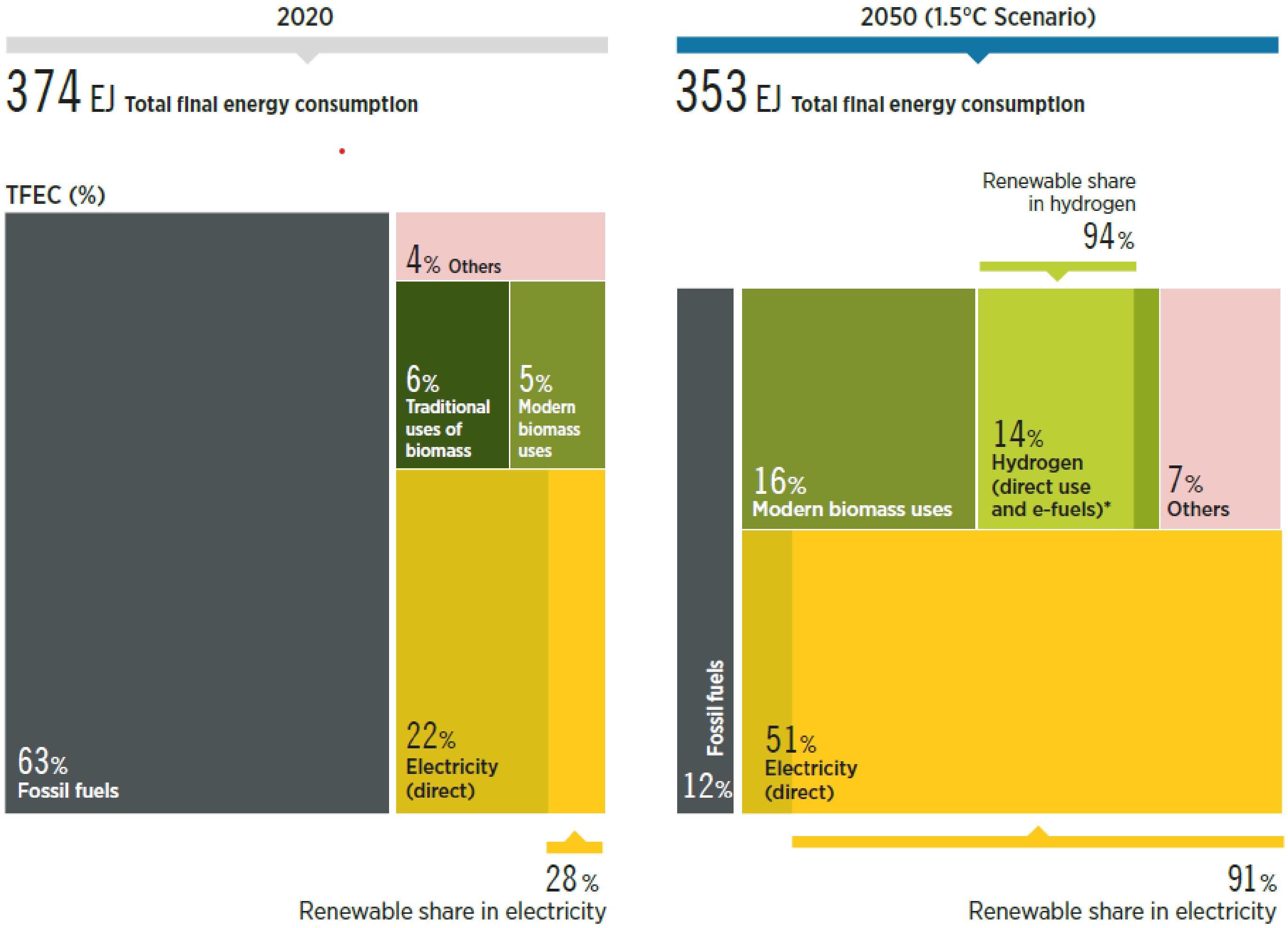
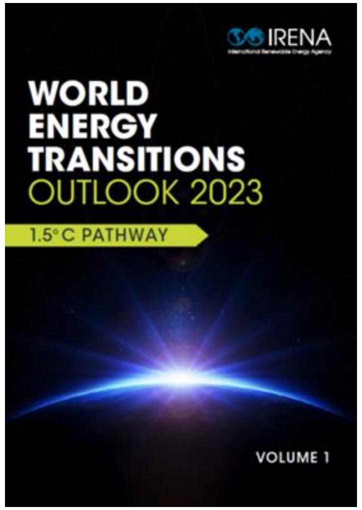
Renewables and biodiversity – balancing risks and benefits

