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Synergies between renewable energy and SMRs in the transition to Net Zero

UNECE Sustainable Energy Week

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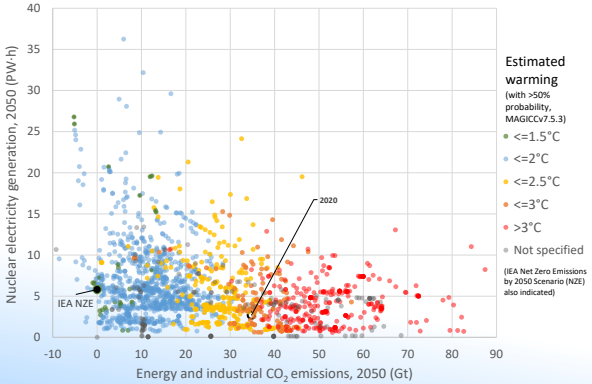
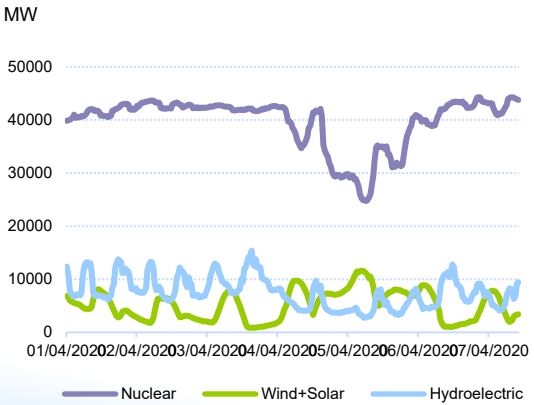
Achieving a sustainable future

Alongside other low-carbon energy sources, advanced nuclear technologies can help to

