

Critical Role of Services Trade in Fighting Climate Change: The Case of Renewable Energy Services

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Outline

Role of Services Trade in Fighting Climate Change: Overview

Trade in renewable energy services: A Closer Look

- What are renewable energy services?
- How renewable energy services are traded?
- Role of renewable energy services in energy transition
- Measures affecting trade in renewable energy services
- Opportunities and challenges for developing countries

Role of services trade in fighting climate change

- Climate change mitigation and adaptation depend on the availability of a wide range of services
- Services trade facilitates the adoption of energy-efficient and low-carbon technologies and investment in the deployment of renewable energy, and thus contributes to decarbonization and energy transition
- Services trade helps reduce vulnerability to climate change, enhance adaptive capacity, and strengthen resilience, and thus contributes to sustainable development

Mapping services needed for climate change mitigation: an indicative list

Mitigation actions	Services
Reducing GHG emissions and increasing energy efficiency	<ul style="list-style-type: none">• R&D and engineering services for heat and power recovery, material recycling and substitution, etc;• Technical testing and analysis services focusing on e.g. low carbon emission, energy efficiency, eco-products, etc;• Related scientific and technical consulting services;• Architectural, construction and engineering services for industrial plants, power generators, buildings with better energy performance;• Operation and maintenance services (Services incidental to manufacturing;)• Transport services aimed at shifting to lower carbon emission modes; ...
Renewable energy	<ul style="list-style-type: none">• R&D services in the development of energy generated from renewable sources;• Construction and engineering services in production facilities and installation of equipment; transport of materials and equipment;• Operation, maintenance and reparation of facilities• Transmission and distribution; sale and marketing; ...
Infrastructure	<ul style="list-style-type: none">• ICT services (e.g. in connection with smart grid, data analysis, etc.)• Energy infrastructure management services• Environmental services (e.g. waste management, emission monitoring and control) ...
Carbon market	<ul style="list-style-type: none">• Carbon emission measurement and evaluation services• Carbon trading services