Dr. Ute Collier, Deputy Director, Knowledge, Policy and Finance Centre, 12.07.2023

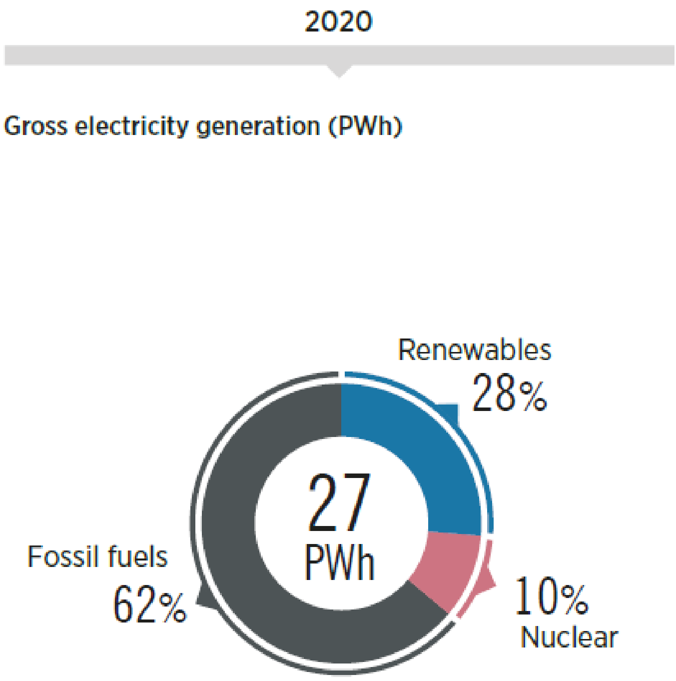
To keep to 1.5°C, we need to transform energy production & consumption

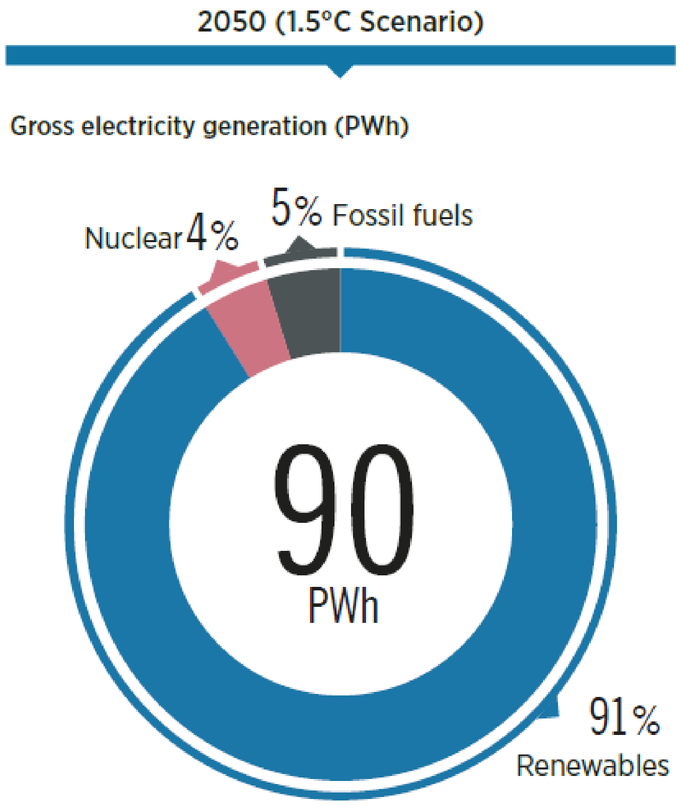
Total final energy consumption by energy carrier under the 1.5°C Scenario

