

International Energy Agency

The Role of Storage beyond Electricity

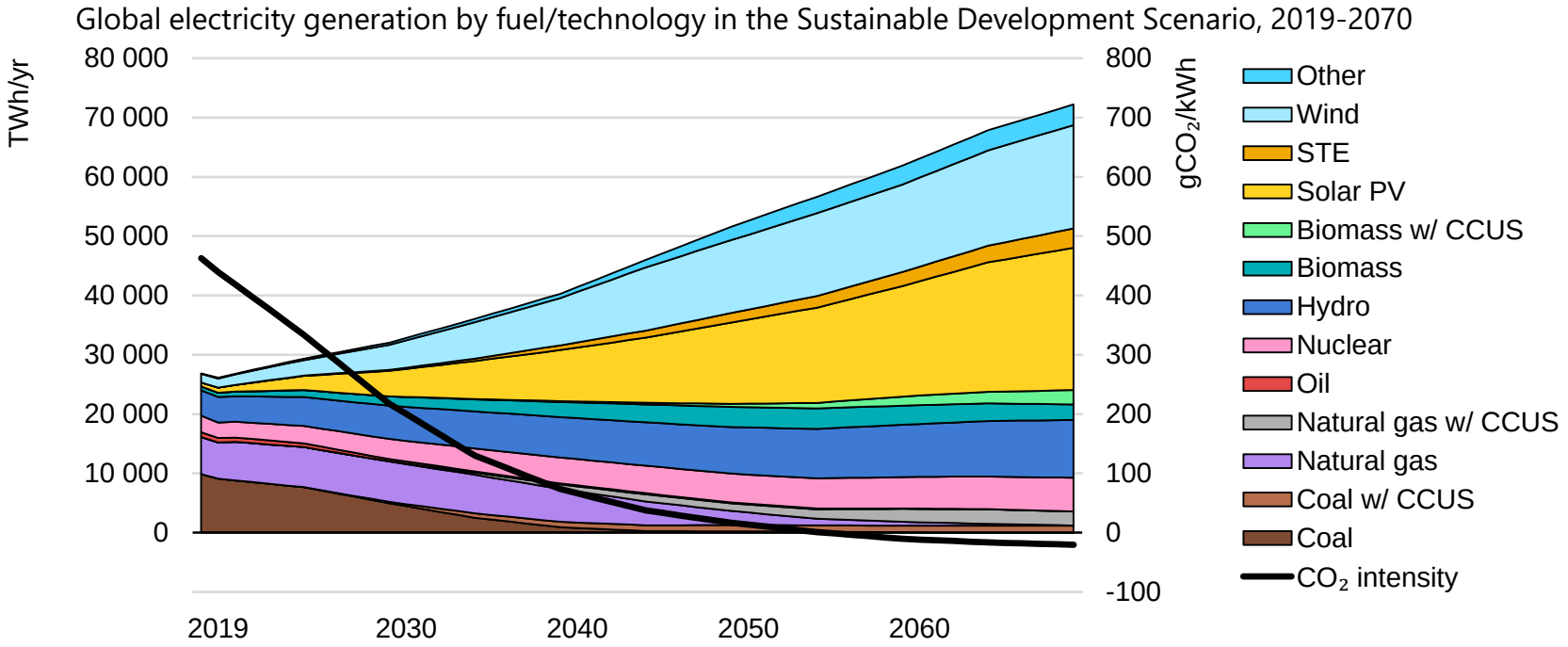
The Need for Integrated Energy Systems

Dr. Paolo Frankl, Head Renewable Energy Division

REWP Workshop, 29 September 2020

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Solar leads renewables to new heights in power systems

