UNITED NATIONS
Commission on Science and Technology for Development

The role of science, technology and innovation to increase substantially the share of renewable energy by 2030

Shamika N. Sirimanne

Director, Division on Technology and Logistics

UNCTAD

2017-2018 CSTD Intersessional Panel

6-8 October, Geneva

Context

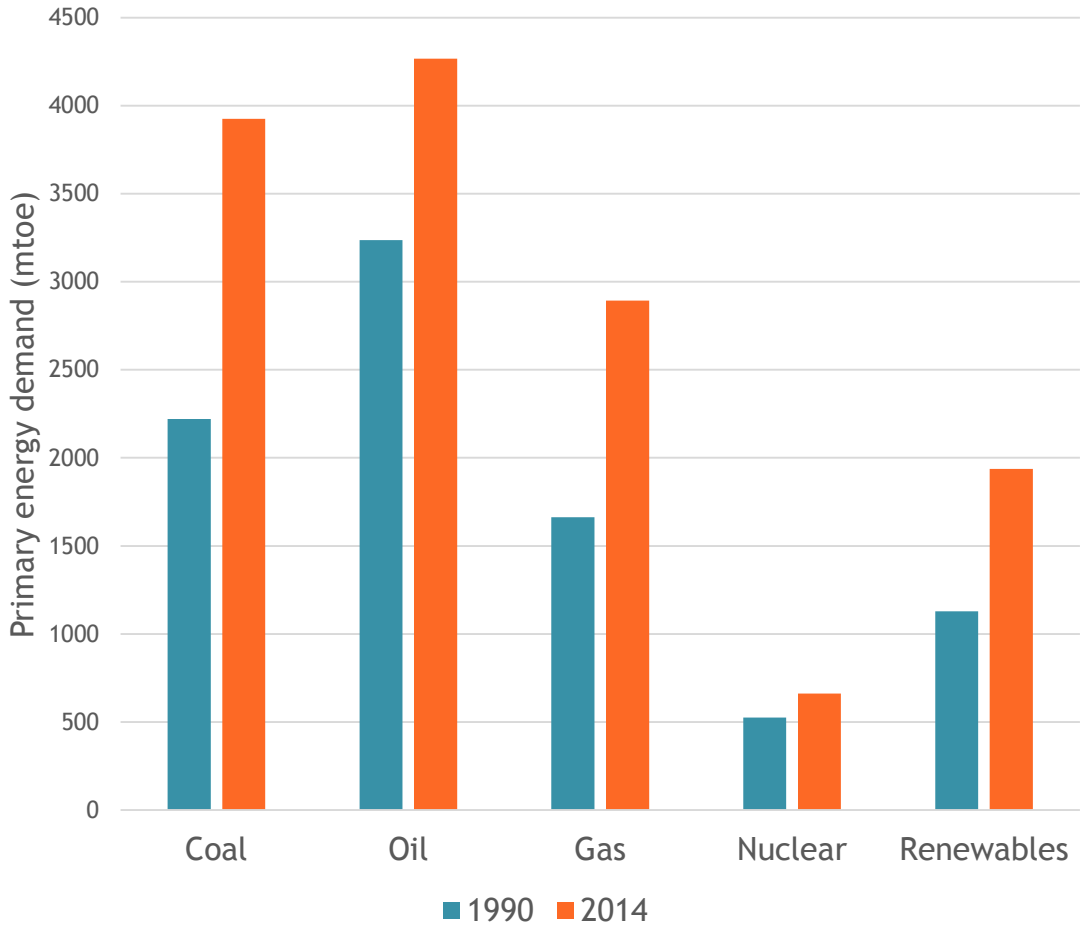
- Facts
  - 1.1 billion: number of people without access to electricity
  - 2.8 billion: number of people worldwide without access to clean energy
  - 46%: average annual growth rate of solar PV between 1990 and 2015
  - 40-75%: fall in the price of solar PV since 2010
- Key question: what role for STI to increase the share of renewable energy?

