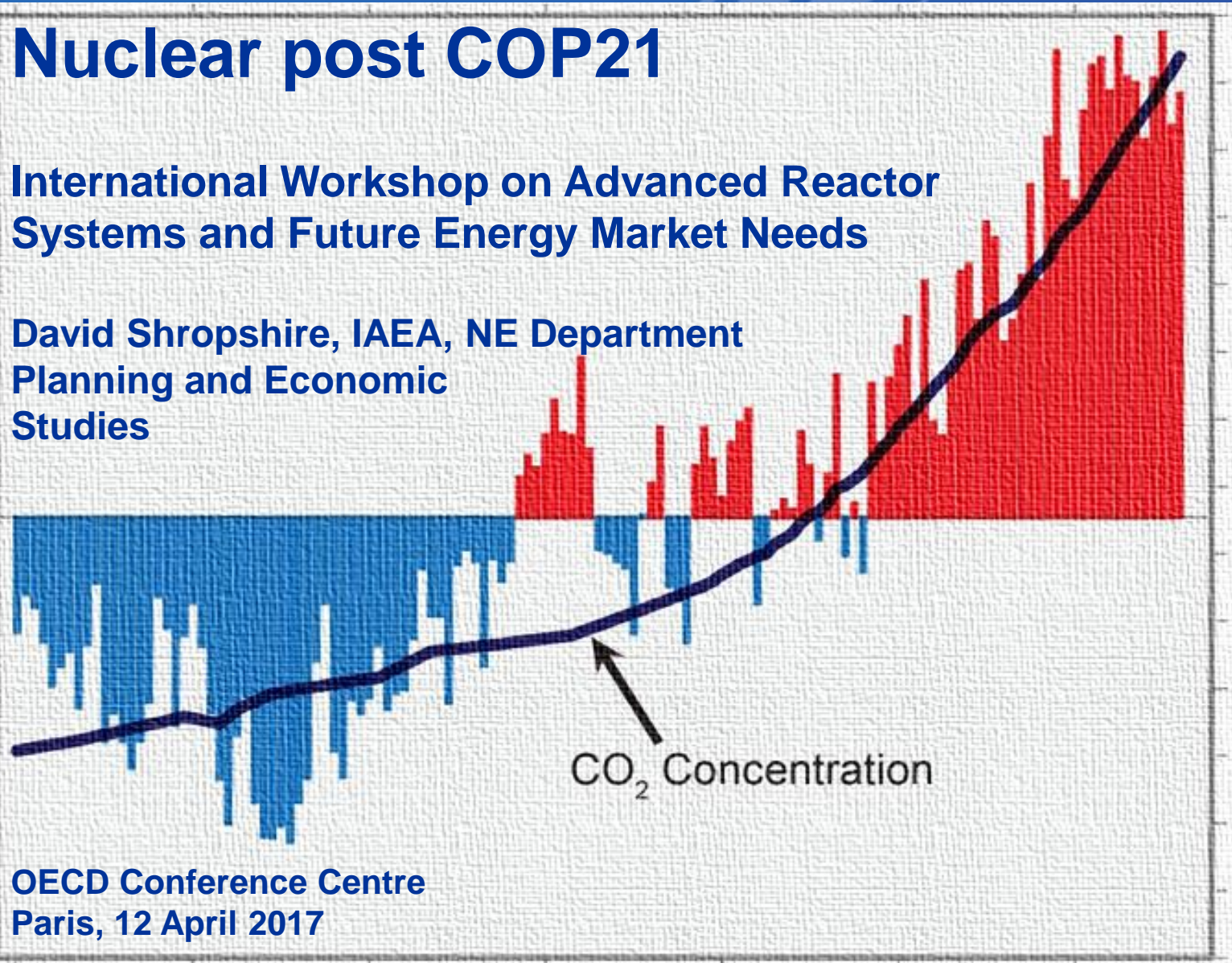


# Nuclear post COP21

## International Workshop on Advanced Reactor Systems and Future Energy Market Needs

David Shropshire, IAEA, NE Department  
Planning and Economic Studies



OECD Conference Centre  
Paris, 12 April 2017

# COP-21 is a good start to global climate action, ..but not the end point

Paris Agreement - “historic, durable and ambitious”