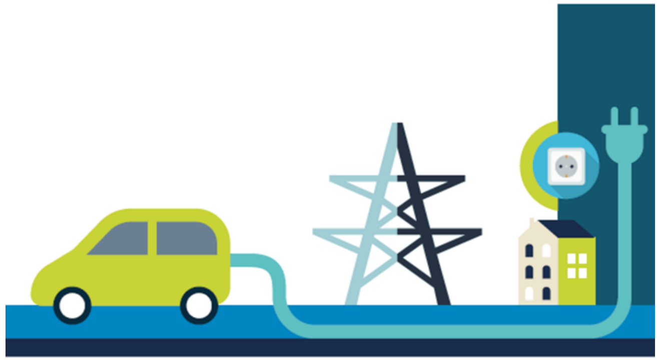




Renewable electricity will need significant scaling up

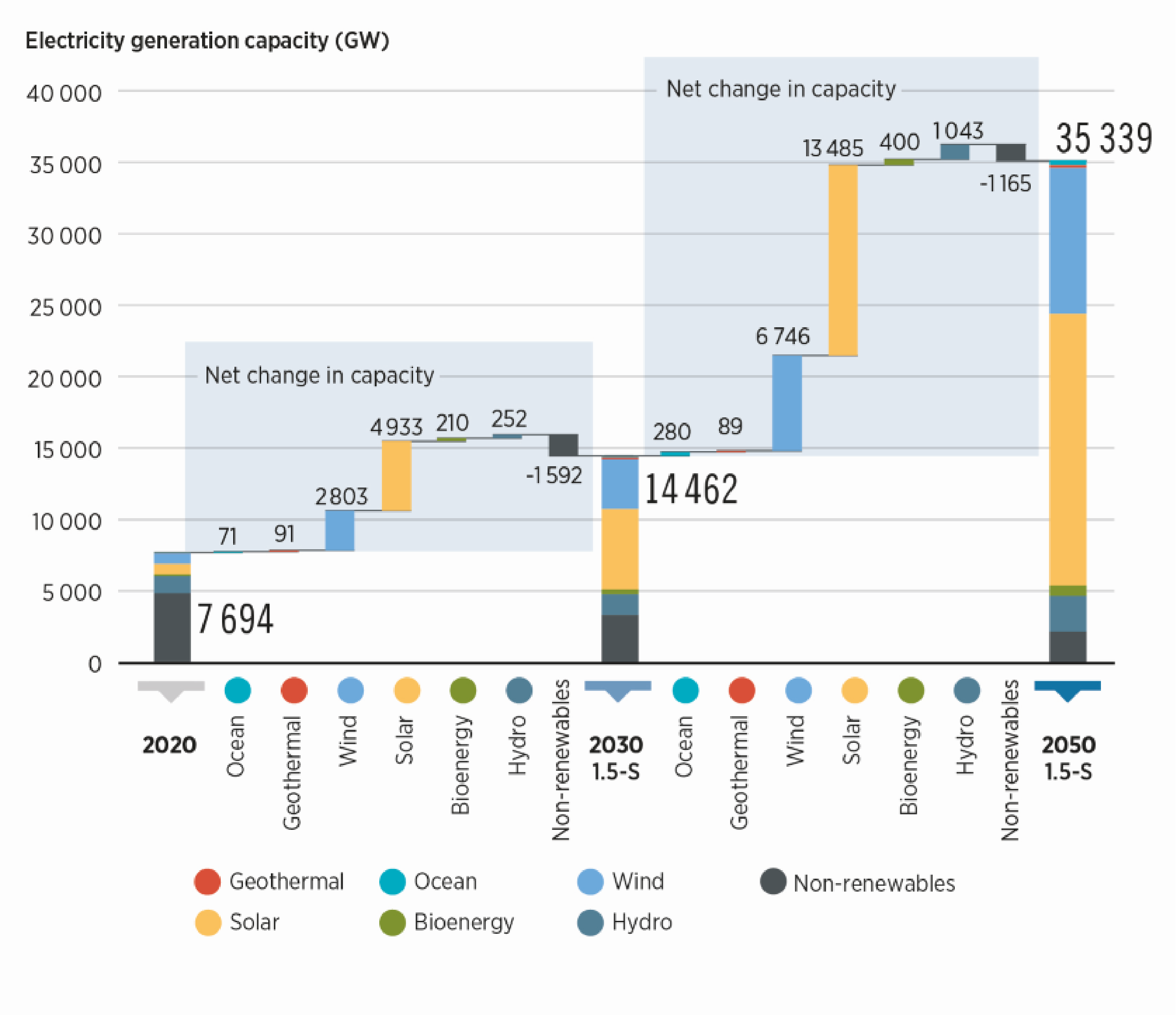






Note: PWh = petawatt hours.

