International Energy Agency

Renewable energy statistics for the SDG indicator 7.2

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SESRIC WEBINAR SERIES ON STATISTICAL EXPERIENCE SHARING ENERGY STATISTICS FOR THE SDG7 INDICATORS - 9 November 2021

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Presentation overview

Key renewables trends

Key concepts

- Classifications of renewables
- Special Issues with biofuels

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Fuel shares in world total energy supply 2019

Which renewable energy do you think takes the largest portion in total energy supply in the world?

1. Hydro **2. Solid biofuels** **3. Solar PV**

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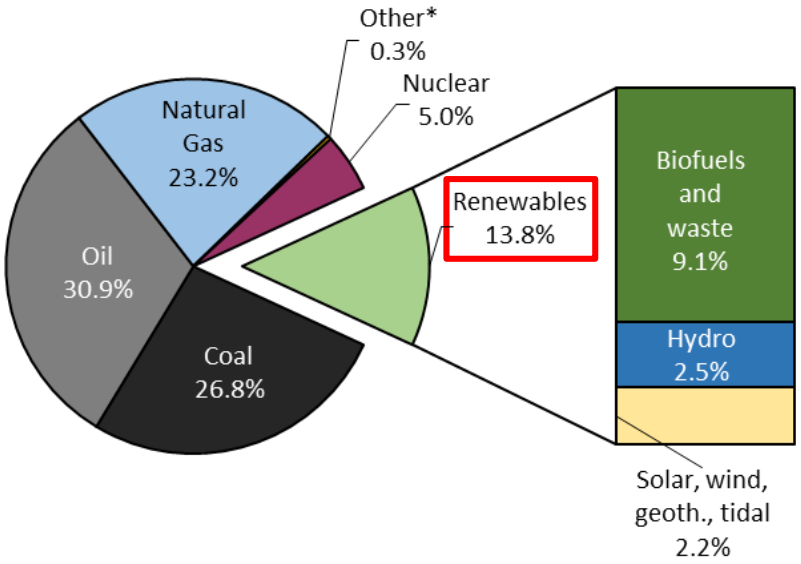
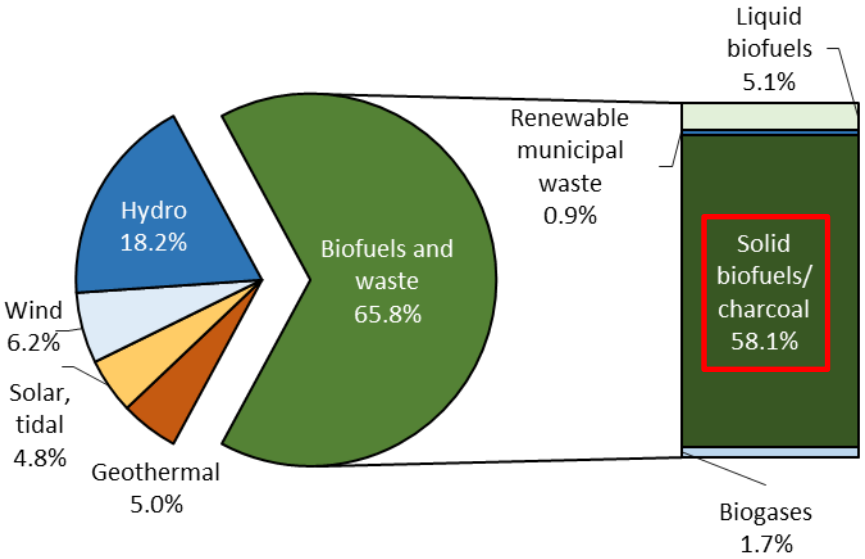
Renewables in the world 2019