Goal: 2°C, aspire to 1.5°C

Nov. 2016: entry into force

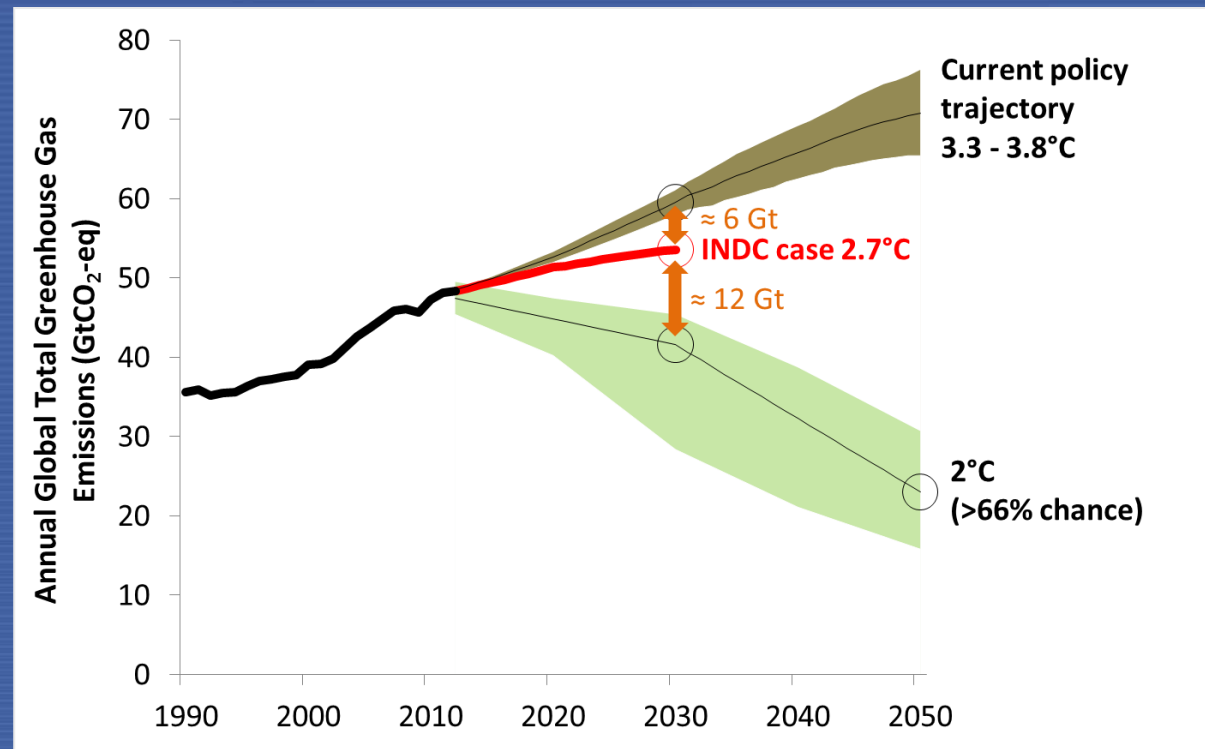
Bottom-up: action at the national level

Vital: design of rules, processes and institutions under negotiations



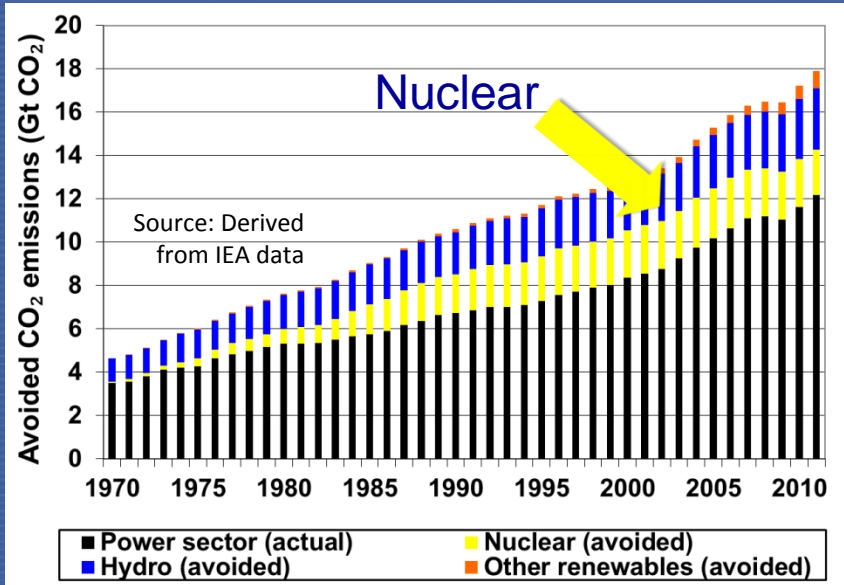
# Country plans to curb emissions help, but fall well short of 2°C