Mitigation planning and capacity building in the energy system

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International Atomic Energy Agency

Why capacity building in energy planning?

- **A prerequisite for informed decision making and sustainable energy development**
  - Optimal domestic resource allocation
  - Establishment of merit order of action / technology choice / NAMAs based on long-run marginal system costs
  - Access and affordability
  - Environmental risks and benefits
  - Investment requirements, financial viability, finance & long-run marginal costs
- **Shift from sequential stop-gap measures to comprehensive and integrated system planning including mainstreaming climate change (NAMAs)**
- **Testing of effectiveness of policy measures**

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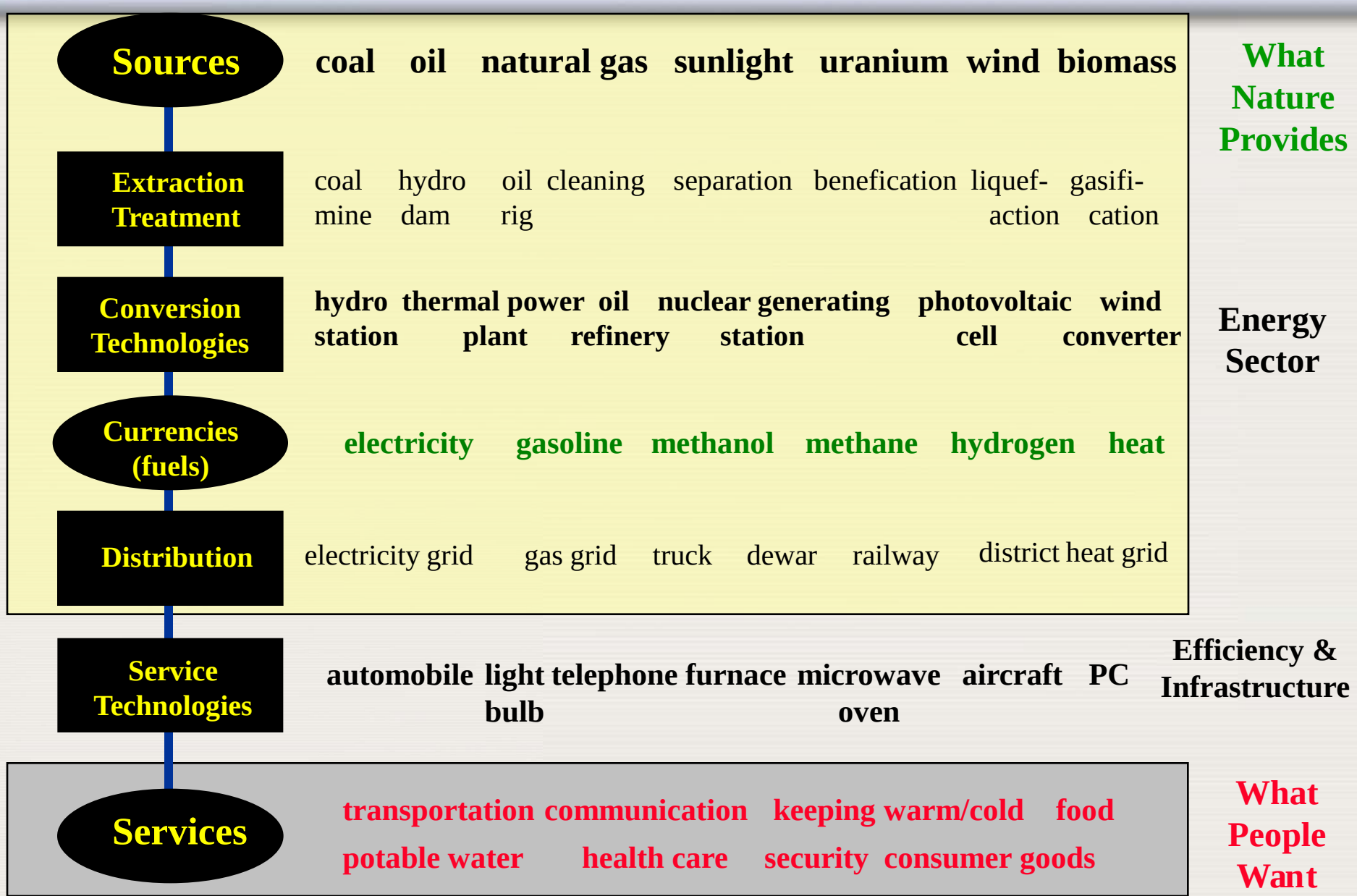
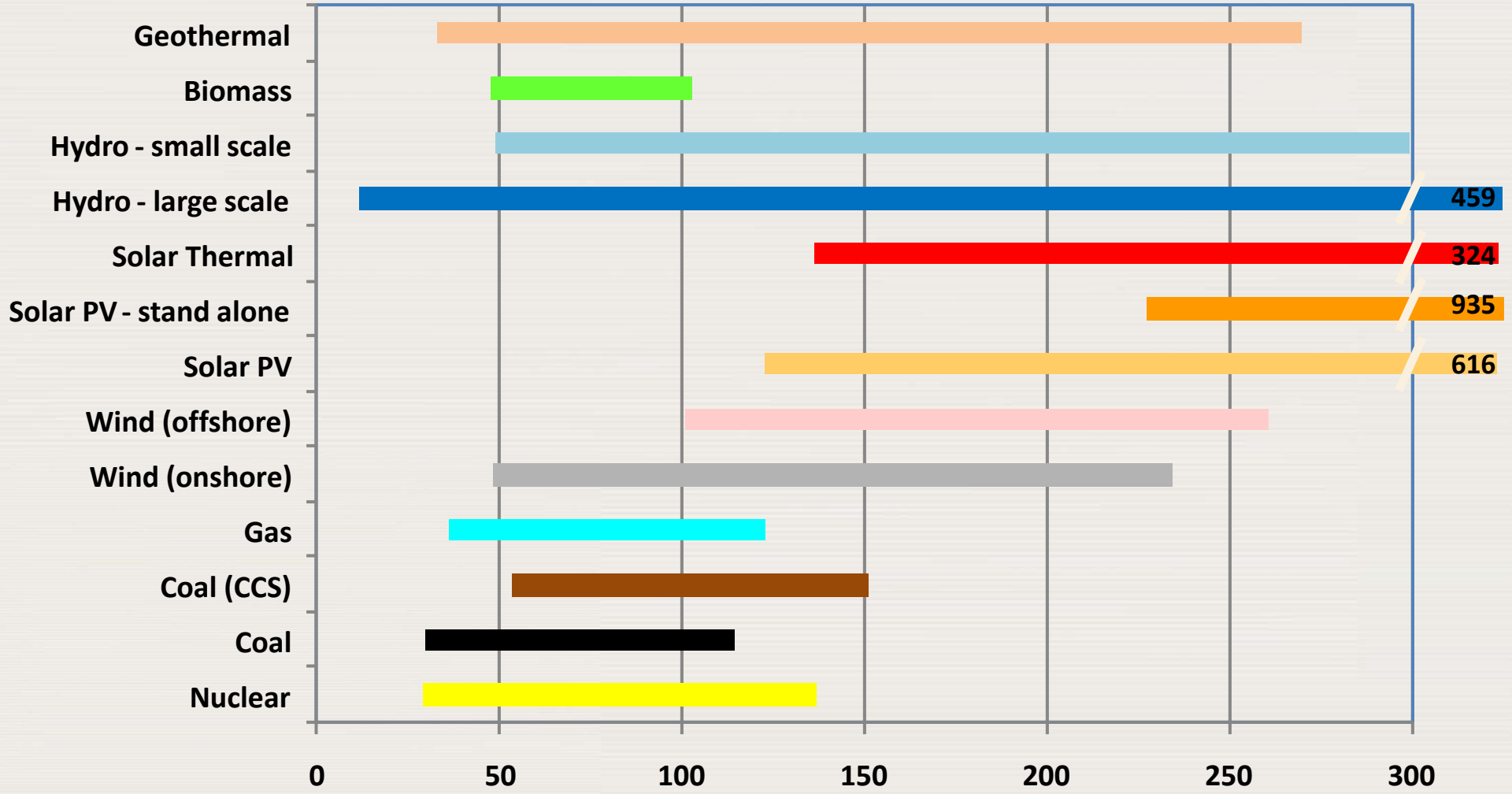
Architecture of the Energy System



