

# **Sector Study on Environmental Services: Renewable Energy**

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- **What are Renewable Energy Services (RES)?**
- **Sector Characteristics & Business Models in RES**
- **Barriers to Trade & Investment in RES**
- **Issues to Consider in Overcoming Barriers**

# RENEWABLE ENERGY (RE): SOLAR, WIND AND SMALL HYDRO

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- **Rapid growth in solar photovoltaics (PV) and wind energy from a low base**
- **Large hydro projects are typically central government-owned development projects; “small” hydro (<50GW\*) in which private enterprise usually participate**
- **In outlook to 2035, still relatively limited role for RE (<10% for all renewables, excluding hydro and nuclear)**
- **Nonetheless, RE important in terms of policy priorities:**
  - **Technology innovation**
  - **New industrial capability and employment**
  - **Pollution and climate change**

\*less than 5% of total hydro capacity

# RE: SECTOR CHARACTERISTICS...1

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- **Following a boom, over-capacity and competition in wind and solar**
  - **More constrained policy support in some countries**
  - **Grid constraints (e.g. transmission lines)**
  - **“subsidy wars” in RE leading to over-capacity**
- **RE “fatigue”: rapid deployment with unintended consequences, push-back in some countries**
- **Continued technological progress and cost improvements, possibly less dependent on subsidies**
- **Demand outlook still bright even if under less privileged circumstances**

# RE: SECTOR CHARACTERISTICS...2

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- **Markets:**
  - **Largest: US/Canada, EU and China**
  - **Smaller but growing markets: Rest of Asia, Middle East, Latin America, Africa**
- **Trade:**
  - **EU and US are largest in terms of imports and exports (both RE and RE Services (RES))**
  - **US, EU and China are major exporters of RE equipment**
- **Solar PV more “commodified”, can be highly fragmented market; wind energy industry more concentrated, with leading EU and US firms dominant**

# WHAT ARE RE SERVICES (RES)...1

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- **Defined as the range of services associated with the generation, transmission, distribution and sale of electricity and heat from RE sources**
- **RES not separately listed in services classifications**
- **Includes all services related to planning, design, construction and O&M of RE installations**
  - **Front end: planning, design, engineering**
  - **Throughout: O&M, management and financial services**
  - **Back end: O&M, de-commissioning**

# WHAT ARE RE SERVICES (RES)...2

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- **RES typically fall under the W/120\* categories:**
  - **Scientific and technical consulting**
  - **Services required for electricity distribution**
  - **Professional services**
  - **Construction and engineering services**
  - **Management consultancy and financial control**
  - **Equipment maintenance and repair**
- **Largely fall under 3 CPC\* groups**
  - **Services incidental to energy distribution**
  - **Other professional, technical and business services**
  - **Construction services**

\*Classification list for services under GATS

\*UN Statistical Central Product Classification

# RES BUSINESS MODELS: CONTEXT...1

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- **Definitions**
  - **Simplest: “How to make money”**
  - **Peter Drucker’s: Assumptions about customers and competitors (values and behaviour), technology and its dynamics, and company’s SWOT**
  - **IEA: Strategy to invest in RE which creates value\* and leads to increasing penetration by RE technology/fuels;**
    - \*RE entity profits do not necessarily translate to value added for economy*



# RES BUSINESS MODELS: CONTEXT...2

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- **RE demand predominantly policy-driven**
  - still not competitive with fossil fuels
  - supply surge and low oil and gas prices
- **Policy Objectives**
  - Local/Regional Environment
  - Climate Change
  - Energy Security
  - Industrial Development

# RES BUSINESS MODELS: CONTEXT...3

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- **RE sector business models shaped by policy environment**
  - Regulations and incentives to expand market for RE and RES
- **Economies constrained in domestic R&D investments:**
  - Typically offer incentives for technology and skills transfer
  - Ambitions for domestic manufacturing capabilities in RE
- **FIT (feed-in tariffs), RPS (renewable portfolio schemes), and other instruments impact on business models**

# RES BUSINESS MODELS: TYPOLOGIES...1

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- **ESCOs**
  - Supply useful energy for a fee
  - Performance contracting (fees based on cost-savings relative to a historical baseline)
  - Bundling of services/contracts and equipment
    - Financing, installation, O&M, permitting, etc
    - Reduce market and technical risks for customers
- **“New” Revenues**
  - FITs or RPS as basis for revenue generation
- **“New” Financing**
  - Customers repay financing via surcharge on bills
  - Leasing of RE equipment (equipment owned by financier)

# RES BUSINESS MODELS: TYPOLOGIES...2

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- **As a function of financial and organizational structure of firm**
- **As a function of market segment**
  - **New vs. Existing Customer**
  - **Residential vs Commercial Customer**
  - **Owner-occupied vs Renter**
- **As a function of market concentration**
  - **e.g. residential solar far more competitive and less concentrated than larger utility-size solar or wind projects**

# RES TRADE: POLICIES AND BARRIERS...1

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- **There are few trade or investment barriers to RE/RES specifically; most countries are signatories to GATS but GATS provides no separate listing of RES**
- **Brand and quality control requirement links RE capital investment to RE services provided**
- **Given link between RE investment and RES, constraints on investments also affect RES trade**
- **Primary motives for protection**
  - **Industrial development and jobs**
  - **Infant industry argument**

# RES TRADE: POLICIES AND BARRIERS...2

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- **Local content regulations (LCR) is major, if not most critical, barrier to RE/RES; common and widespread across developed and developing countries**
- **Measured as % of project locally-procured; no direct fiscal costs, but ignores economic costs**
- **LCRs on equipment manufacture affects services trade**
  - **Engineering, Design, Installation, O&M**
- **Non-tariff barriers such as LCR grey area in WTO;**

# RES TRADE: POLICIES AND BARRIERS...3

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- **LCR effected in several ways**
  - “Local firm” requirements
  - Import licensing and rules of origin
  - Government procurement rules
  - Immigration / work visa requirements
- **Larger advanced economies promote exports of RE equipment and allied RES via export credits, other financial and diplomatic support**
- **Estimated 5% of global trade affected by LCR; about \$100 bn in global annual costs; some dispute resolution cases taken up at WTO relate to RE**

# RES TRADE: ISSUES RAISED BY BARRIERS

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- **Replace NTBs such as LCR with explicit tariffs, subsidies and taxes**
  - **Transparent fiscal costs, assists in social CBA**
- **Have sun-set clauses if non-price regulatory requirement for RE investments is implemented**
  - **Danger of “infants” not growing up**
  - **Ballooning costs of implicit subsidies over time**
- **Make a distinction between value-added local content as against mandatory local content**
  - **Training for local skills, community development**
  - **Cost factors as incentive for FDI to localize business as fast as possible**
  - **Levy on expat labour is more transparent**