target, much less 1.5°C

- Much greater ambition needed from States to adequately address the problem
- Low-carbon govt. policies, actions, and investments must quickly follow



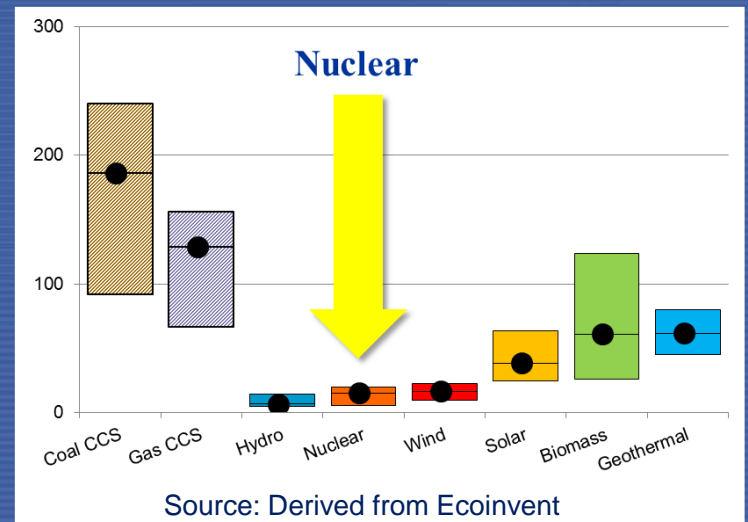
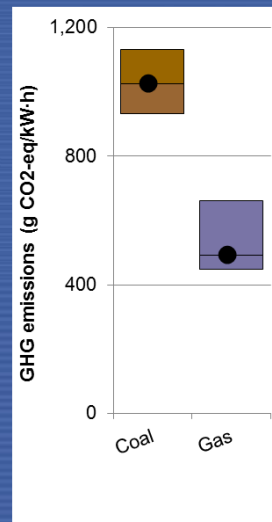
Source: Derived from Climate Action Tracker, UNEP and IEA