Solar PV and wind to dominate the growth of renewables in the power sector



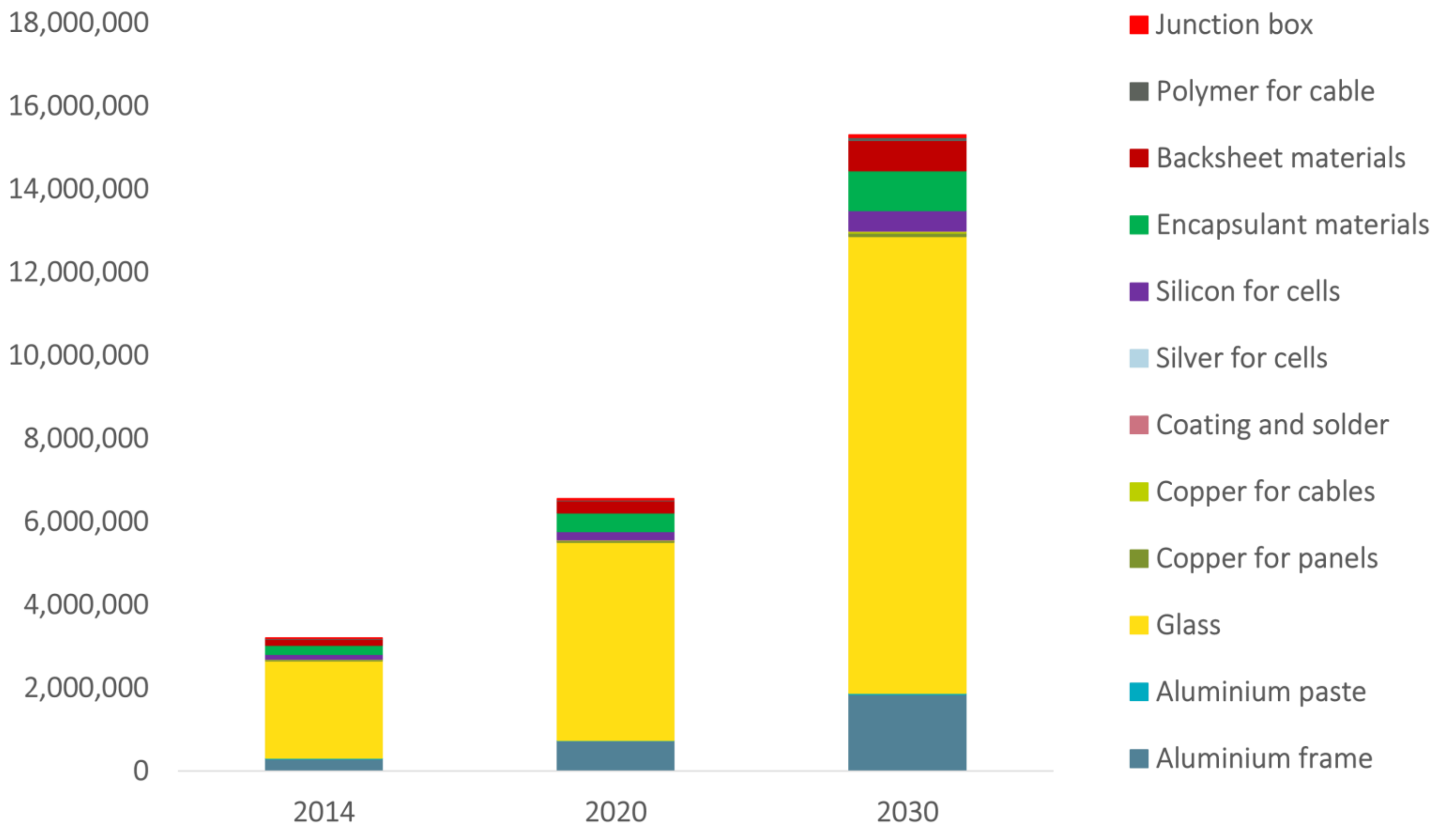
Notes: GW = gigawatt; 1.5-S = 1.5°C Scenario

- Under the 1.5°C Scenario, the global installed solar PV capacity would increase almost **eight-fold by 2030.**
- The global installed **onshore** wind capacity would reach 3040 GW in 2030, more than **four-fold growth** over 2020 levels.
- The global installed **offshore** wind capacity would reach almost 500 GW in 2030, a **fourteen-fold growth** over 2020 levels.

