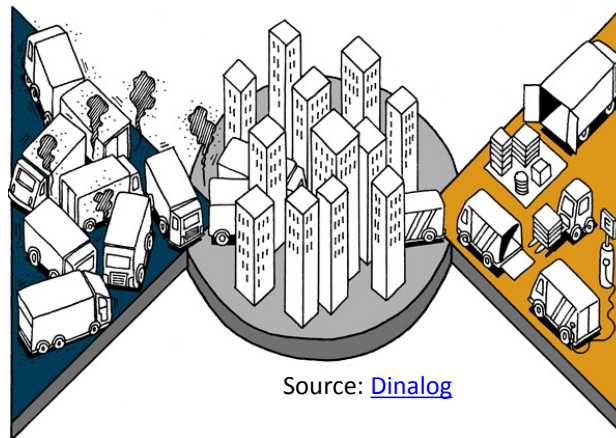
## ■ Energy mix



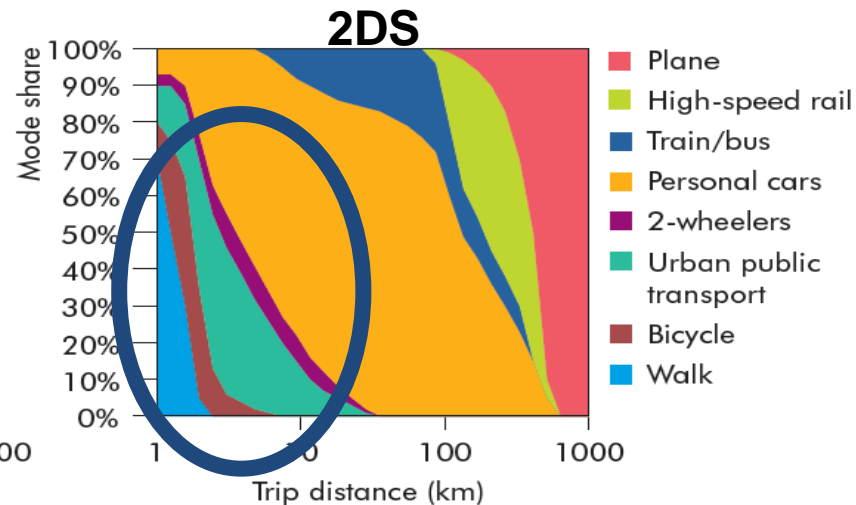
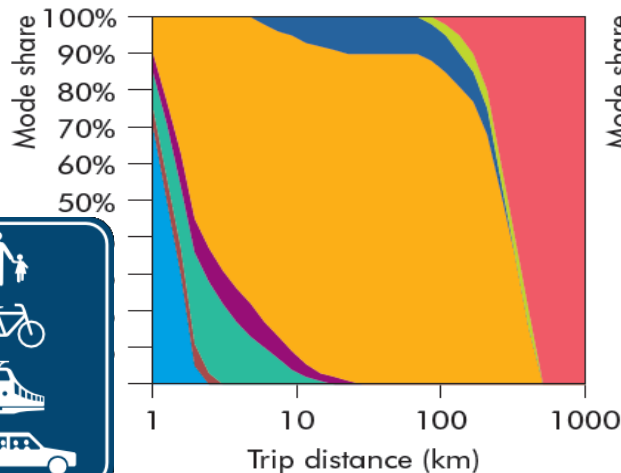
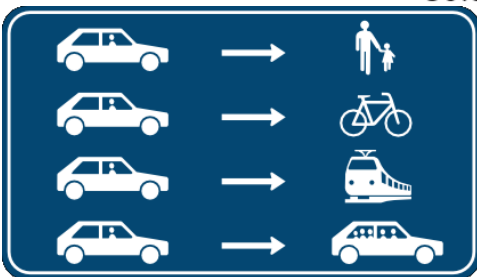


*Meeting thermal comfort demand in dense urban areas in a sustainable way requires informed planning decisions from policy-makers*

## Logistics



## Mode Shares



*A significant portion of travel can be avoided or substituted by more efficient modes and lower carbon options*

	Motorcycles		Passenger cars			Buses		LCV	Trucks		Rail		
	Lead acid	Li-ion	PHEV	Small BEV	Large BEV	Urban	Rural		MFT	HFT	Passenger Urban	Intercity	
Battery charging	+	+	+	+	+	+	+	+	+	-	-	-	-
Swapping	+	-	-	-	+	+	+	+	-	-	n.a.	n.a.	n.a.
Static induction	-	-	+	+	+	+	+	+	+	+	+	-	-
Dynamic induction	-	-	+	+	+	+	+	+	+	+	+	-	-
Catenary	n.a.	n.a.	n.a.	n.a.	n.a.	+	-	-	-	+	+	+	+