# Nuclear power avoids huge amounts of CO<sub>2</sub> generation over long time scales

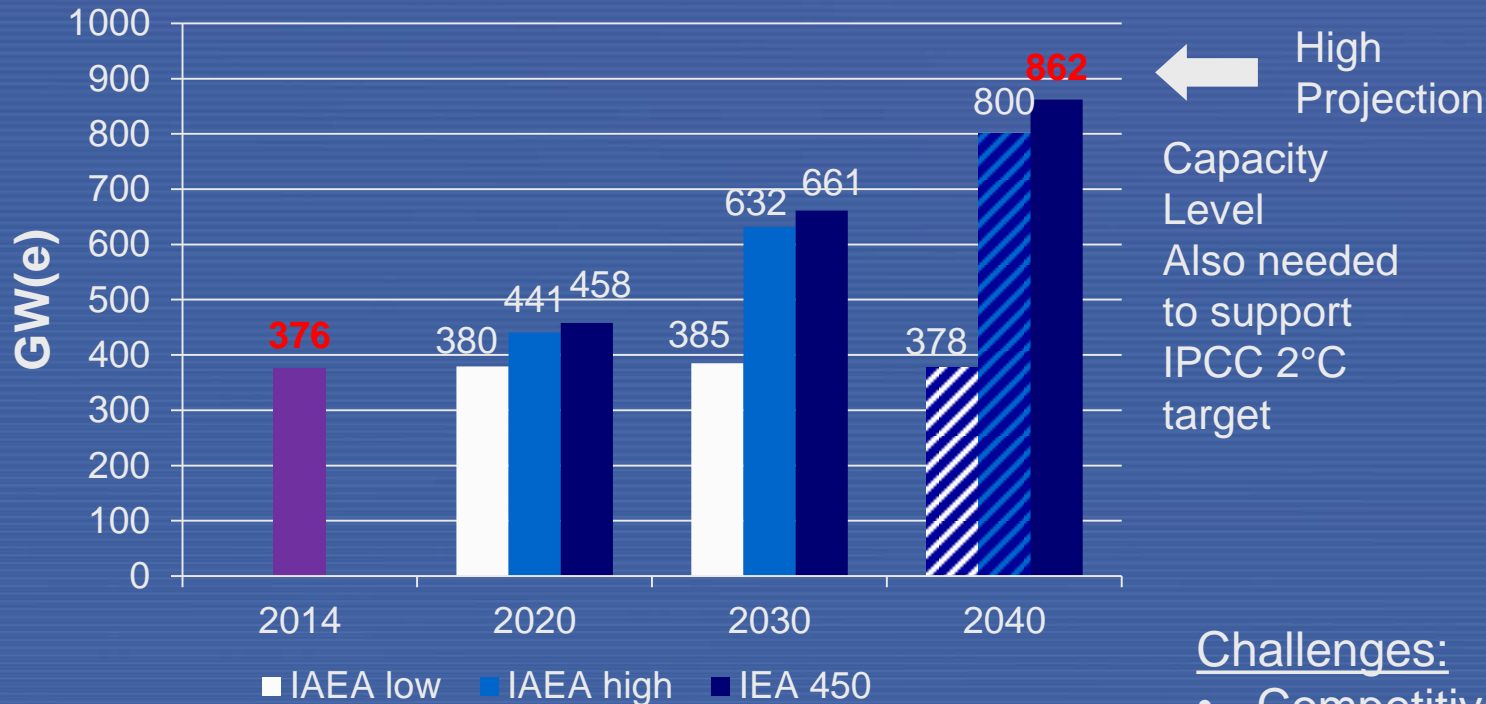


**Nuclear power is very low life cycle emission source**

Life cycle GHG emissions from electricity generation



# Ramping nuclear to support 2°C target will be difficult, but not impossible



## Challenges:

- Competitiveness
- Nuclear investments
- Construction times
- Regulatory constraints
- Supply Chain limitations
- Skilled Workforce
- Public Acceptance

# Significant actions needed to awaken the “Sleeping Giant” we know as Nuclear Power

## Competitiveness and Finance

### Need:

Valuation on reliability, macro-economic, and environmental benefits; & investment certainty

### Actions:

Full accounting of total system costs; tax on high-C consumption, production, and emissions; innovative financing and increased technology innovation

## Clean-Energy Investments

### Need:

Investments of at least US\$80B/year for nuclear power, potentially double if fossil CCS fails