TES



606.5 EJ

Renewables



83.5 EJ

***Other includes non-renewable wastes and other sources not included elsewhere such as fuel cells**

Sources: IEA, Renewables Information, 2021
IEA, World Energy Balances, 2021

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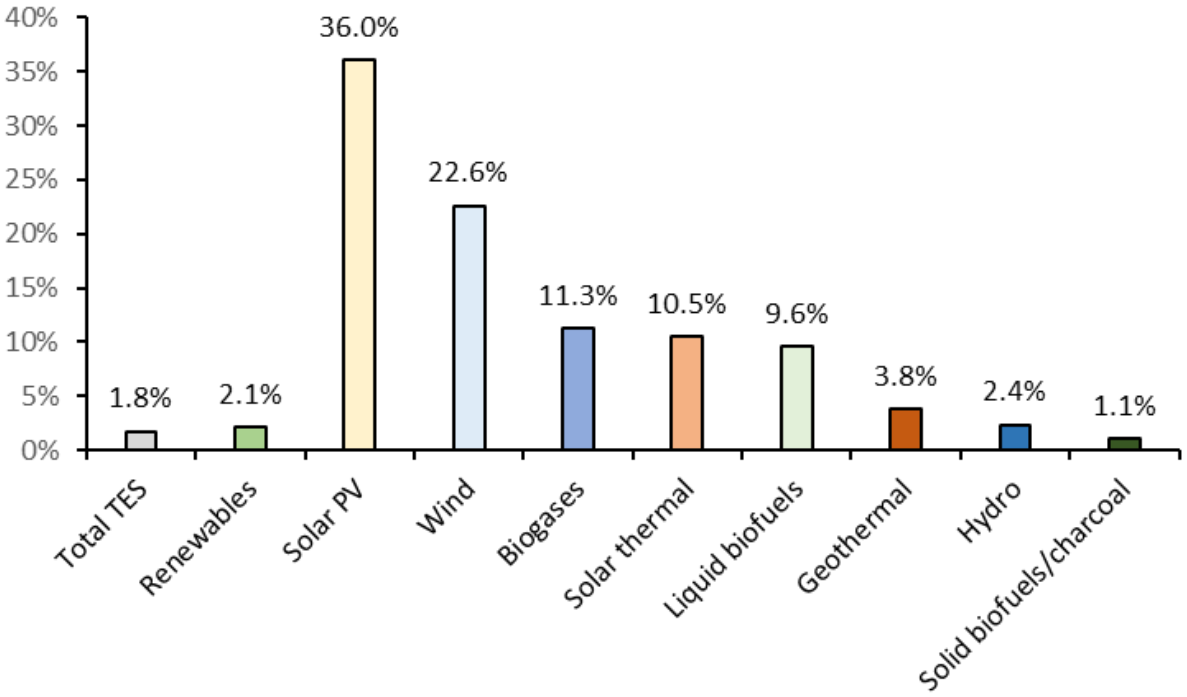
Average annual growth rates of world renewables supply 1990 to 2019



Source: IEA, Renewables Information, 2021

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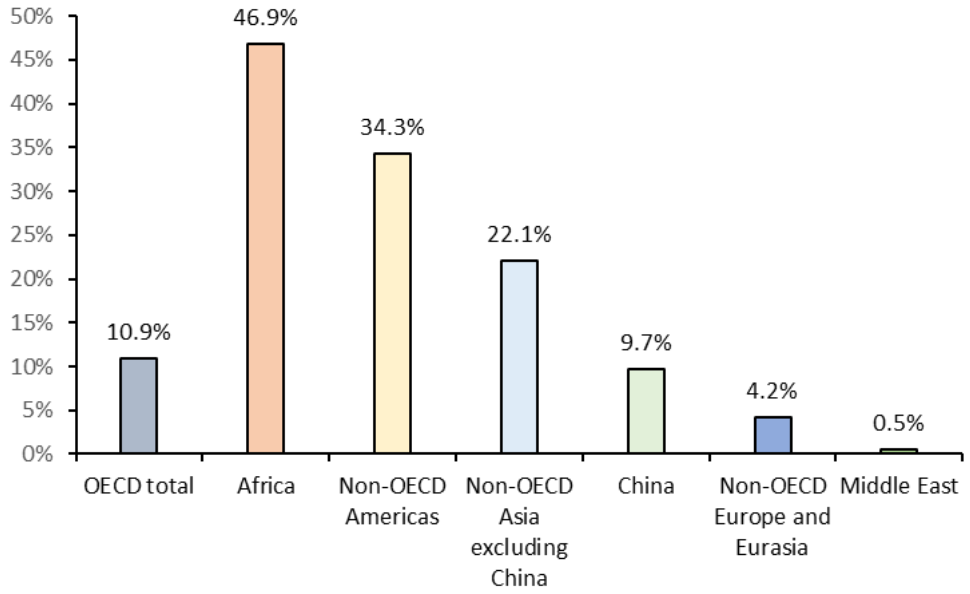
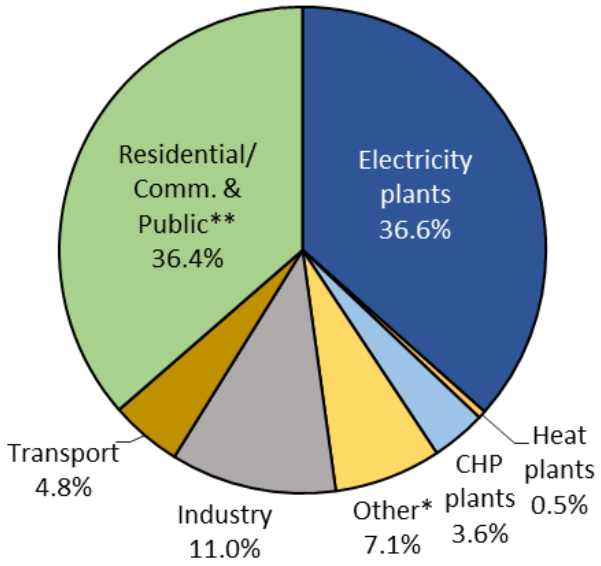
Renewables in the world 2019