- Synergies between Goal 7 and other SDGs

Synergies between Goal 7 and the other SDGs

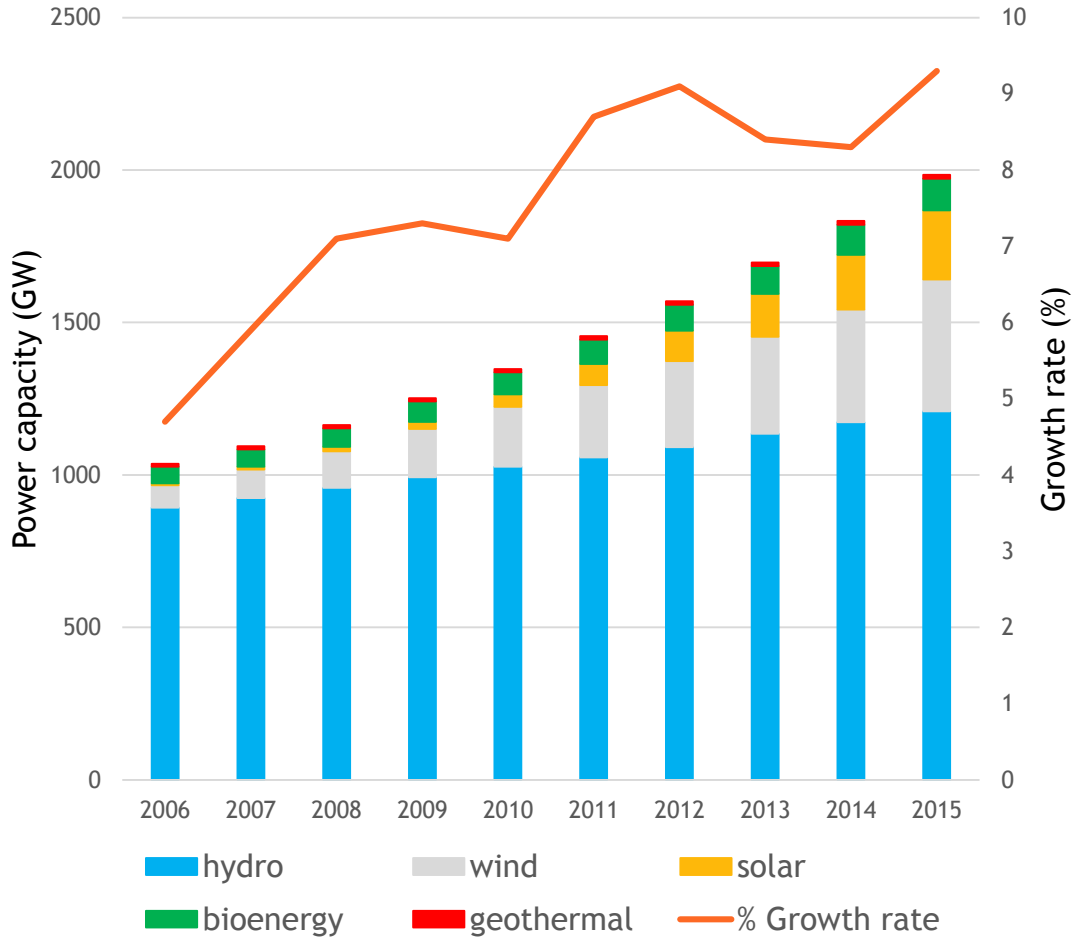
Trends in the renewable energy sector

Chart 1: Global primary energy demand by energy source 1990 vs 2014



Source of data: IEA

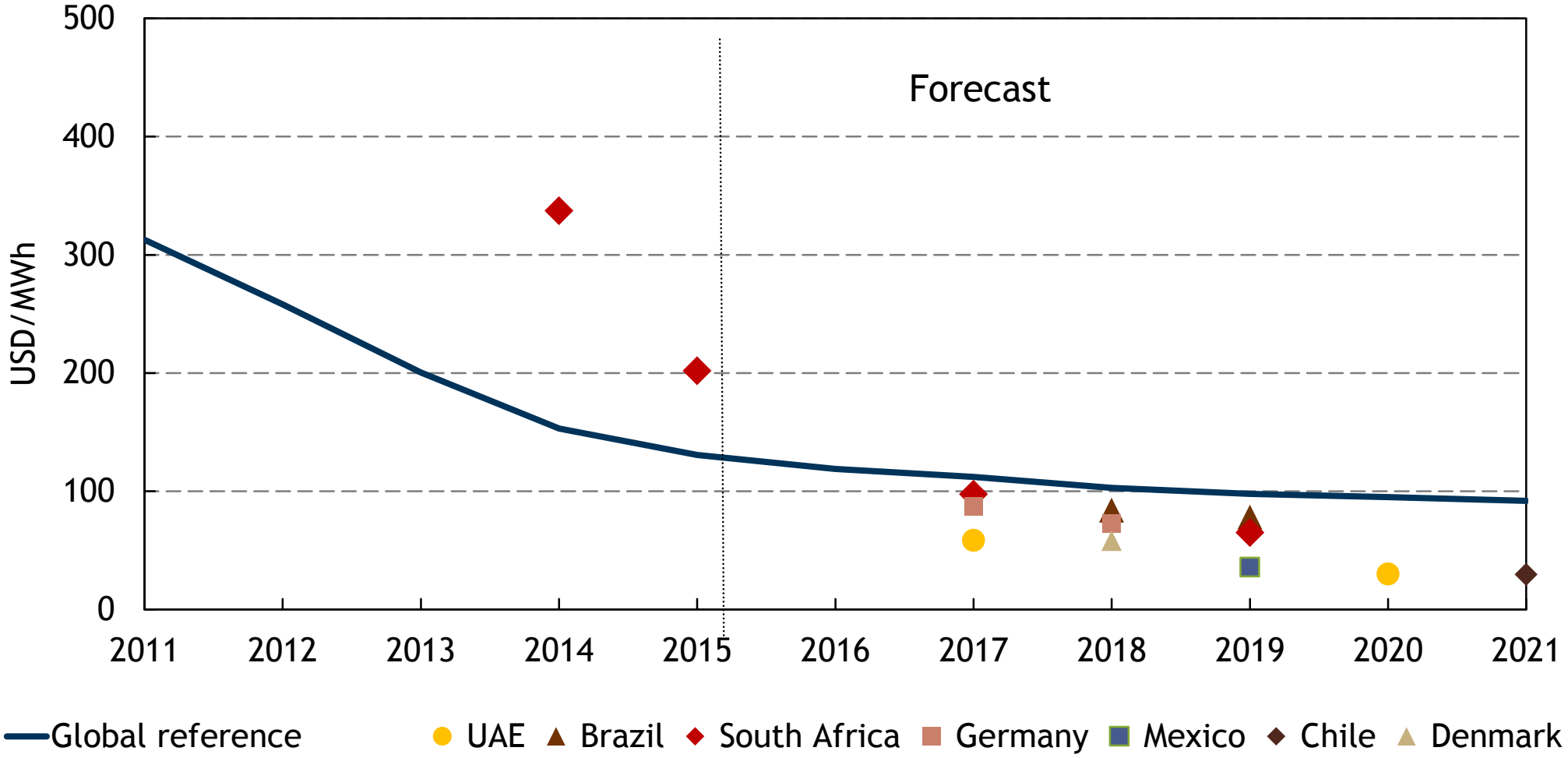