Mapping services needed for climate change adaptation: an indicative list

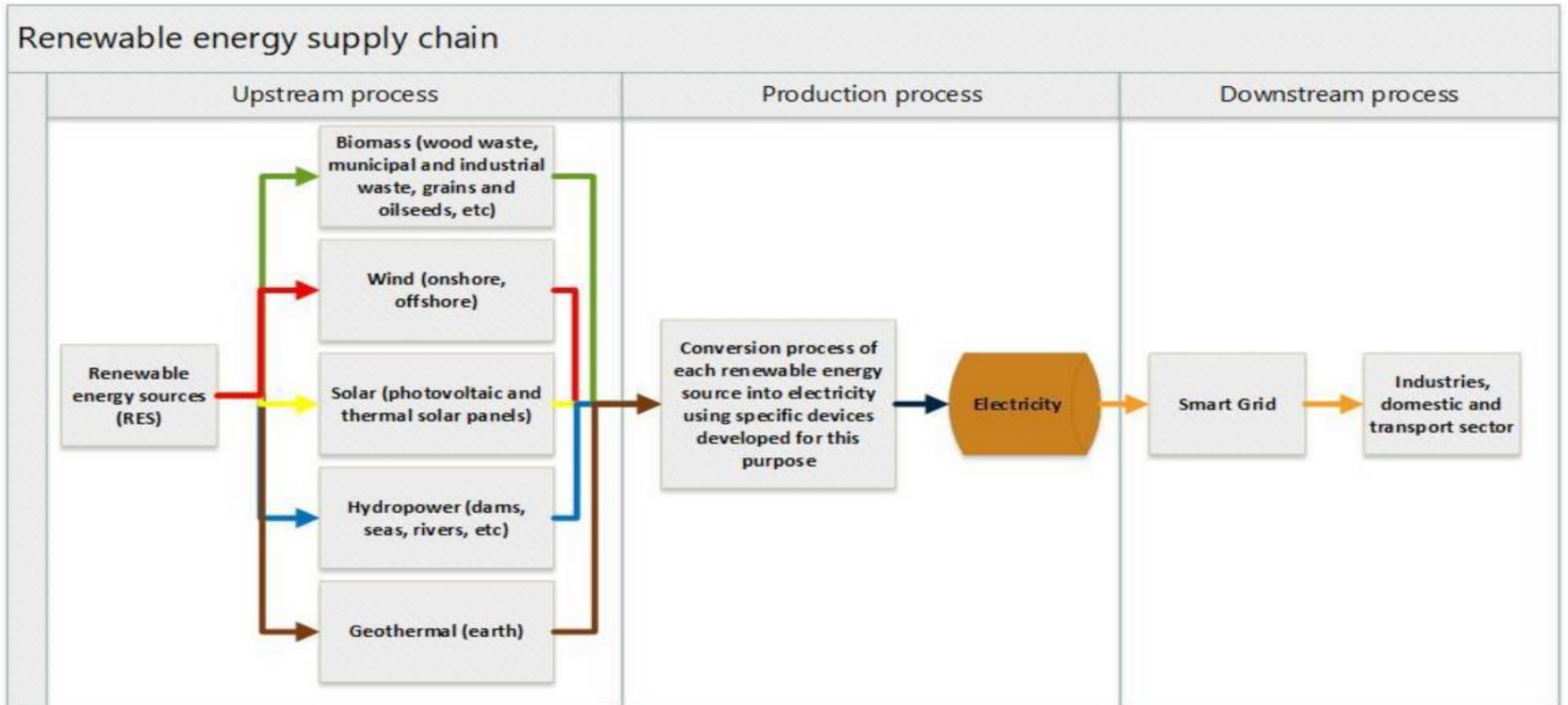
Adaptation actions	Services
Environment protection to reduce vulnerability to climate change	<ul style="list-style-type: none">• Environmental services (e.g. waste management; pollution monitoring and control);• R&D services on natural/social science related to environmental protection;• Technical testing and analysis services;• Architectural, construction and engineering services (e.g. to improve energy efficiency);• Environmental impact assessment services;• Education services; ...
Enhancing adaptive capacity	<ul style="list-style-type: none">• Business services (e.g. legal, management consulting, maintenance and repair of equipment, etc.)• ICT services• Weather forecasting services• Education services• Financial services• Transport services• Energy services ...
Strengthening resilience	<ul style="list-style-type: none">• Services incidental to agriculture/mining/forestry• ICT services• Financial services• Transport services• Education services• Energy services

Renewable energy services: trade as a driver

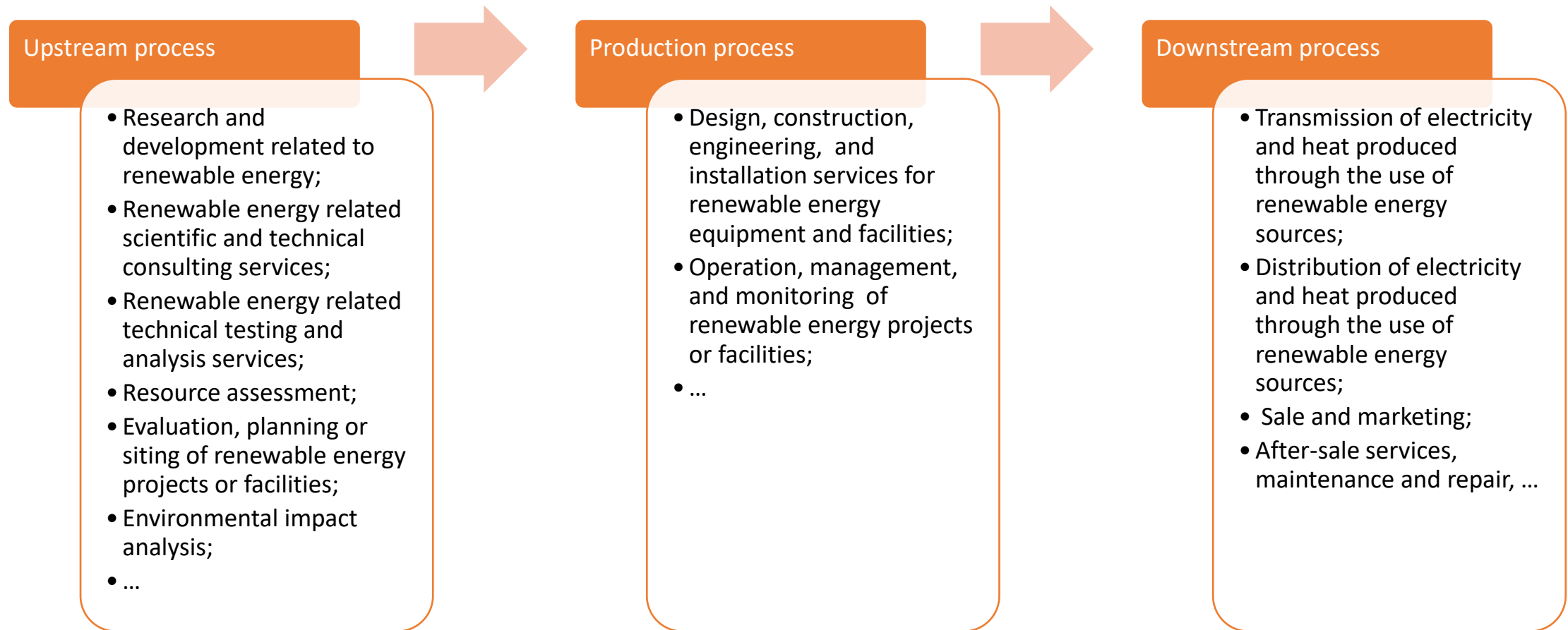
What are renewable energy services?

