UNCTAD Multi-year Expert Meeting on Trade, Services and Development

# The role of trade and services for enhancing science, technology and innovation to promote a fair transition to sustainable energy

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1. The current “energy transition” combines two streams of innovation:

- energy decarbonisation, resulting from recent
    - energy and climate policies stemming from the Paris Agreement and
    - specific energy technical solutions enabling the implementation of such policies;
- energy digitalisation, resulting from the application of general-purpose information and communication technical solutions to the energy value chain.

This combination of technical solutions leads to increasing:

- decentralisation of energy resources management, from individual households and businesses to local energy communities;
- electrification of energy end use, in particular as regards transport and heating and cooling in buildings and in industry.

The outcome is a new, multi-level and multi-sector energy architecture.

In order to guarantee that these developments are coherent with public policies promoting sustainability (environment, energy, industry, trade, urban planning, social, etc.) national legislators must design and implement an appropriate institutional and operational framework.

2. Although the hardware “building blocks” of the current energy transition are pretty much the same everywhere (solar panels, wind generators, batteries, smart meters, electric vehicles, heat pumps, etc.), energy architectures and the associated software needed to operate and control the hardware vary from country to country, according to available energy resources, energy demand patterns, institutional culture, etc.. While trade in “clean energy tech” hardware grows rapidly, trade in energy services is much slower, due to several factors, such as:

- lack of harmonisation and standardisation of key hardware and software components, which leads to too many ad hoc proprietary solutions;

- insufficient technical and institutional capabilities of local authorities in charge of designing or approving local energy platforms, which delays the energy transition and the development of innovative business models;

- slow evolution of the energy legal and regulatory framework, which sometimes prevents the adoption of innovative solutions;

- excessive weight of institutional and industrial silos (electricity, gas, heating, etc.), which delays the development of integrated and integrative tools for energy system integration.

Public authorities should support:

- international standardisation of key energy components;

- capacity-building of local authorities and local communities;

- reform of energy markets and energy regulation.

3. The European Union has taken several significant steps in this direction, such as:

- promoting multi-country research and development projects aimed at accelerating the energy transition and innovation;

- launching several initiatives aimed at harmonising smart metering and smart grids;

- reforming electricity markets;

- promoting circular economy models including energy and materials;

- helping capacity-building of municipal authorities;

- enforcing common energy and climate governance rules.

However, these efforts must be substantially increased to meet EU 2030 energy and climate targets.