Chart 2: Renewable energy power capacity and annual growth rate 2000 to 2015



Source of data: IRENA

Trends in the renewable energy sector

Chart 3: Solar PV levelized cost of electricity and contract prices



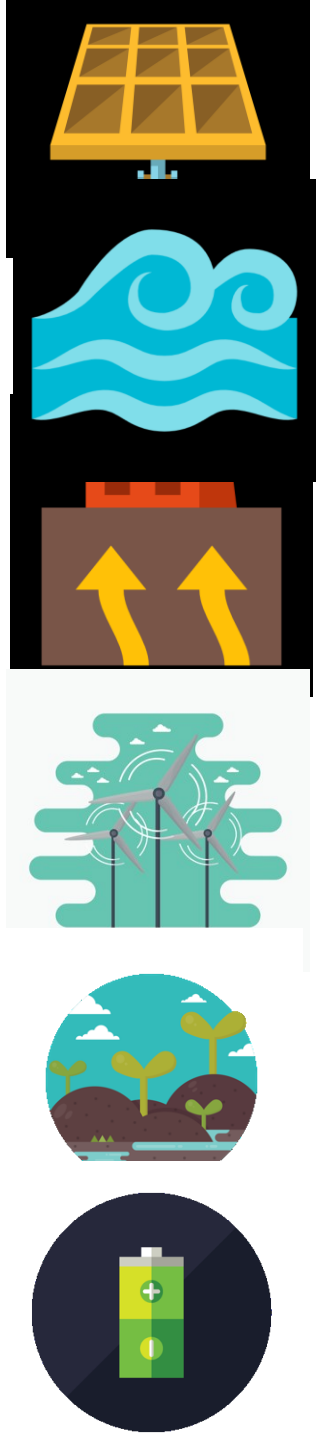
Source: International Energy Agency (2017), Tracking Clean Energy Progress 2017, OECD/IEA, Paris

