

**2372-32**

**Joint ICTP-IAEA Workshop on Sustainable Energy Development: Pathways  
and Strategies after Rio+20**

*1 - 5 October 2012*

**A Review of the Workshop**

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# A Review of the Workshop

ICTP/IAEA Workshop on  
Sustainable Energy Development: Pathway & Strategies after Rio+20  
Trieste, 5<sup>th</sup> October 2012

Gaurav Monga



# Outline

- Introduction
- Post Rio+20 - terminology
- Renewable Energy
- Nuclear Energy
- Special Session
- Energy Models
- Conclusion

# A Global Workshop

- 28 participants from 20 countries
- 1-5<sup>th</sup> Oct -- Trieste, Italy
- IAEA and ICTP



**Hungary, Germany, Italy, Russia, Ukraine, Moldova**

**Iraq, Iran**

**Ghana, Nigeria, Ethiopia**

**India, Pakistan, Sri Lanka, Thailand**

**Peru, Columbia, Cuba**

# Fundamental Problems

Growing energy demand

The number of people without access to electricity (1,5 billion).

Ensuring the supply of energy sources to remote areas

Volatile oil prices (1972 crises)

Rising carbon dioxide emissions growth

Energy Security



# Terminology



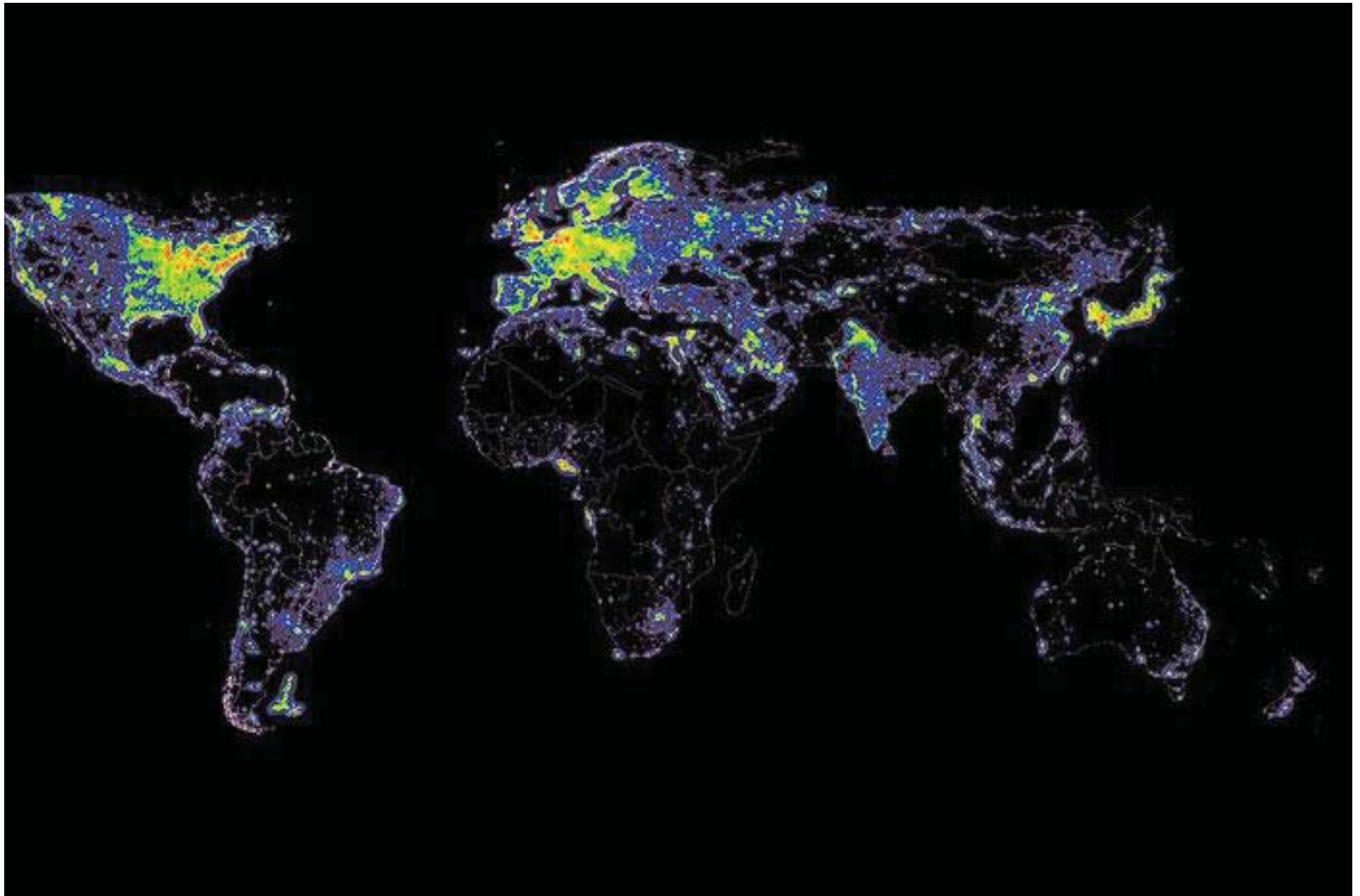
**RIO+20**

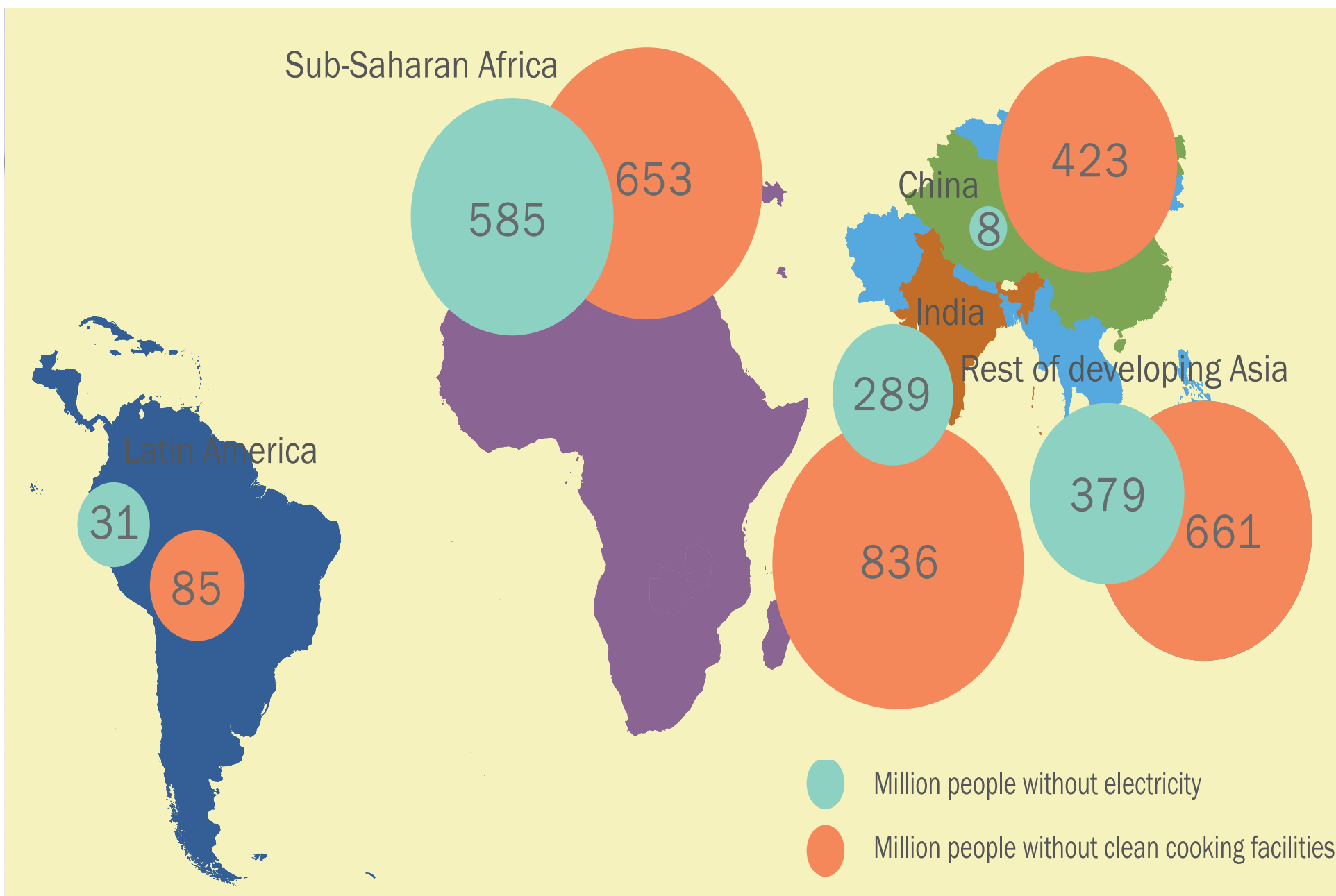
**Global Green Growth (GGG)**

**Strong vs Weak  
Accountability**

**Global Public Goods**

**Green to Evergreen Economy**







# Universal Electricity Access

**Average number of households gaining access to electricity**

Millions

**Good e.g. – China, Vietnam & Tunisia**

**New connections**

1990-2000