### Actions:

Realisation of all proposed nuclear projects worldwide by 2030, life-time extensions for existing NPPs

## Climate and SDGs

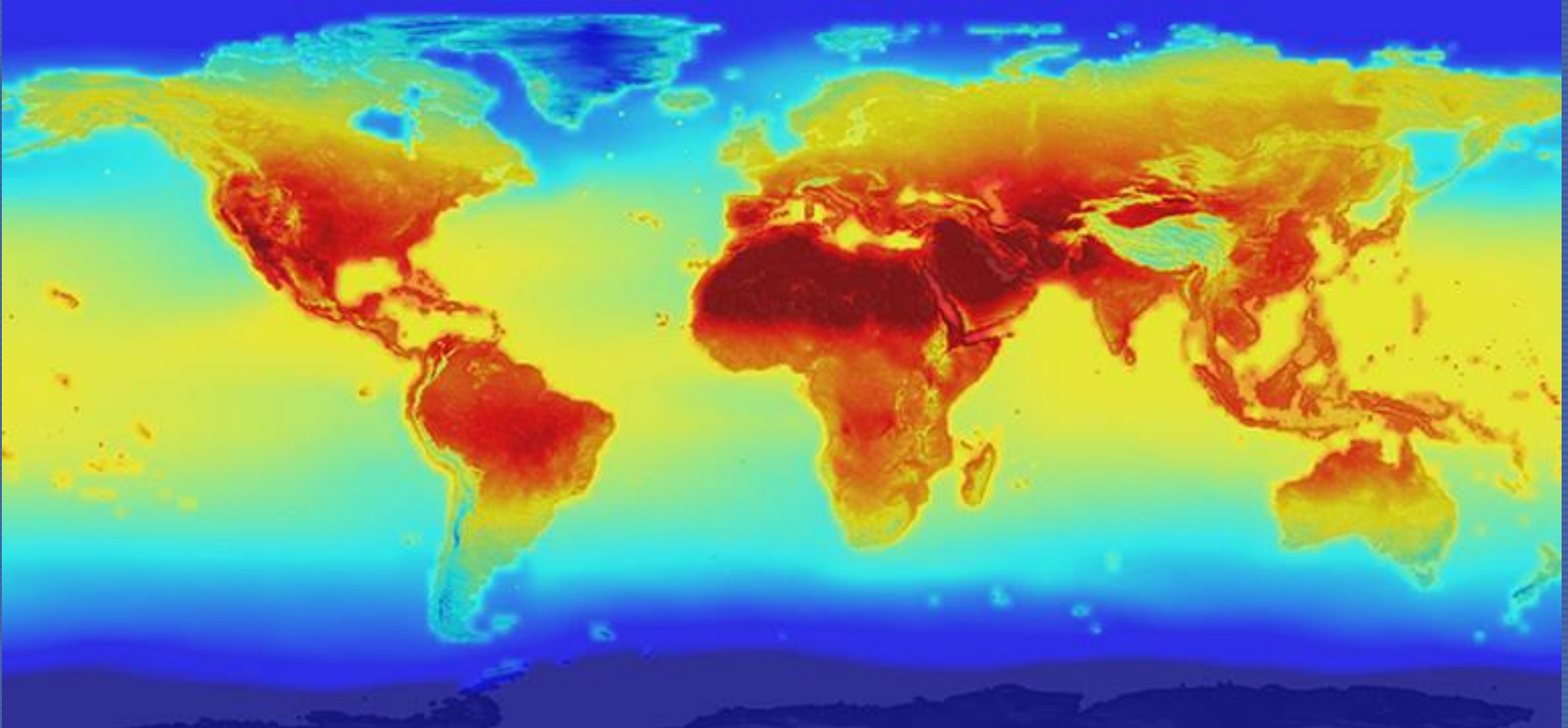
### Need:

