Forests, energy and livelihoods in the tropics

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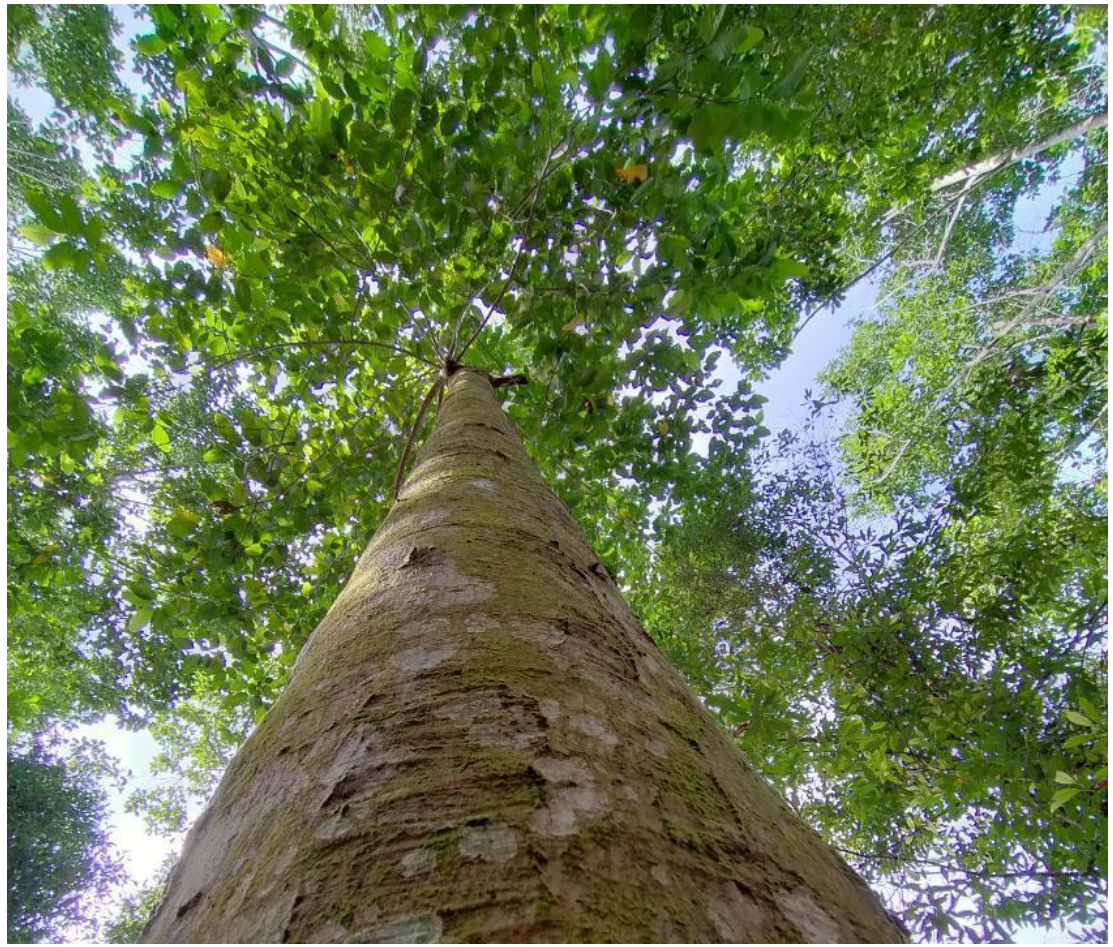
Sheam SATKURU
Executive Director ITTO

INTERNATIONAL TROPICAL TIMBER ORGANIZATION (ITTO)