Solar PV raw materials consumption more than doubles under IRENA's 1.5ºC Scenario

IRENA International Renewable Energy Agency

Estimate of material consumption for crystalline silicon PV systems in 2014, 2020 and 2030, in tonnes

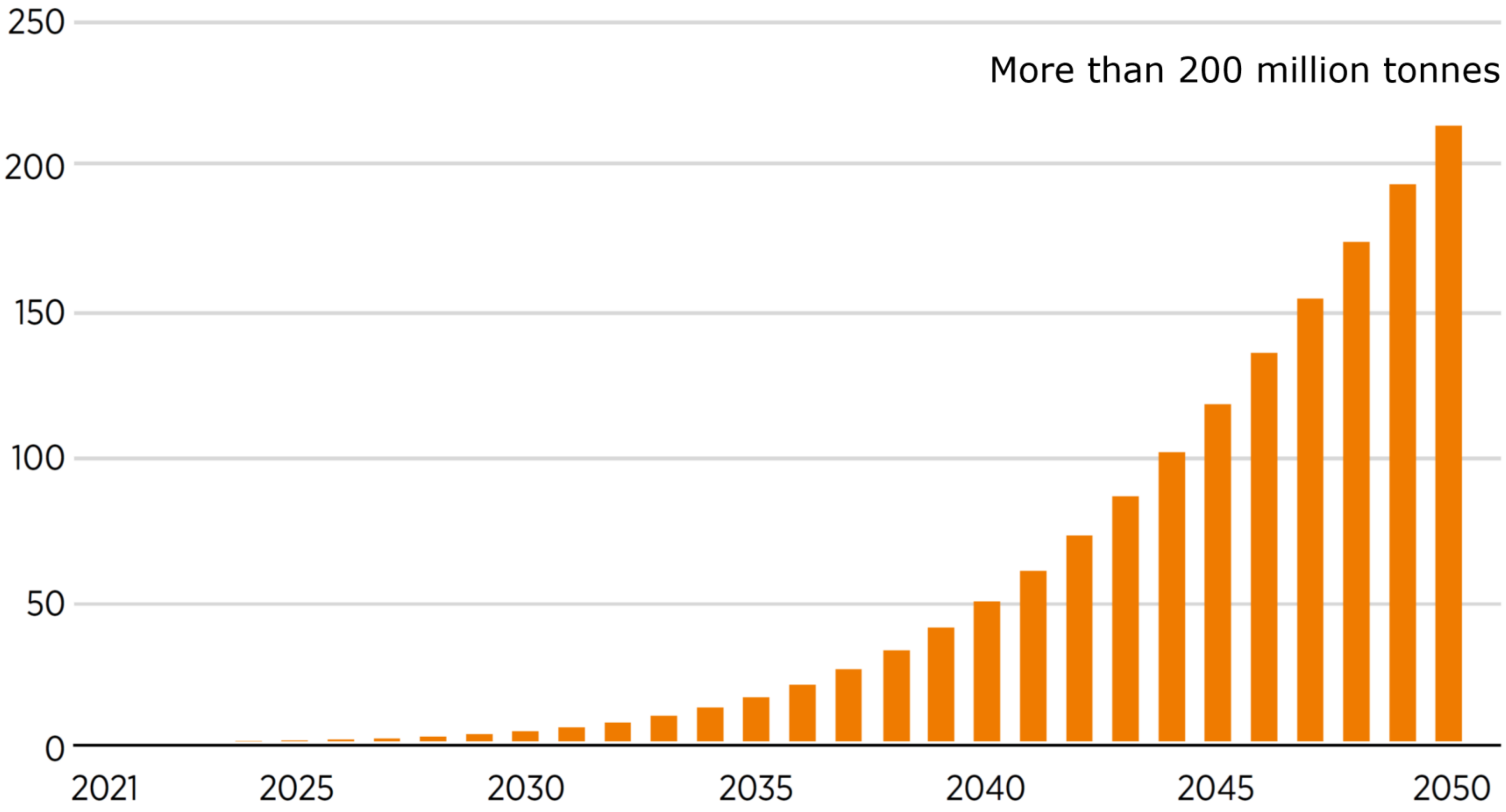