Factors of success, breakthroughs and emerging technologies

- Factors that drive or inhibit renewables development and deployment
  - Costs and affordability
  - Finance
  - Technical maturity
  - Integration into electricity system
  - Environmental sustainability

- Breakthroughs in theses areas drove the deployment of some renewables
  - Solar (thermal and PV), wind and hydro

- Emerging technologies
  - Newer forms of solar energy
  - Wave and tidal energy technologies
  - Geothermal energy
  - New wind power technologies
  - More advanced biofuels
  - Progress in enabling technologies
    - Storage
    - Smart electricity systems



Market and policy challenges

- Key issues
  - Technological innovation can be accelerated both by competition and cooperation
  - Example of solar PV shows that:
    - innovation dynamics are highly international in nature
    - Innovation in the renewable energy sector requires
      - market demand for renewables
      - mix of supporting policies such as: R&D, coordinating actors, regulations, incentives, funding
  - Role for policy learning
    - from feed-in tariffs to auctions

Integrating renewables into the grid infrastructure

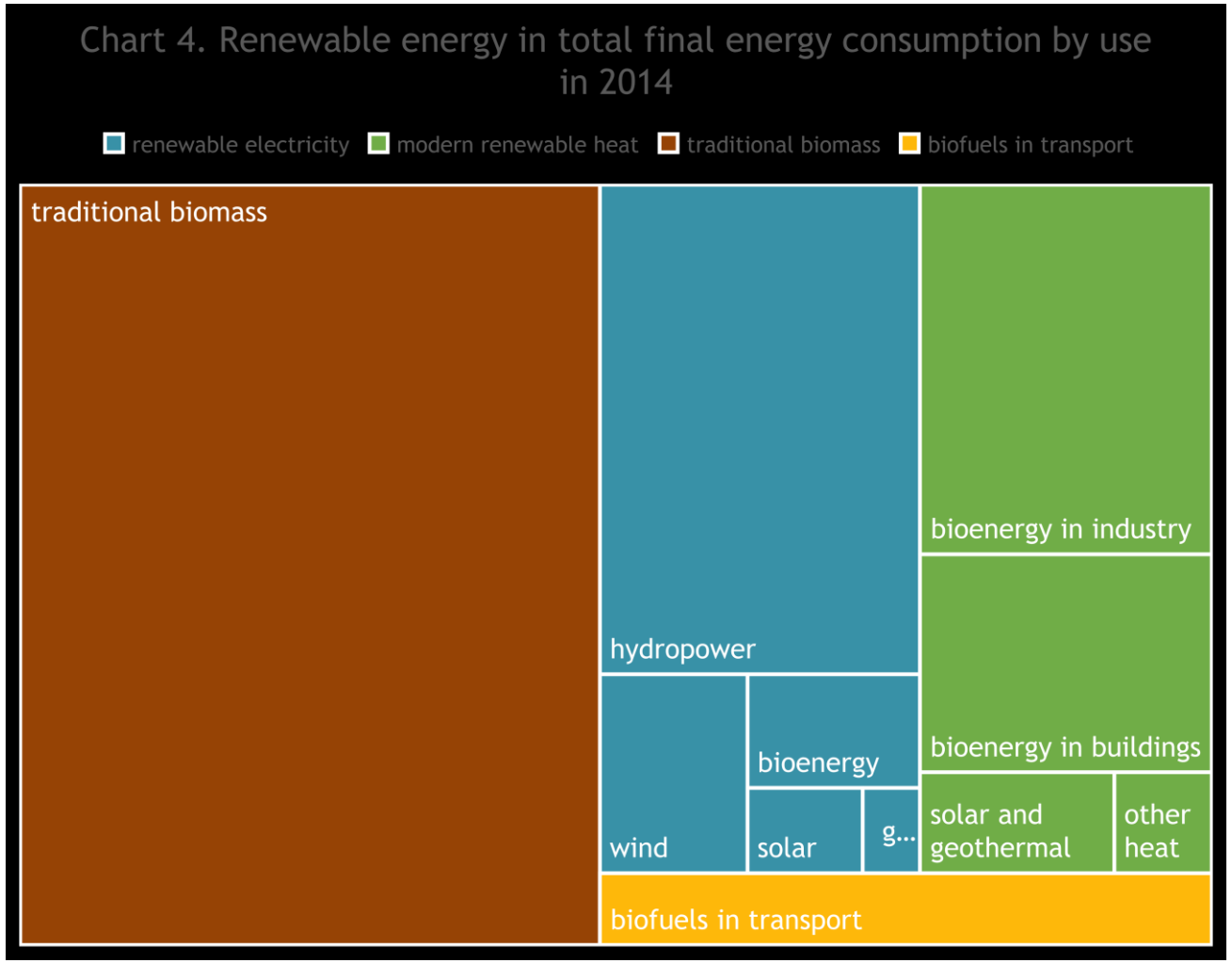
- Key issues
  - Efforts for grid development and upgrade to integrate renewables
  - Keeping the costs low requires demand side flexibility
  - Opportunity for digitization
  - Need for innovation in storage