ITTO's mission



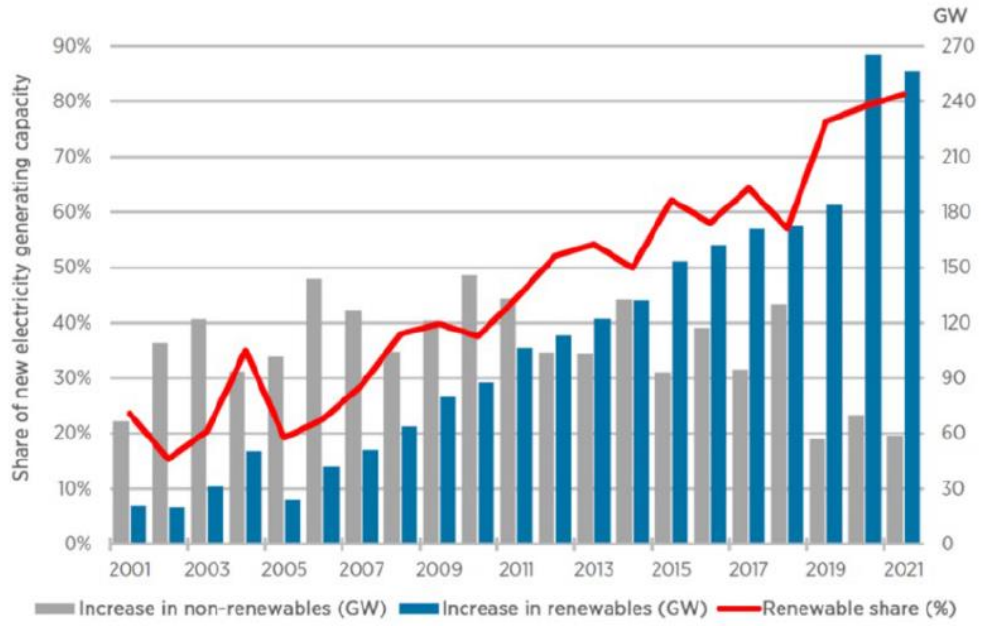
- Promote the sustainable management and conservation of tropical forests.
- Promote the expansion and diversification of trade in tropical timber from sustainably managed and legally harvested forests.

ITTO—THE SOLE inter-governmental organization focused entirely on tropical forest resources.

ITTO members (37 producers & 38 consumers) **cover over 80% of global tropical forests and account for 90% of trade in tropical forest products!**

Opportunities for bioenergy

Renewable share of annual power expansion[4]



Renewable-based electricity capacity has more than double over the past decade and 2021 alone, it increased by 257 GW:

- solar, increase of 133 GW (+19%)
- wind energy with 93 GW (+13%)
- **bioenergy by 10 GW (+8%)**

Evolution of global renewable energy employment by technology, 2012-2021[20]

Global renewable energy sector employed an estimated to 12.7 million people in 2021:

- solar; 4.3 million
- **bioenergy; 3.4 million**

Source: IRENA (2022), *Renewable Energy Statistics 2022*.