Source: IRENA, forthcoming

Solar PV waste will exceed more than 200 million tonnes by 2050

IRENA
International Renewable Energy Agency

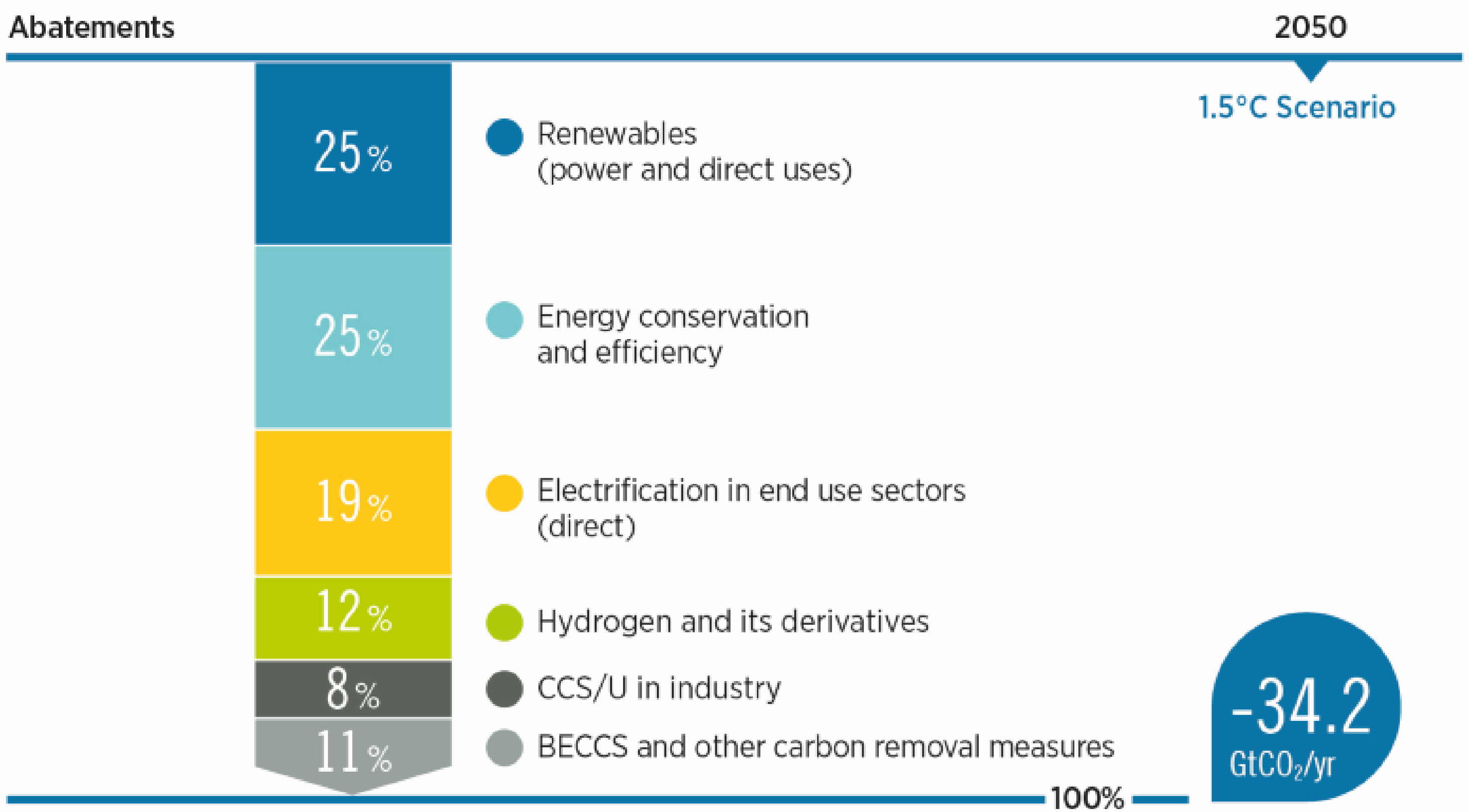
Cumulative solar PV waste in the 1.5ºC Scenario, 2021-2050, in million tonnes