Share of renewables in TES by region



World sectoral consumption of renewables



*** Other transformation, energy industry own use, losses.**
**** Includes the Agriculture/ forestry, fishing and non-specified industries.**

Source: IEA, Renewables Information, 2021

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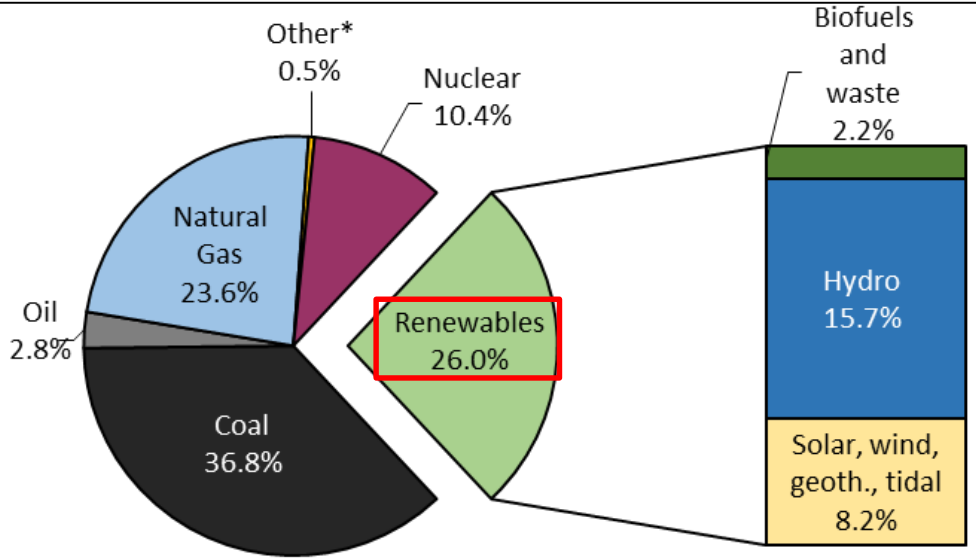
World electricity production in 2019



26,936 TWh

*** Other includes electricity from non-renewable wastes and other sources not included elsewhere such as fuel cells and chemical heat, etc.**