Range of levelized generating costs of new electricity generating capacities

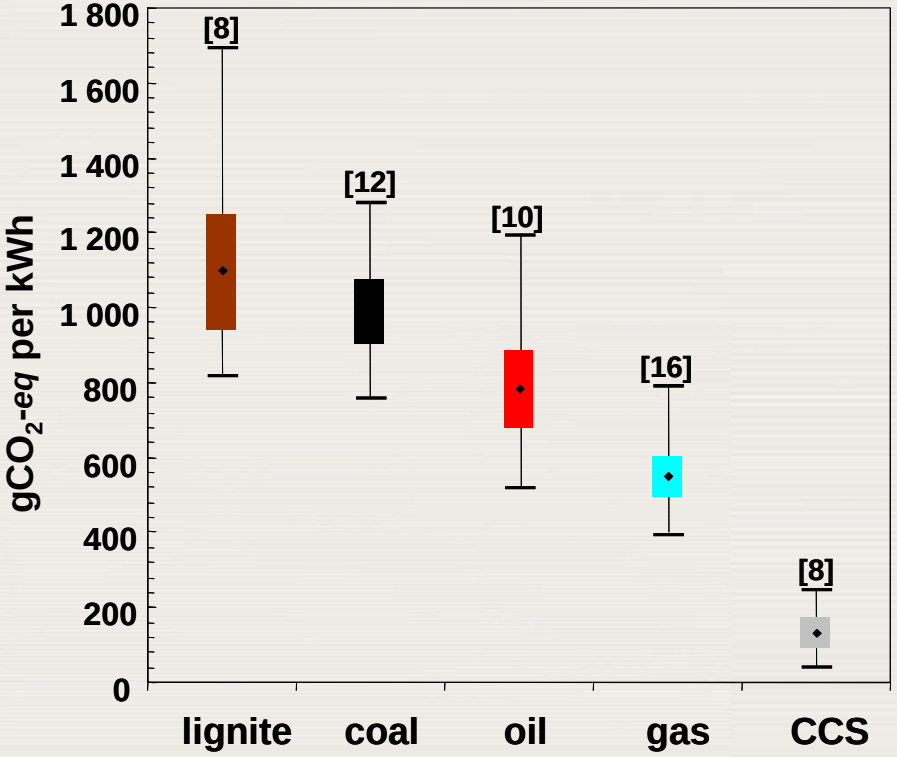


Source: NEA/IEA, 2010

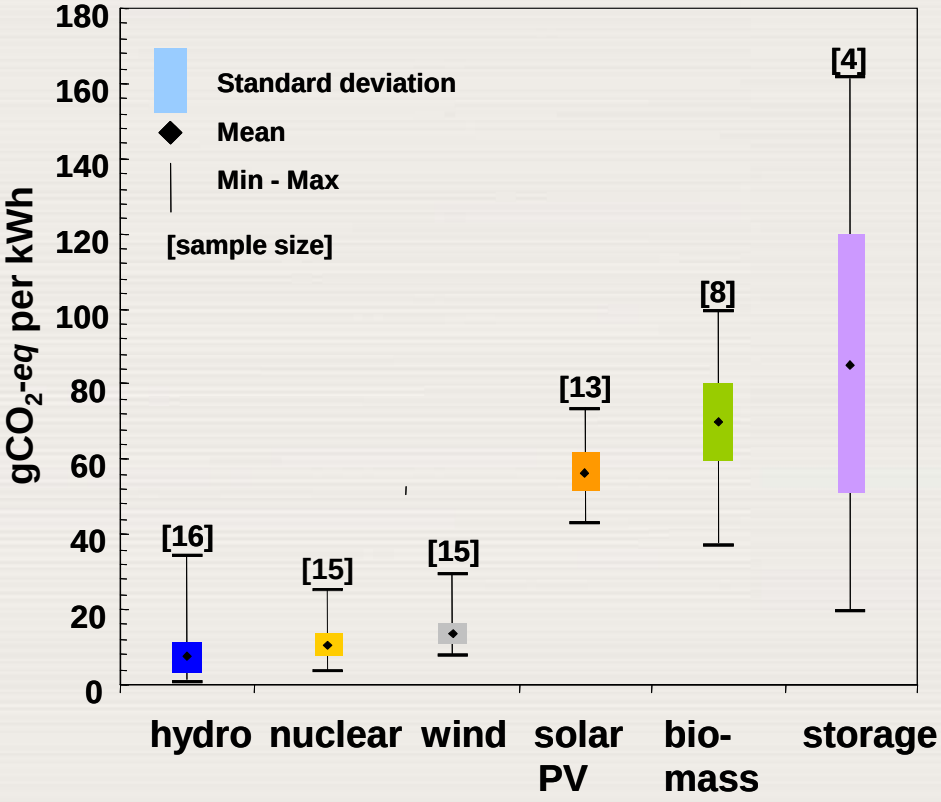
Mitigation – Comparison of different electricity generating options

Life cycle GHG emissions of different electricity generating options

Fossil electricity generation (life cycle emissions)



Non-fossil electricity generation (life cycle emissions)



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IAEA: Capacity building – hands on expert training

- Transfer planning models tailored to developing countries (and the analysis of NAMAs)
- Help identify data: technologies, resources and economics
- Train local experts
- Jointly analyze national options
- Help establish lasting local expertise

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Sample of IAEA energy planning and analysis tools

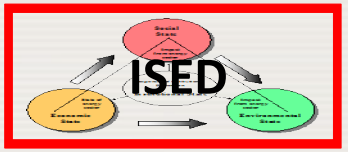
- **M**odel for the **A**nalysis of **E**nergy **D**emand

- **M**odel for **E**nergy **S**upply **S**ystem **A**lternatives and their **G**eneral **E**nvironmental impacts

- **Fin**ancial Analysis of Electric Sector Expansion **Plan**s

- **Simp**lified Approach for Estimating **Impacts** of Electricity Generation

- **I**ndicators for **S**ustainable **E**nergy **D**evelopment



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Why modeling?

- Comparative assessment of options
- Transparency & boundaries
- Quantification
- Repeatability / reproducibility
- Sensitivity analyses – What if questions
- Documentation
- Communication & acceptance
- Indicators for monitoring progress
- Re-occurring or rolling activity

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Closing remarks

- **IAEA analysis tools help identify and rank NAMAs based on**
  - **cost-effectiveness of mitigation measures**
  - **national or local conditions such as energy resource availability, technology, human resources**
  - **policy objectives**
  - **finance**
- **But most importantly is the establishment of lasting national capacity in the area of energy system planning – the analysis of mitigation options and NAMAs is just a co-benefit**

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…atoms for peace.

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Architecture of the Energy System