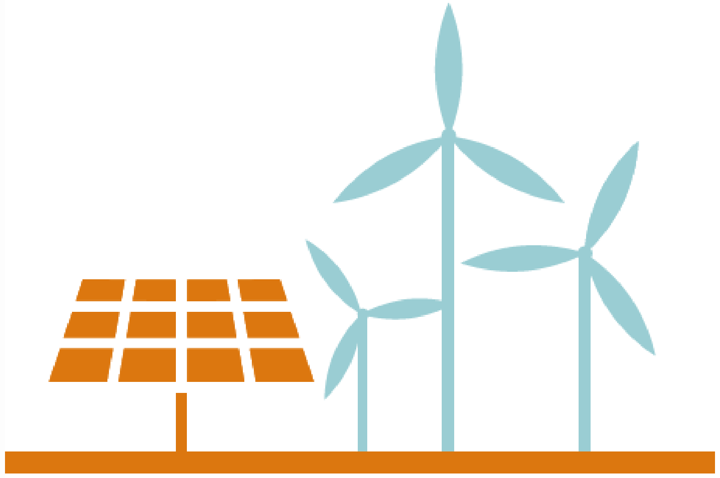
Source: IRENA, forthcoming

Risks vs benefits: can't reach 1.5°C target without massive scale up of renewables!

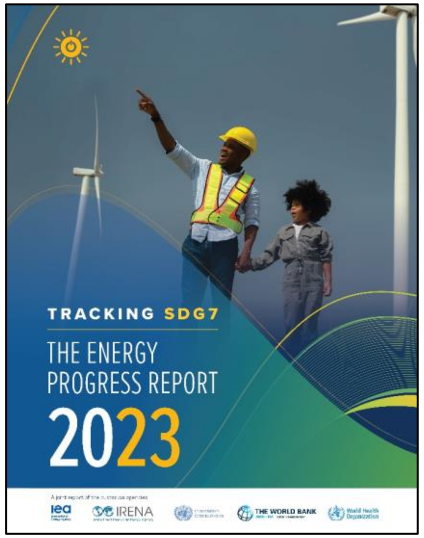
FIGURE 1.5 Carbon dioxide emissions abatement under the 1.5°C Scenario in 2050



Notes: BECCS = bioenergy with carbon capture and storage; CCS/U = carbon capture and storage/utilisation; GtCO2/yr = gigatonne of carbon dioxide per year.



Renewables can be very positive for biodiversity – clean cooking example



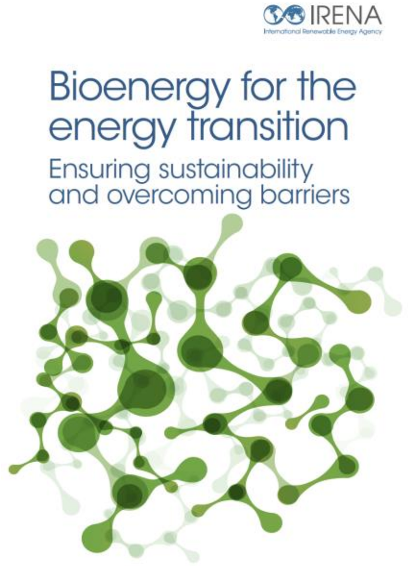
INDICATOR	2010	LATEST YEAR
7.1.2 Proportion of population with primary reliance on clean fuels and technology for cooking	2.9 billion people without access to clean cooking	2.3 billion people without access to clean cooking (2021)

- Renewables–based clean cooking helps prevent deforestation and associated biodiversity loss

But often the picture is much more complicated

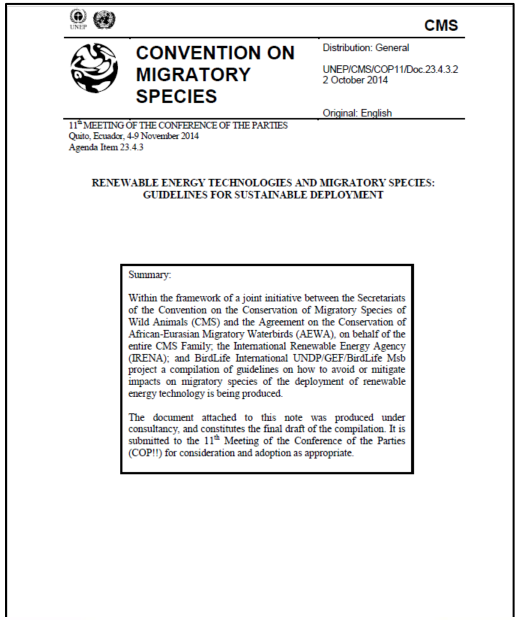
Potential negative impacts		Potential benefits
Emissions caused by land use change Emission from the supply chain	**GHG emissions**	Emission reductions through replacing fossil fuels Net zero emissions through BECCS Reduced methane emissions through capture from landfills and waste streams
Air pollution from biomass combustion Biodiversity loss or invasive species Increased water consumption Reduced water quality Reduced soil quality Deforestation	**Environmental aspects**	Land restoration Improved forestry management Improved waste management Improved soil quality Improved water quality
Competition with food for land Threats to smallholders' livelihoods Expensive BECCS	**Socio-economic aspects**	Improved public health Access to modern energy services Improved energy security Job creation Additional income from agricultural and forestry residues Improved gender equality