Sources: IEA, Renewables Information, 2021
IEA, World Energy Balances, 2021

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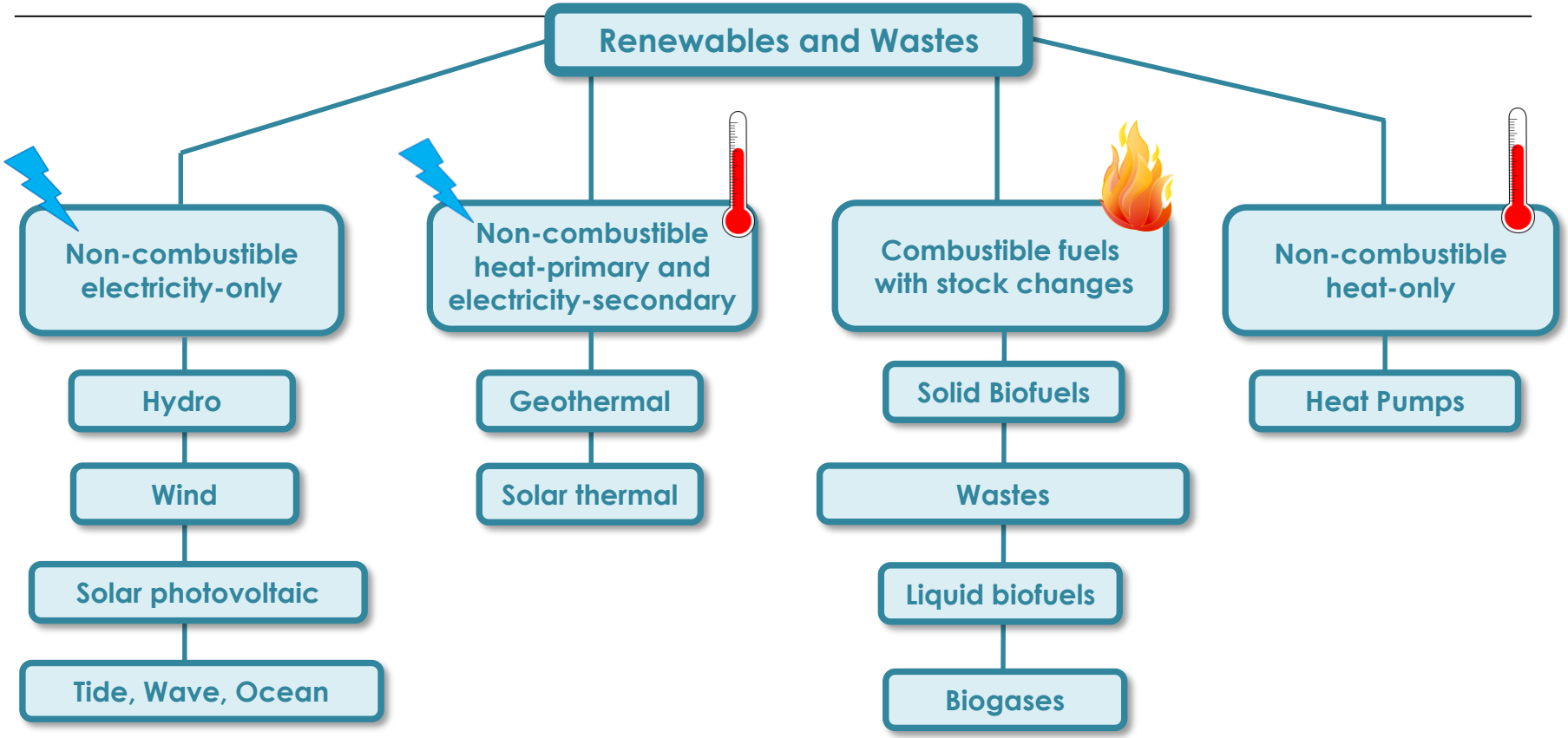
Classification



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Classification: Non-combustible renewable energy sources

Hydro

Tide, Wave, Ocean

Solar photovoltaic

Wind

Energy Capture → Energy Transformation → Electricity Production

Primary energy form = electricity

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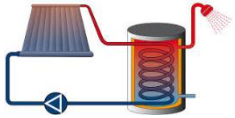
Classification: Other non-combustible renewable energy sources