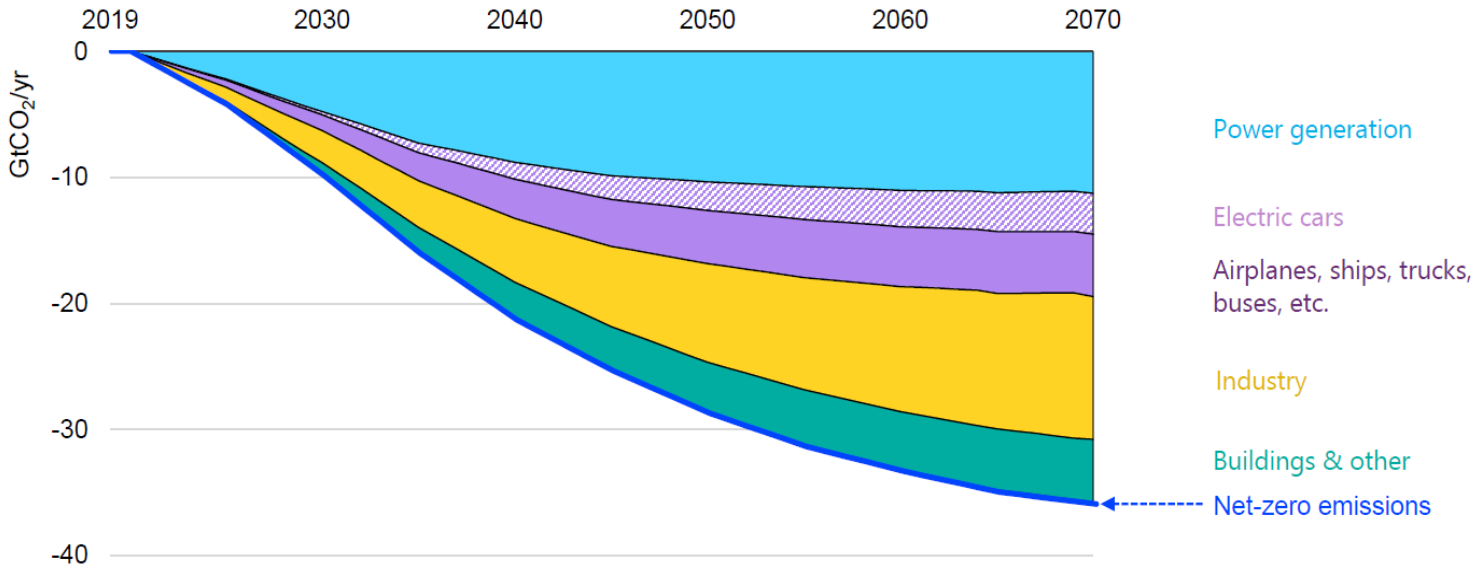


Solar becomes the cheapest electricity in most countries, leading the massive deployment of renewable electricity. RE share on total electricity generation surpasses 80% in 2050 and reaches 87% in 2070.

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Focusing on the power sector is not enough to reach climate goals

Global CO2 emission reductions in the Sustainable Development Scenario, relative to baseline trends

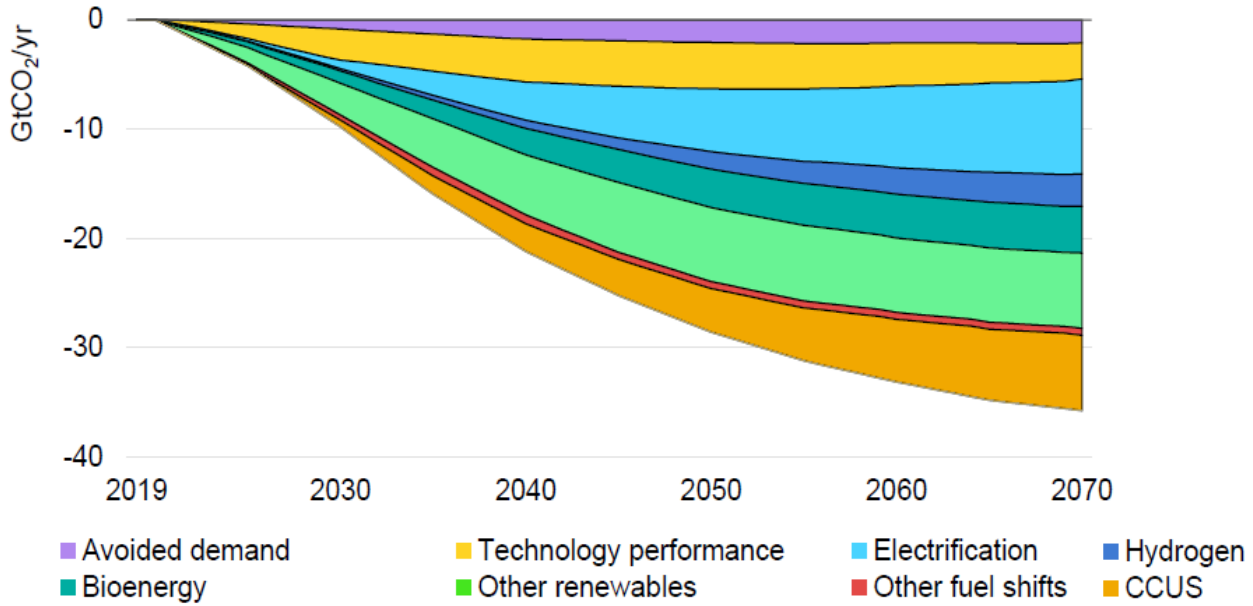


Clean energy technology progress in the power sector and with electric cars is encouraging, but alone not sufficient to reach climate goas. About half of all CO2 emissions today are from industry, transport & buildings

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A large portfolio of clean energy technologies is needed

Global annual energy sector CO2 emissions reductions by measure in the SDS relative to the Stated Policies Scenario