- Renewable energy services broadly comprise a range of services associated with the generation, transmission, distribution, and sale of electricity and/or heat produced from renewable energy sources. These also include services related to the planning, design, construction, and operation and maintenance of renewable energy installations, among others.

An illustration of renewable energy supply chain



Services supporting the entire renewable energy supply chain



Not included in the illustration are services as necessary inputs in the manufacturing of renewable energy equipment and facilities, such solar panels, wind turbines, etc.

One-stop solar solutions for every stage of the project

Development

- Site surveys
- Economic feasibility studies
- Power purchase agreements
- Various regulatory approvals

Financing arrangements

- Capital raising
- Loans
- Project financing

EPC

- Design, engineering
- Equipment procurement
- Construction

Asset management, O&M

- Maintenance
- Power generation monitoring
- Asset management

Trade in renewable energy services

- Renewable energy services can be traded through four modes of supply:
 - Establishment of a commercial presence by foreign investment is the dominant mode of supply for renewable energy services.
 - Movement of natural persons is also an important mode of supply for renewable energy services, in particular in the construction, installation, maintenance and repair of renewable energy facilities.
 - With technological advances, cross-border trade is gaining importance in renewable energy services (e.g. remote monitoring and diagnosis services for wind turbines).
- Renewable energy services are usually traded together with the sale of renewable energy equipment and facilities.

Limited data on renewable energy services trade

- In the renewable energy sector, data are usually about installed electricity generation capacity and electricity production from renewable energy;
- Data are rarely reported and collected specifically on renewable energy services. Some estimates might be made based on data regarding trade in construction and engineering services, or professional and other business services.

Measures affecting renewable energy services

- Governments take various policies to encourage renewable energy, including: investment incentives, tax measures, incentive tariffs (e.g. guaranteed prices, feed-in tariffs, and bidding systems), legislation (e.g. environmental standards).
- While these policies typically target one participant in the renewable energy market (e.g. generator, electric utilities, or consumers), they commonly produce upstream or downstream effects and affect other, sometimes all, market participants, including services suppliers.
- There are few barriers that specifically impede trade in renewable energy services, but measures on investment, land use, professional licensing, movement of natural persons that apply to all sectors affect trade in renewable energy services as well.

Opportunities and challenges for developing countries in renewable energy

- Opportunities
 - Leap frog to achieve energy sufficiency/security
 - Tap into the huge potential of natural resources
 - Benefits from technology transfer and trade
- Challenges
 - Poor infrastructure
 - Lack of investment
 - Need for technology transfer and capacity building
 - Need for a conducive regulatory framework
- Trade in services can contribute to the deployment of renewable energy in developing countries



THANK YOU
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