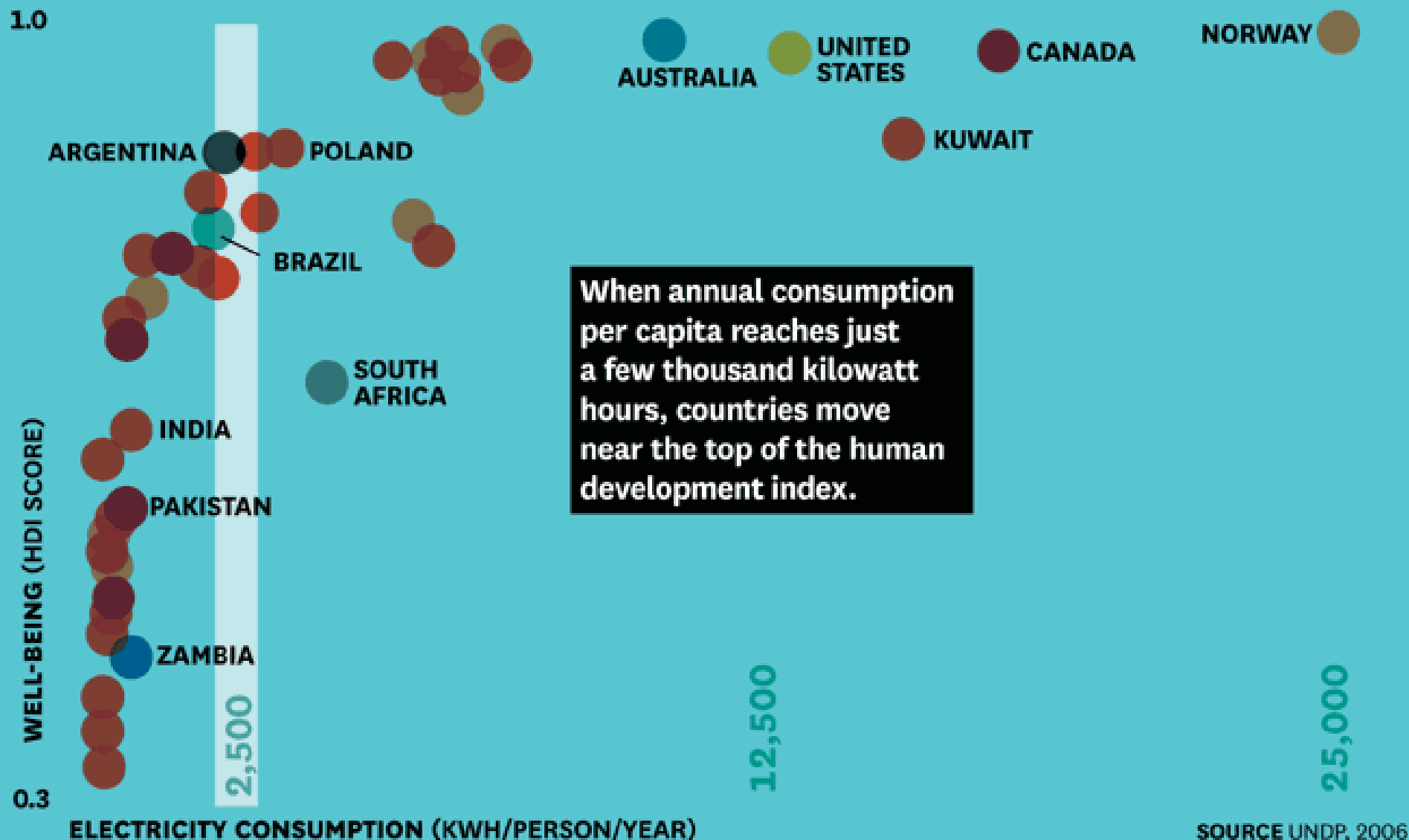
**New connections**

required per decade  
to meet universal  
access by 2030



Source: World Bank Working paper,

# HOW ELECTRICITY POWERS WELL-BEING



# Renewable Energy

## Bioenergy



**Iraq** - Kirkurk municipal waste study.

**Cuba** – use ethanol and biodiesel. By 2040 cover 39% of installed capacity and 33% of electricity generation.

**Europe** – European Directives and EU 20/20/20 plan

**Russia** – modest plans



## Solar



**Iraq** – concentrated solar power systems in Kirkurk for electricity generation.

**Sub-Saharan Africa**

**MENA**

**Peru** – presentation today

**Russia** – modest plans

## Wind



**Italy** – Wind energy is niche source in Friuli