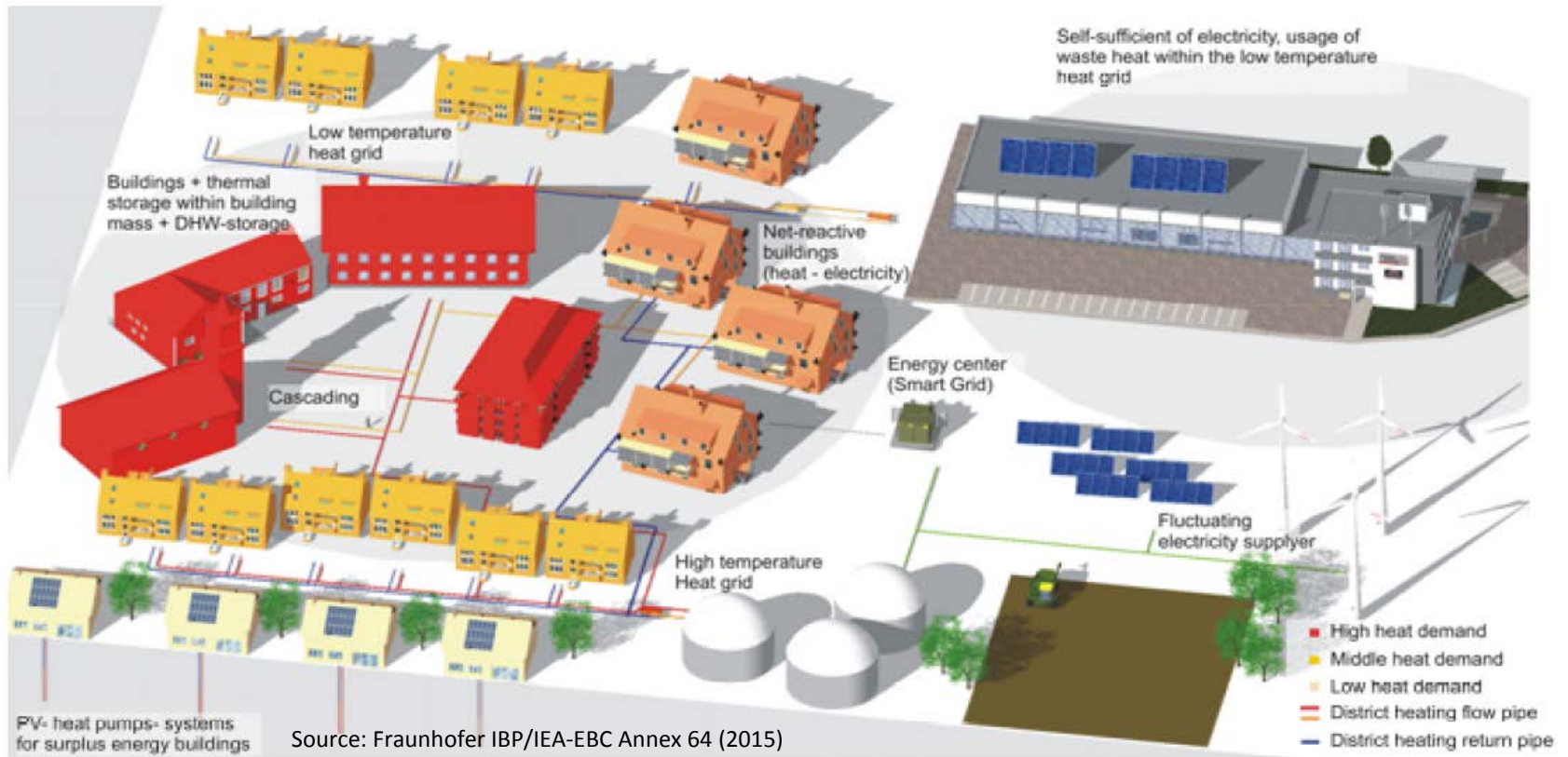
Economic potential: + positive, - negative  
 Technological maturity: ● developed, ● moderate, ● nascent

Notes: it is not only the vehicle itself that determines the potential/maturity, but also the application in which it is used. Bicycles, for example, have different results if considered individually or within the context of bike sharing. Abbreviations: Li-ion - lithium ion battery. PHEV - Plug-in hybrid electric vehicle. LCV - Light commercial vehicle. MFT - Medium freight truck. HFT - Heavy freight truck. n.a. - not available.

## EV CITY CASEBOOK



*Stakeholders plan to increase the global market share of electric vehicles in cities to reach at least 30% by 2030.*



## *Linking urban electricity and heat systems*

- **Part 1: Setting the Scene**
  - Global Outlook
  - Tracking Clean Energy Progress
- **Part 2: Building Sustainable Urban Energy Systems**
  - The Urban Energy Challenge
  - Low-Carbon Buildings in the Urban Environment
  - Sustainable Urban Mobility
  - Urban Energy Supply and System Integration
  - Innovative policy and finance frameworks to accelerate urban energy transitions
  - Building a sustainable urban energy transition in Mexico

- **Project scope distributed to stakeholders**
  - Partnerships being defined with several international and national partners
- **Data collection activities started**
- **Planned launch in May 2016**
- **Dissemination Roadshow**
  - CEM?
  - Habitat 3?
  - ...



**THE WORLD BANK**  
IBRD • IDA

**I.C.L.E.I**

**C40**  
**CITIES**  
CLIMATE LEADERSHIP GROUP



**WORLD  
RESOURCES  
INSTITUTE**



- **Focus more on Supply-side technologies**
  - Urban analysis very demand centered
- **Deeper look into security & investment aspects**
  - Technology impact on supply availability and costs
  - Environmental impacts of various supply options
  - Resilience/climate change adaptation
  - Infrastructure issues