- **Bioenergy's impacts on nature remain hotly debated**



Policy framework is needed to ensure sustainable bioenergy development

Regulations, guidelines & good practice examples abound


UNEP
CMS
CONVENTION ON MIGRATORY SPECIES
Distribution: General
UNEP/CMS/COP11/Doc.23.4.3.2
2 October 2014
Original: English

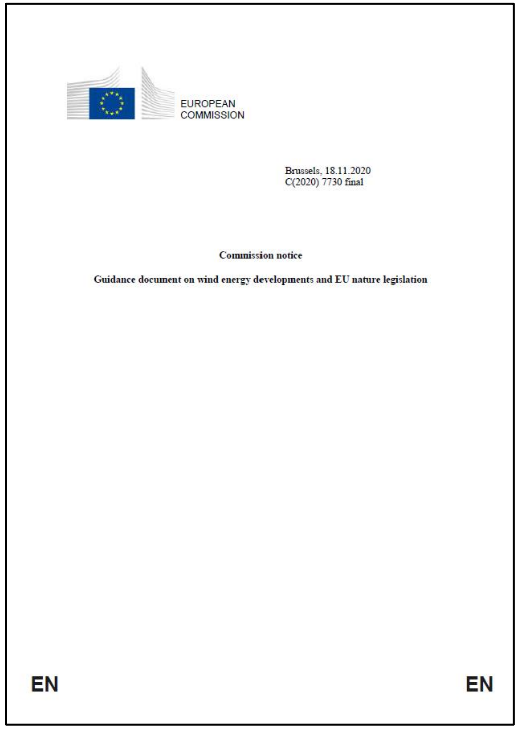
11[th] MEETING OF THE CONFERENCE OF THE PARTIES
Quito, Ecuador, 4-9 November 2014
Agenda Item 23.4.3

RENEWABLE ENERGY TECHNOLOGIES AND MIGRATORY SPECIES: GUIDELINES FOR SUSTAINABLE DEPLOYMENT

Summary:

Within the framework of a joint initiative between the Secretariats of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) and the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), on behalf of the entire CMS Family; the International Renewable Energy Agency (IRENA); and BirdLife International UNDP/GEF/BirdLife Msb project a compilation of guidelines on how to avoid or mitigate impacts on migratory species of the deployment of renewable energy technology is being produced.

The document attached to this note was produced under consultancy, and constitutes the final draft of the compilation. It is submitted to the 11[th] Meeting of the Conference of the Parties (COP11) for consideration and adoption as appropriate.


EUROPEAN COMMISSION

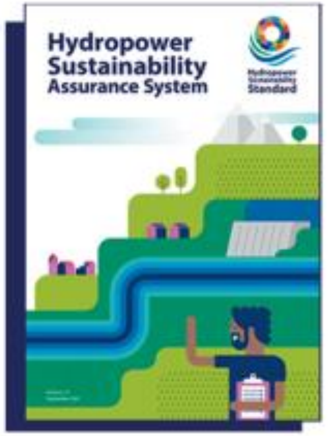
Brussels, 18.11.2020
C(2020) 7730 final

Commission notice

Guidance document on wind energy developments and EU nature legislation

EN EN

CERTIFIED Sustainable Hydropower



Materials & circular economy – policies & measures

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International Renewable Energy Agency

A circular economy for solar PV: approaches, measures and examples

Approaches	Policies and programmes	Country examples
Government-led policies	• Landfill ban • Extended producer responsibility (EPR) • Government guidance • Financial and fiscal incentives • Labelling and certification • Other programmes and policies	Victoria (Australia) Germany, France European Union China European Union Japan
Industrial programmes and initiatives	• Voluntary standards by industrial associations • Industry-initiated reduce/reuse/recyling programmes • Other industrial initiatives	SERI (United States), RIOS (International) LONGi (China) First Solar (United States) PV Cycle (Japan)

Source: IRENA, 2022, Curtis and Heath, 2022

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Thank you!