Inclusive electricity access

- Key issues
  - Access to electricity can improve livelihoods through different channels
  - Affordability is a major issue for developing country rural communities
  - Robust governance structure, clear regulatory environment and enabling policy environment are crucial

Renewable energy for household purposes

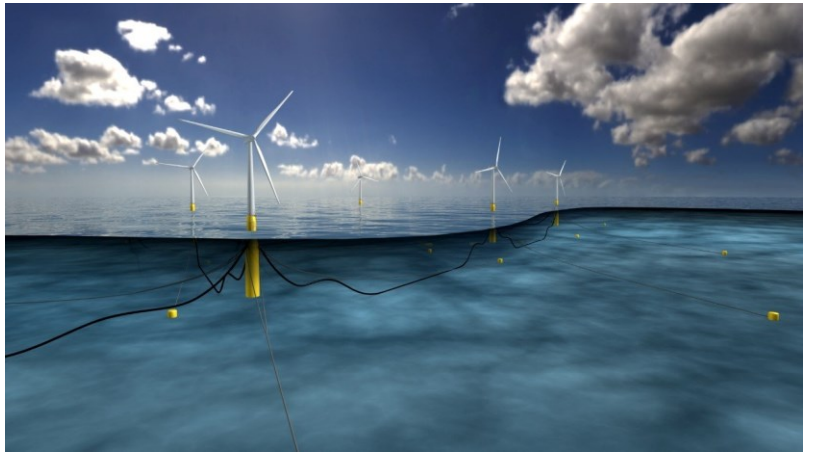
- Key issues
  - Using biomass for cooking has serious health, social and environmental consequences
  - Solution:
    - Modern forms of fuels
    - Improved biomass cookstoves
  - Increasing access to clean cooking and the deployment of renewable energy are not entirely aligned
  - Some options are consistent with increased deployment of renewable energy



Source of data: IRENA

International and inter-regional collaboration

- Hywind Scotland: the world's first floating wind farm
- Southern Africa Solar Thermal Training and Demonstration Initiative
- Mission Innovation
- Global Alliance for Clean Cookstoves



Floating windfarm
Source: Statoil

Questions for group discussions

- Group 1: Good practices and lessons learnt for renewable energy (RE) deployment (4-6pm, Room 1004)
- Group 2: The role of international and inter-regional collaboration for RE deployment (4-6pm, Room 1006)
- Group 3: The role of public policies for deployment of innovative RE (4-6pm, Room 1008)

Thank you for your attention

http://unctad.org/cstd

stdev@unctad.org