Nexus of tropical forests, energy and livelihoods

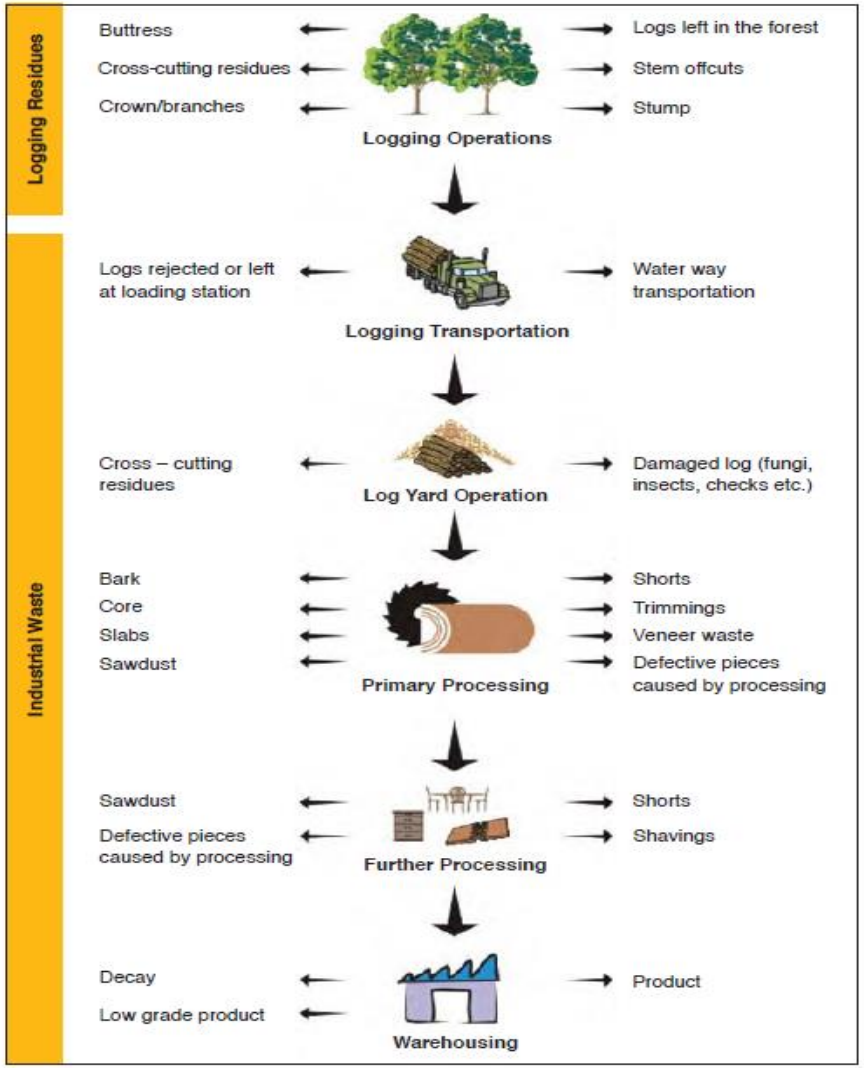
- Historically, forests provided energy for cooking and heating. Firewood & charcoal remains important for rural populations in the tropics. Forests have emerged as an important source of renewable energy - still unappreciated.
- Wood energy is environmentally friendly, as long as appropriate safeguards are in place to ensure sustainable sources and responsible production
- Developing a sustainable wood-based bioenergy sector in the tropics presents both a challenge and an opportunity, with potential solutions, including
  - Energy tree/forest plantations in degraded/vacant lands
  - Production of wood pellets for electricity and heat in power plants and homes
  - Energy generation from logging residues and wood processing waste
  - Improve energy security and reduce green-house gas emissions
  - Promote SFM practices that balance economic, social, and environmental needs
  - **Contribute to SDG 7 (Affordable and clean energy) & several other SDGs!**

ITTO field work: landscape restoration for energy forest plantations (Indonesia)

- An ITTO project in northern Sumatra encouraged restoration of degraded lands for biomass production:
  - the project established 33 ha of planted model forests for biomass production in degraded lands.
  - trained 35 village leaders in cooperative management for bioenergy production.
  - produced manuals on energy forest plantations for three species

- **An unrealized output of the project was the investment in a biomass processing facility**— lessons learnt:
  - **investments** require enabling conditions—this in turn, will increase the restoration area.
  - Energy plantations must be **economically viable** with support of alternative livelihoods to meet short-term needs (i.e., agroforestry, beekeeping, etc.)
  - linkages to markets for woodchips and pellets are crucial for the **sustainability of restoration activities (uncertainty market prices fluctuations**).