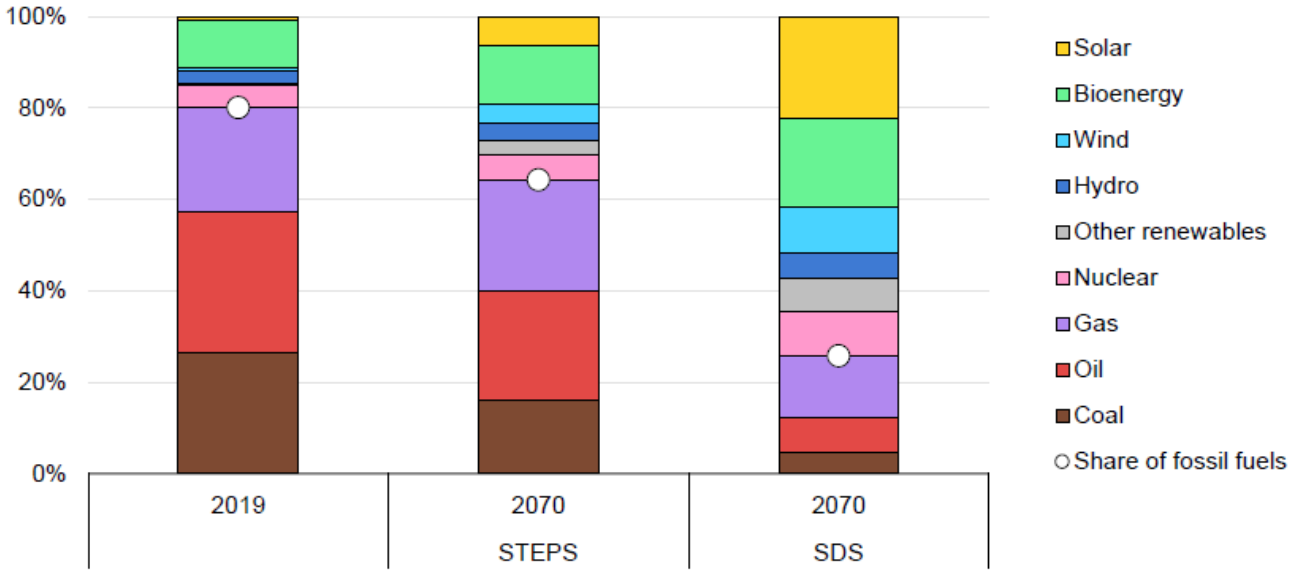


The use of modern bioenergy triples from today's levels. It is used to directly replace fossil fuels or to offset emissions indirectly through its combined use with CCUS, accounting for 1/5 of annual emission reductions

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Renewables Primary Energy more than quadruples by 2070

Global primary energy demand by fuel share and scenario, 2019 and 2070

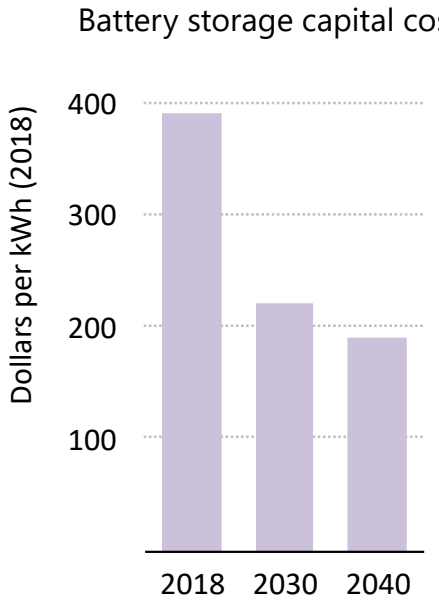


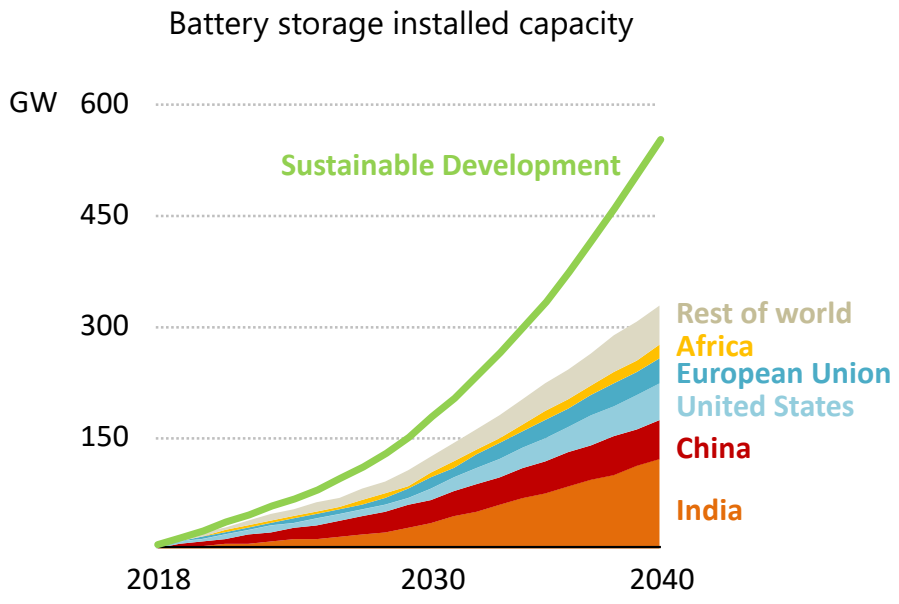
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With fossil fuel use falling rapidly, renewables rise from 15% in 2019 to more than 60% in 2070 in the Sustainable Development Scenario; Solar becomes the first primary energy source