Venezia Giulia

**MENA**

**Russia** – modest plans

## Hydro



**Ghana** - Hydro potential. Renewable Energy Law – feed-in-tariffs

**Nigeria** – largest dam in Africa currently under construction.

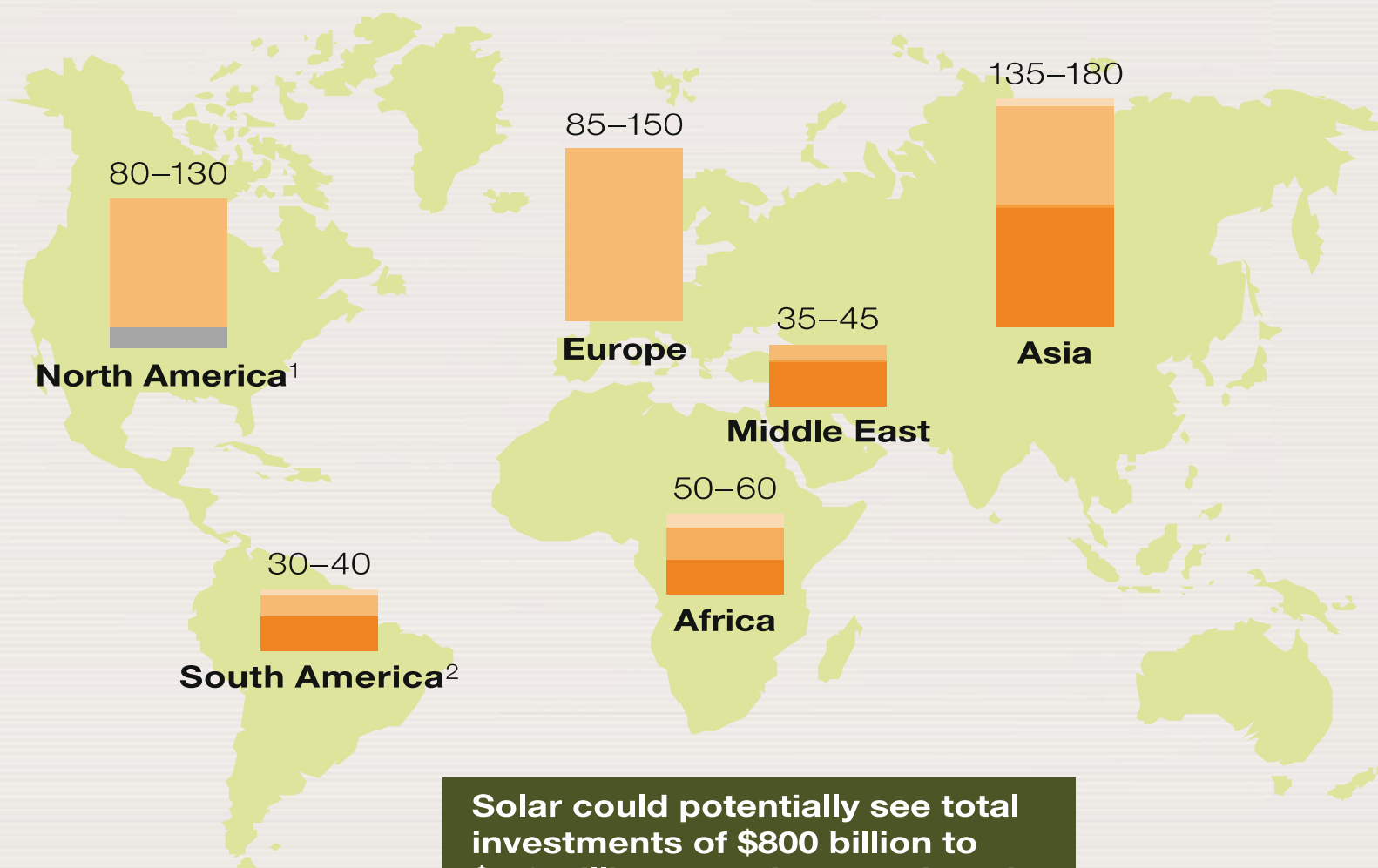
**India** – NorthEast has a lot of potential micro-hydro plants

**Russia** – modest plans

# Growth in solar PV may transform power markets.

Cumulative capacity additions, 2012–20, gigawatts

Off-grid   Residential and commercial   Isolated grids   Peak capacity   Large-scale power plants<sup>1</sup>



# Nuclear energy → green growth



Source of sustainable energy for the future, not just as a transition energy.

**Country presentations** – Russia, Ukraine, Moldova, India, Czech Republic & Hungary

- 1. Predictable competitive costs of generation**
- 2. Security of supply**
- 3. Low carbon emissions**
- 3. Reliability**
- 4. Possible future use of new tech – India (thorium)**

# Nuclear Energy versus the Rest



	Nuclear	Fossil	Renewables
Worsens Climate Change		✓	
Energy Security	✓		✓
Stable Generation Cost	✓		
Waste	✓	✓	
Extensive Land Use			✓

# Special Session

moderated by Asif Ali Shah

## Innovative bottom-up approach

Barefoot College Programme in India



## Examples

- Biogas - working with animal excreta didn't work. After one year, it stopped. Govt. should create the capacity to educate the people.
- World Bank - water project - design flaw - this turns nightmare during heavy rainfall turns into heavy floods.