Anchor nuclear as a core asset for meeting 2°C goal and SDGs

### Actions:

Make nuclear core to achieving countries NDCs and sustainable development vision

# Thank you for your attention!



Credit: NASA

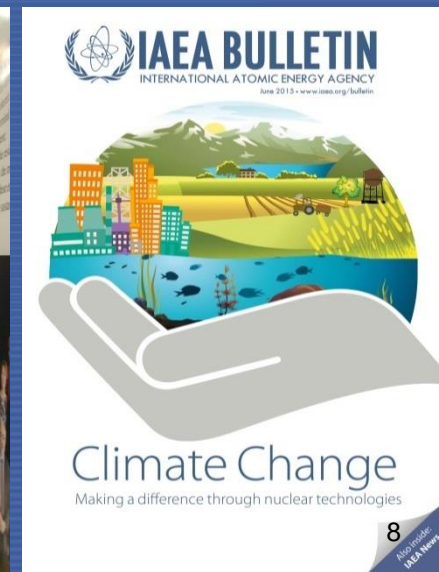
[www.iaea.org/nuclearenergy](http://www.iaea.org/nuclearenergy)



 @IAEANE

# IAEA plans greater engagement with MS on future Climate Change activities

- Outreach through COP meetings and participation on UN HLCP Working Group
- Support IPCC Special Reports
- Produce Climate Change publications
- Research, Training (ICTP) and collaborations





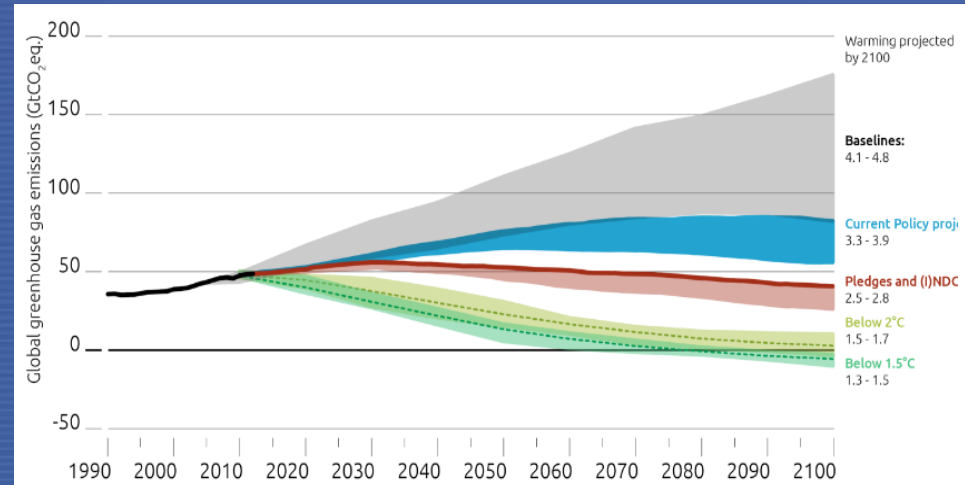
# PESS Planning and Capacity Building

## Assessing Nationally Determined Contributions (NDCs)

### The Issue

Where would business as usual lead us?  
Are we well on track towards Paris, taking into account:

- unconditional &
- conditional pledges?



Source: [climateactiontracker.org/global.html](http://climateactiontracker.org/global.html)

### How PESS Contributes

- Regional Workshops on NDCs
- Lectures on evaluating energy technologies to tackle climate change
- Providing the PESS tool MESSAGE free of charge
- Developing country case studies

### The Output

- Investment pathways
- Greenhouse gas (GHG) emission profiles
- Optimal technology mix to achieve GHG targets
- **Strengthened local expertise for evaluating energy options**