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Utility-scale battery storage is projected to grow strongly

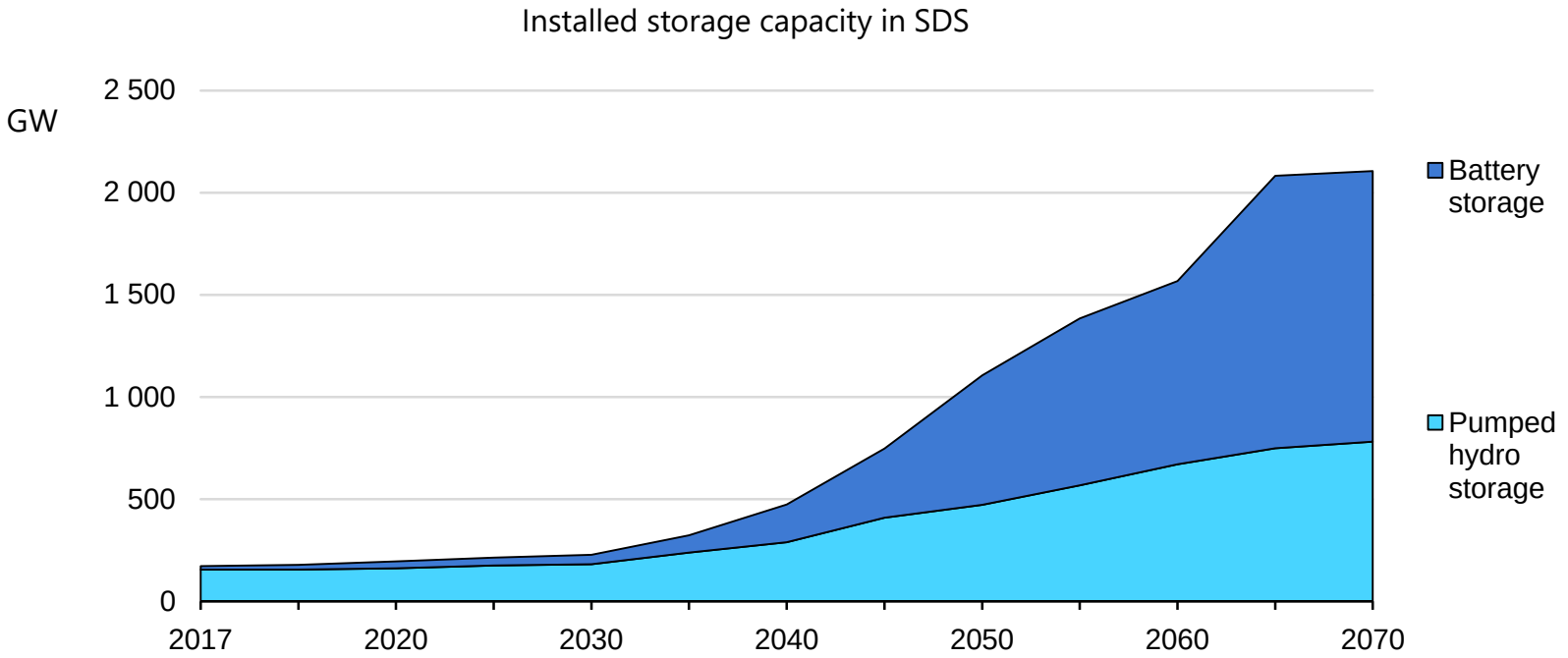




In the next two decades, batteries are projected to be the fastest growing technology in the power sector, thanks to reduced costs and policies supporting deployment

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Electricity storage to ramp up quickly after 2030



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Concluding remarks & questions for discussion

- Renewables primary energy more than quadruples by 2070 in the SDS, reaching almost two thirds of total.
- What other forms of storage are feasible / desirable in order to foster renewables deployment in all end-use sectors?
- How can they be remunerated? What business models are envisaged?
- Can storage services provide additional power system flexibility to enable faster deployment of variable renewables?
- Can they facilitate a better alignment of renewables and energy efficiency?

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