Opportunities for wood-based bioenergy



- There are substantial volumes of wood residues in timber industry operations in the tropics (around 50%), which could be used to generate energy:
  - In Brazil, for example, logging residues amount to 600 million tonnes/year;
  - could generate 36 000 megawatts of electricity;
  - equivalent of three large hydropower stations.
- Wood-based bioenergy (wood and woodchips) have an advantage over agriculture-based bioenergy (biofuels, biogas) in terms of CO_2 mitigation performance

*Source: ITTO. 2007. *Report of the International Conference on Wood-Based Bioenergy*. Hannover, Germany, 17-19 May, 2007. ITTO Technical Series No.31. Yokohama, Japan.

Opportunities for wood-based bioenergy (continuation)

- Wood-processing residue comprises a significant amount of the total wood volume (e.g. 50% in Ghana). The industry does not make efficient use of this residue.
- Options to improve efficiency include briquette production, cogeneration, and better fuelwood management.
- Wood-based bioenergy from wood-processing waste is well-suited to small-scale projects
- **A new window of opportunity** for small-scale renewable energy producers. Need to solve problems with logistics, an insecure and uncertain supply, competition for the resource, and a lack of information

ITTO field work: woodflooring residues for energy production (Brazil)

- An ITTO project in Brazil improved the sustainability of the wood flooring industry
- Among other things, the project studied value-addition of wood-residues, including in the production of particle boards and energy generation:
    - firewood
    - pellets and briquettes
    - cogeneration

ITTO field work: REDD+ and clean cooking (Cambodia)

- An ITTO project assisted the Government of Cambodia to prepare for REDD+ and **improve livelihoods through SFM**, including clean cooking
- The project distributed 1,600 fuel-saving cookstoves to the communities. Beneficiaries include:
  - savings due to reduced woodfuel consumption,
  - improved household health by reducing indoor pollution, and
  - increased productivity as less time is spent in foraging for woodfuel.

More: Read article on TFU issue 29/2 (page 16).

ITTO field work: landscape restoration, agroforestry and charcoal (Côte d'Ivoire and Togo)

- ITTO supported the charcoal business ventures of women in Côte d'Ivoire and Togo to reconcile the short-term subsistence needs (food and woodfuel) with the medium- to long-term need to rehabilitate the forest:
  - women realized that the viability of charcoal production requires SFM—efforts to reforest and ensure the availability of the forest resource.
  - forests restored in the Ahua gazette forest (Côte d'Ivoire) and in Blitta and Lakes prefectures (Togo).
  - training provided in seedling production, nursery establishment, forest plantation establishment and maintenance, and agroforestry.
  - thanks to ITTO interventions in Côte d'Ivoire, MALEBI (a women's association) improved its charcoal production using metal furnaces and efficient, eco-friendly techniques. In Togo women have increased income through agroforestry while restored forests grow for charcoal production.
- High potential for replication and for piloting decarbonized charcoal—more support is needed!

What is needed to move forward?

To enhance & realize the nexus between forests, energy, and livelihoods, inclusive, innovative and integrated SFM practices are essential

RECOGNITION OF SUSTAINABLY MANAGED FOREST-BASED BIOENERGY & BIOECONOMIES AS COST EFFICIENT & EFFECTIVE NATURE-BASED SOLUTION TO CLIMATE CHANGE AND SDGS

- **Environmental and social safeguards**: Balancing economic, social, and environmental needs in forest management to promote sustainable wood-based energy production and livelihoods of forest-dependent communities
- **Governance and policy frameworks**: Developing value chains that link wood-based energy production & consumption - ensure benefit-sharing mechanisms and safeguards for the environment
- **Market demand and innovative financing/investments/fiscal & non-fiscal incentives**: Creating market demand and innovative financing/investments for sustainable forest-based energy and forest products - address market fluctuations, changing consumer awareness, international trade dynamics & viability of bioenergy
- **Capacity building and technical cooperation**: Local communities, forest managers, other stakeholders in SFM - forest-based energy production & value addition

http://www.youtube.com/user/ittosfm

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International Tropical Timber Organization

www.itto.int

satkuru@itto.int