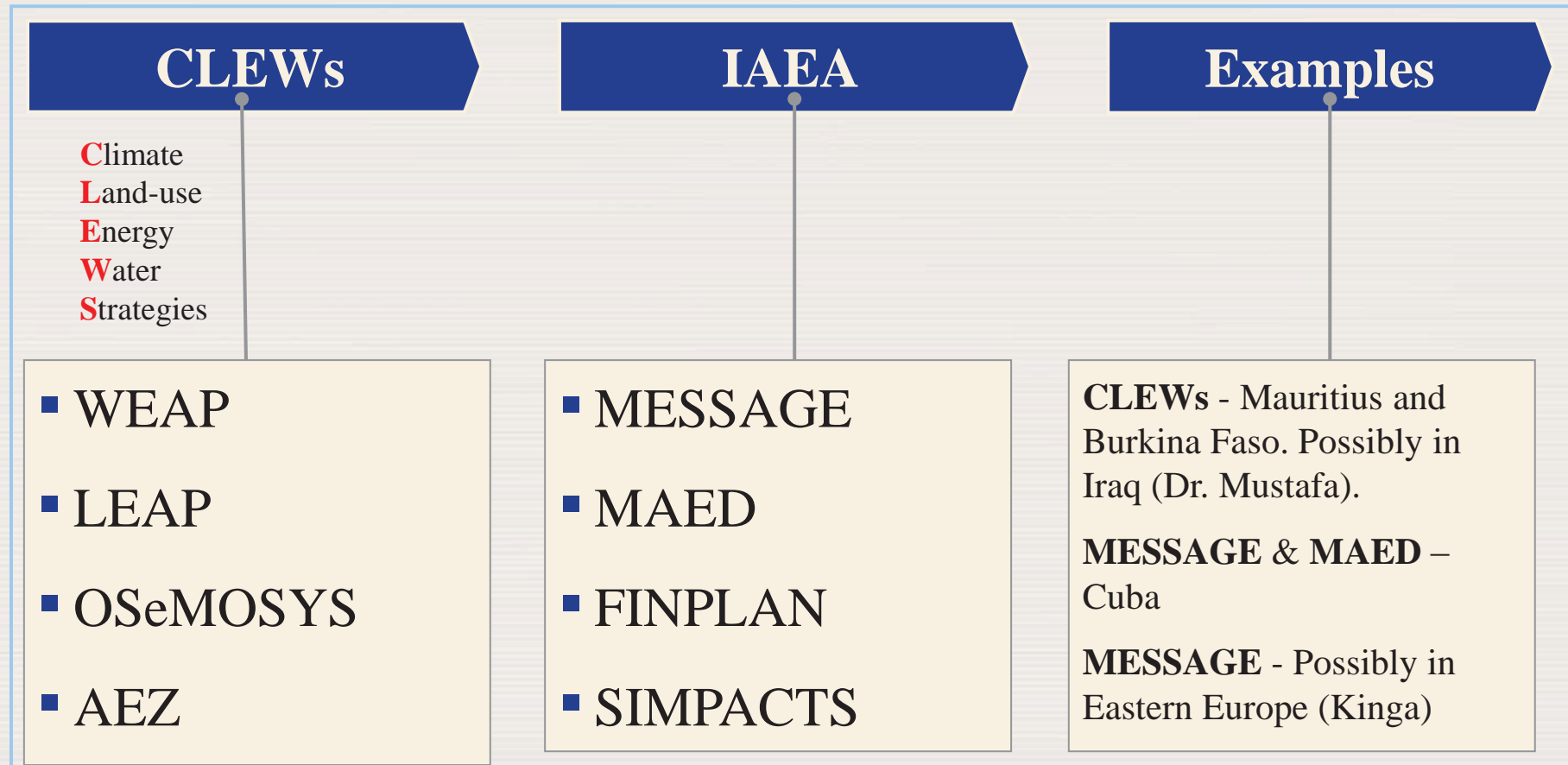
## Leadership & Accountability

- Annual review of projects

## Country Examples

- Nigeria – Widow-led projects
- Cuba – Putting solar panels in hospitals in rural areas during economic crises.
- Pakistan – Salt accumulation in a desalination plant. Low literacy rate of 30%, that too in rural areas.
- Africa - principle of asymmetry - e.g. vaccination policies failed in Africa initially.

# Energy Models – capacity building





# Conclusion

- A **BIG** thank you to

**Dr. Ferenc Toth (IAEA) - Workshop Director**

Chairs Dr. Elena and Sebastian & ICTP

- Elizabeth Brancaccio (ICTP)
- Kinga Csontos (IAEA)



# ATOMS FOR PEACE



**IAEA**

International Atomic Energy Agency