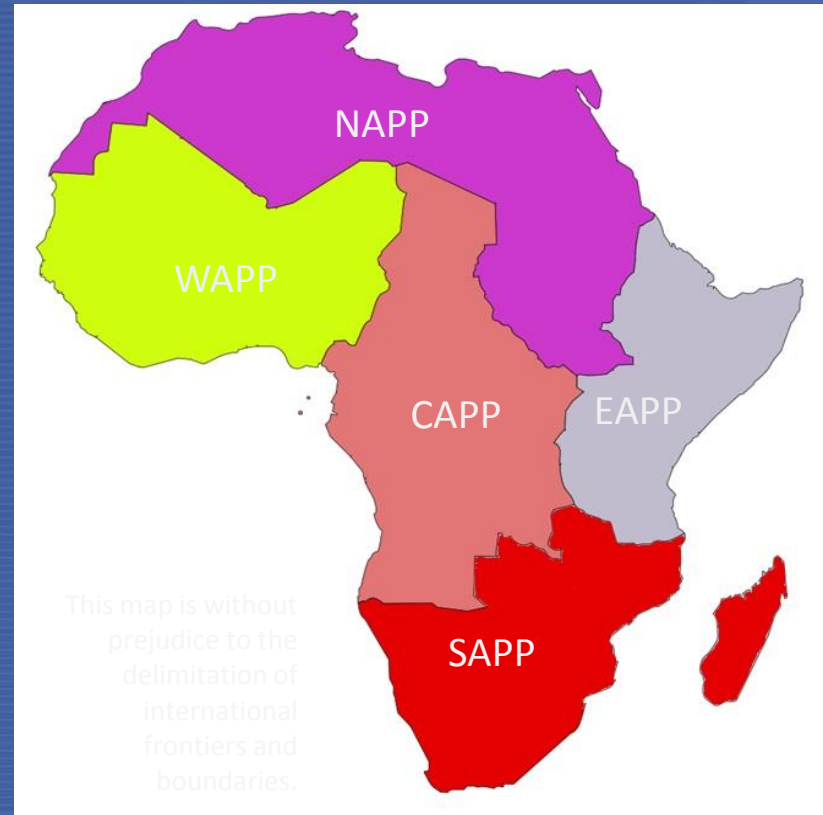
# Examples of Our Work – Regional Projects

Bringing Countries together to Model their Power Pools

## AFRA



- Sub-regional trainings for
  - North Africa – Tunisia
  - Central Africa – Cameroon
- Regional training on Energy Statistics and Energy Balances – Sudan
- Regional Conference on Energy and Nuclear Power in Africa and the Project Coordination meeting – Kenya
- Training for Islands and Small & Isolated Countries –Mauritius



# PESS 3E Analysis Highlights

(Energy-Economics-Environment)

- Cooperative Research Program activities
  - Assessment of the Potential Role of Nuclear Energy in National Climate Change Mitigation Strategies
- Climate, Land, Energy, Water (CLEW)
  - Integrated assessment of the energy-food-water-climate nexus

# CRP – Collaborative Research Project

## *Assessments of the Potential Role of Nuclear Energy in National Climate Change Mitigation Strategies (2017-2020),*

- Participation: Armenia, Australia, Chile, China, Croatia, Lithuania, Pakistan, South Africa, Viet Nam, Turkey, Ukraine and USA
- Outputs:
  - Development and testing of analytical / methodological frameworks for comparing different low carbon energy supply options under various support policy mechanisms;
  - Country Studies assessing the role of nuclear energy in national CC mitigation strategies;
  - Generation of information package for MS in preparation of their NDCs.

# Framework for integrated assessment of the energy-food-water-climate nexus

- Explores energy sector policies in a broader national sustainable development context and explores trade-offs and synergies among different policy goals
- Deliver capacity building projects in Member States in collaboration with UNDP and UNDESA.
  - Support sustainable development policy and attainment of SDGs in Member States
  - Used in parallel with economy-wide modelling tools and sectoral models to conduct comprehensive assessment of development policy
  - Expanding number of national projects
    - Projects ongoing with Ghana and Nicaragua