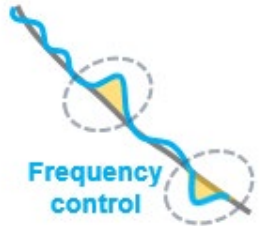
Drive climate and decarbonization goals



Ensure energy system diversity and security

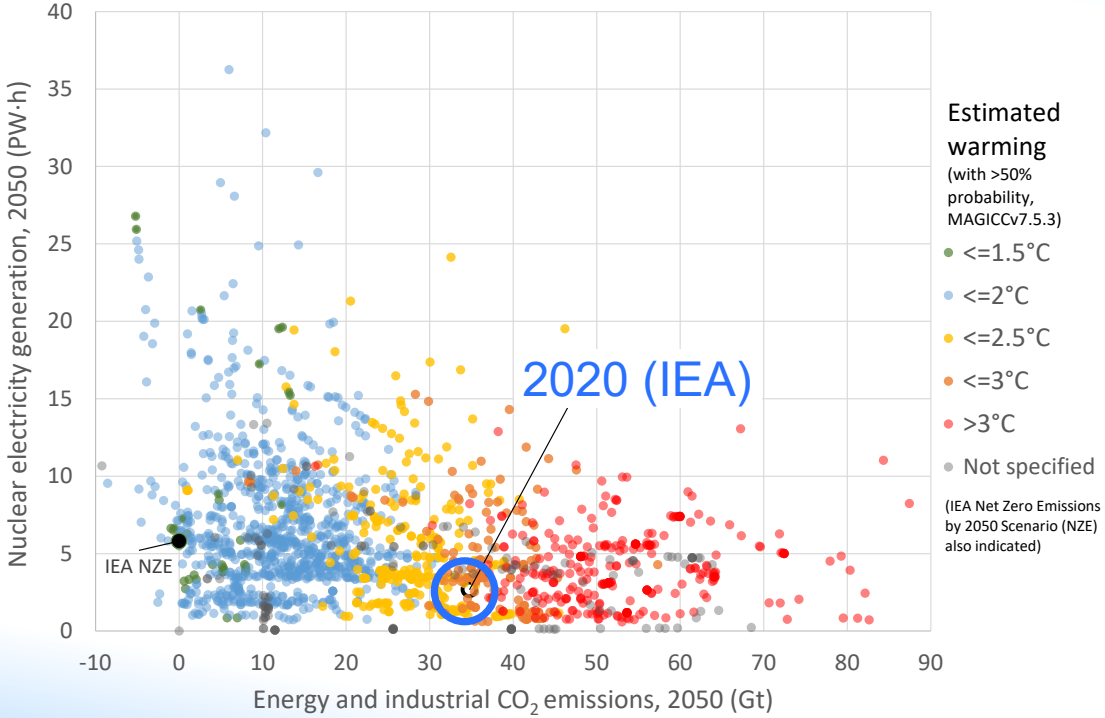


Enhance energy infrastructure resilience



Climate and decarbonization

Nuclear electricity generation and CO_2 emissions, 2050

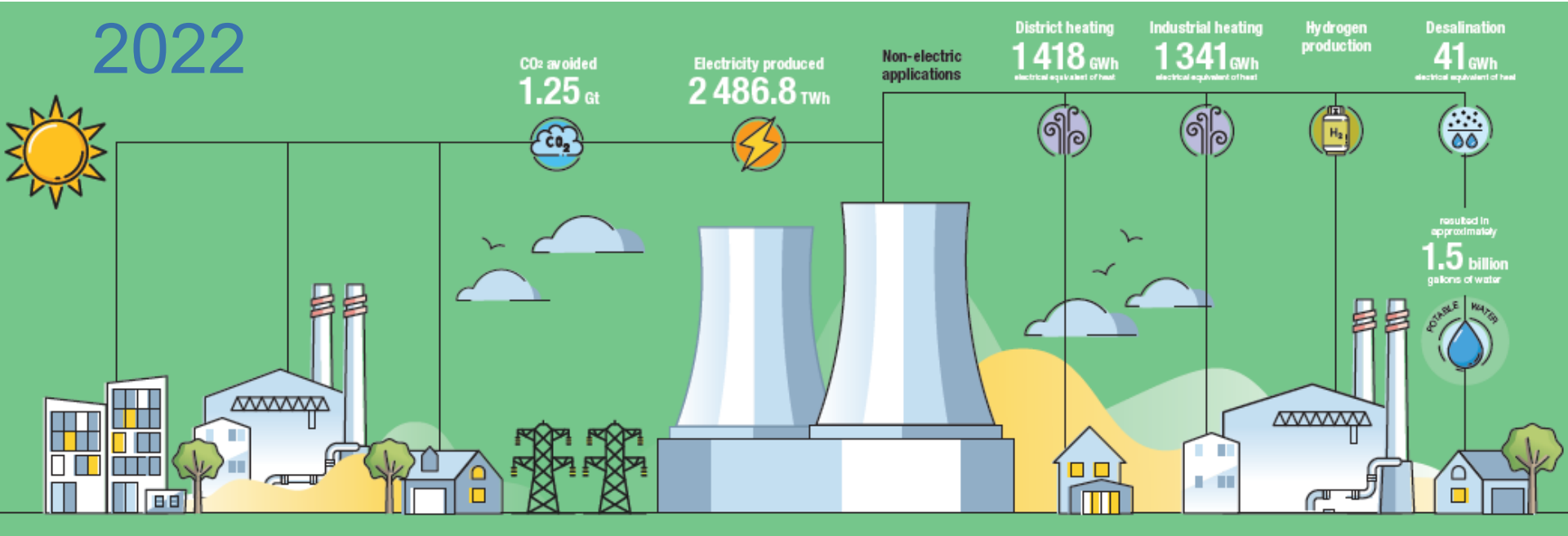


- Low emission energy source
- Enables greater integration of renewables and reduces the need for fossil fuel backup
- Lower investment ranges compared to traditional large reactors
- May be deployed as a replacement for fossil fuel-based power generation (coal-to-nuclear)

Decarbonization beyond power

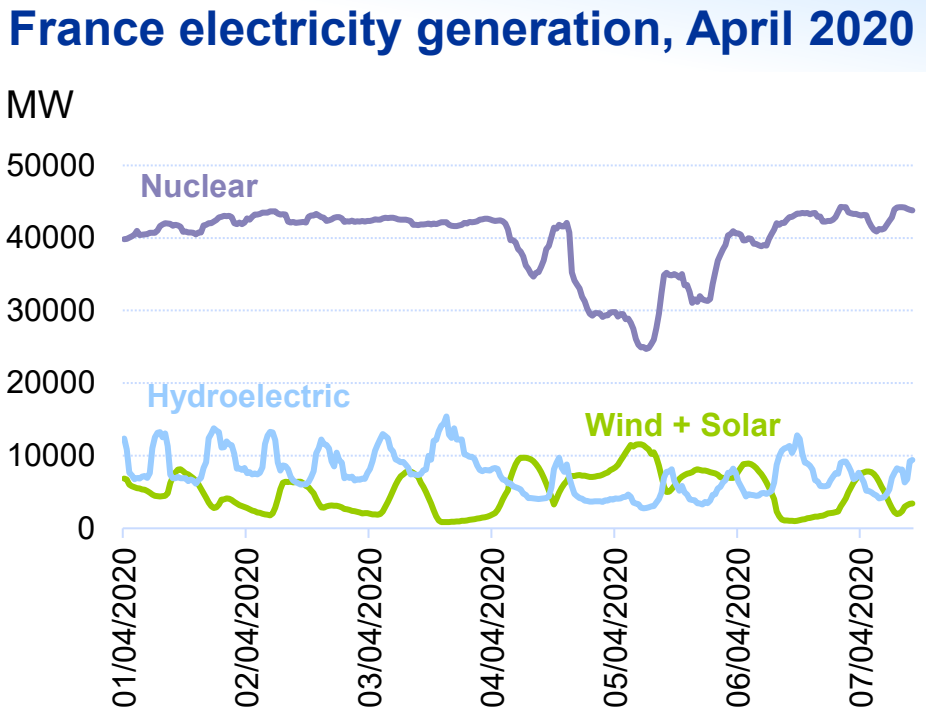
Low carbon energy systems will be complex and highly integrated

- SMRs can provide various scalable, low carbon products to sustainable energy systems



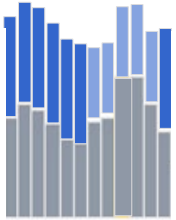
Energy diversity and security of supply

- Flexibility of nuclear (in general)
- SMRs offer modularity of deployment, helping to meet the challenges of meeting demand in an evolving energy landscape
- Distributed generation model reactors to be deployed near end-users / in isolated geographies
- Complementarity of dispatch with renewables – SMRs can enhance grid stability with location-specific deployment



Resilience of energy infrastructure

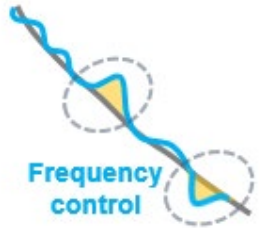
Seasons
Dispatchable power



Hours
Day-ahead markets

Minutes
Spinning reserves

Seconds
Balancing services



- Non-tangible energy infrastructure via grid support services: management of seasonal imbalances via the optimisation of planned outages, load modulation, balancing, inertia and voltage regulation
- Optimizing energy production and reducing infrastructure overbuilding

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thank you!

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Comparing emissions, water, land and materials