Geothermal

Solar thermal

Energy Capture

Exports*

Imports*

Direct Use

Energy Transformation

Electricity Production

Heat Production

Primary energy form = Heat

* Very rare

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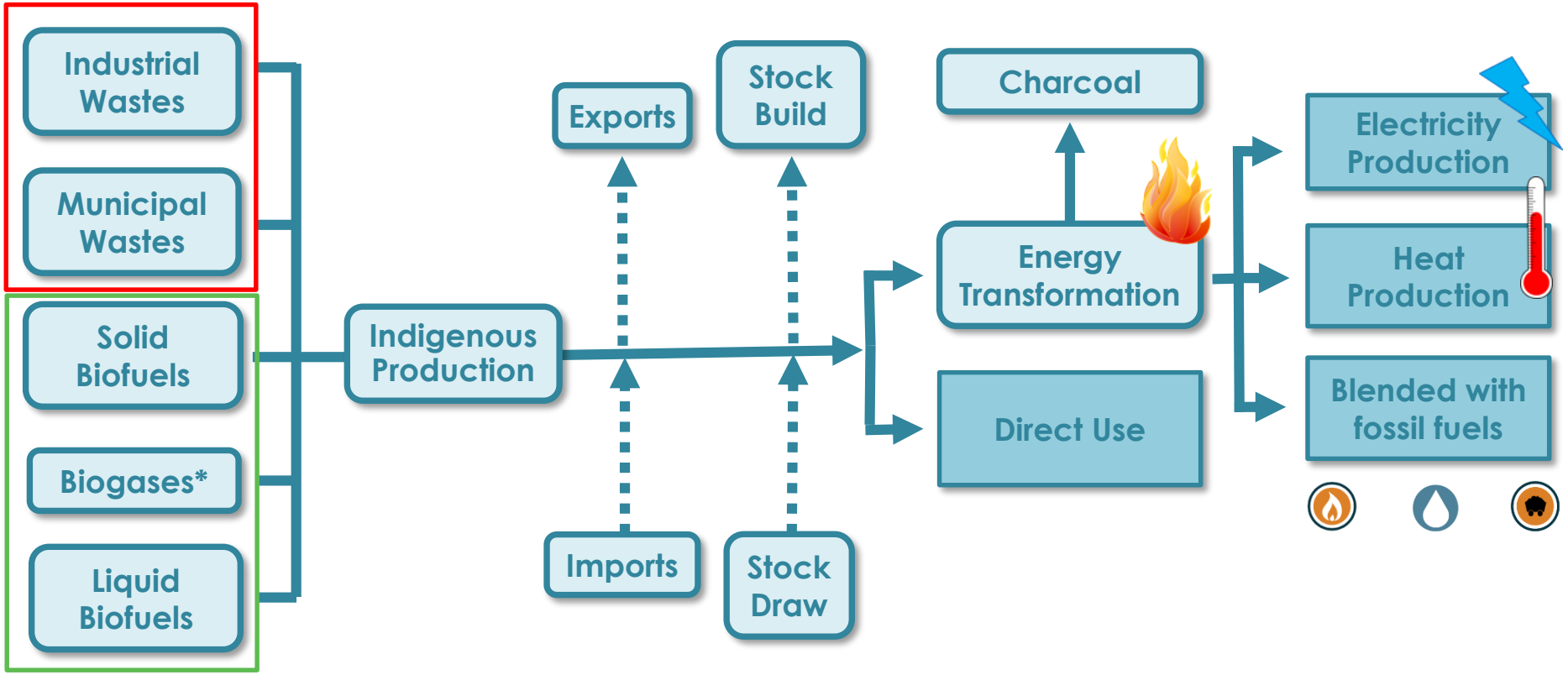
Classification: combustible renewable and waste fuels



* Stock changes and trade of biogases are very rare

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Solid Biofuels

Wood and woody materials
(firewood, wood chips, sawdust…)

Charcoal
(produced from wood products)

Bagasse
(by-product of sugar cane juice extraction)

Solid biofuels *covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation.*
We distinguish ***primary*** *and* ***secondary*** *solid biofuels. The latter have been manufactured through a transformation process.*

Rice husk

Black Liquor
(by-product of paper production)

Olive cake
(by-product of olive oil production)

Wood Pellets

Animal waste / material

Industrial waste (renewable)
(e.g. natural rubber component of waste tires – no relationship to other wastes in the questionnaire)

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Charcoal Production

Wood
(Solid Biofuels)

Input

Charcoal Transformation Plant

Output

Charcoal

IMPORTANT FACTS ABOUT CHARCOAL PRODUCTION

Efficiency = Output/Input (energy units)

Reference NCV of charcoal is 30,800 kJ/kg

Charcoal plant efficiencies usually range from 25% - 40%

Often, you need to calculate the input to the charcoal production plants.

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What is an example of how wood is used in energy statistics?

1. As material for making furniture
2. Burning for home heating
3. Wood residues burned in a landfill
4. None of these

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Statistics of solid biofuels and biogases

Not included in energy statistics

Landfill

Sugar Cane

Included in energy statistics

Landfill gas

Bagasse

Helpful links

- IEA Energy statistics manuals (IRES): https://www.iea.org/areas-of-work/data-and-statistics/manuals
- IRENA Data Collection Guidance: https://www.irena.org/Statistics/Capacity-Building/Data-Collection-Guidance
- IEA Questionnaires and Instructions (including Renewables and Wastes): https://www.iea.org/areas-of-work/data-and-statistics/questionnaires
- IEA Photovoltaic Power Systems Programme: http://www.iea-pvps.org/
- Solar Heating and Cooling Programme of the IEA: http://www.iea-shc.org/solar-heat-worldwide
- IEA Bioenergy Technology Collaboration Programme: https://www.ieabioenergy.com/
- World Energy Outlook SDG7: Data and Projections: https://www.iea.org/reports/sdg7-data-and-projections
- Food and Agriculture Organization of the United Nations – Forestry Production and Trade database (biomass data): http://www.fao.org/faostat/en/#data/FO

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Thank you!
Any questions?

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