

Supplementary Material for

Is a solar future inevitable?

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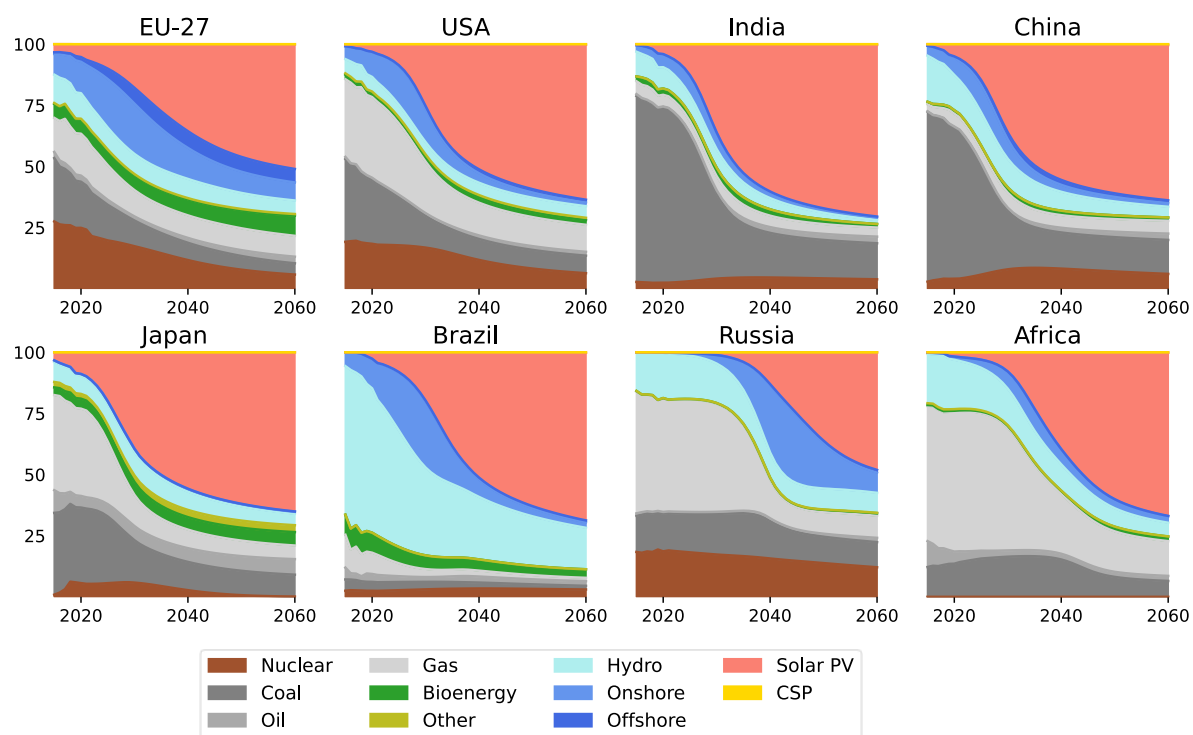
³ The World Bank, US

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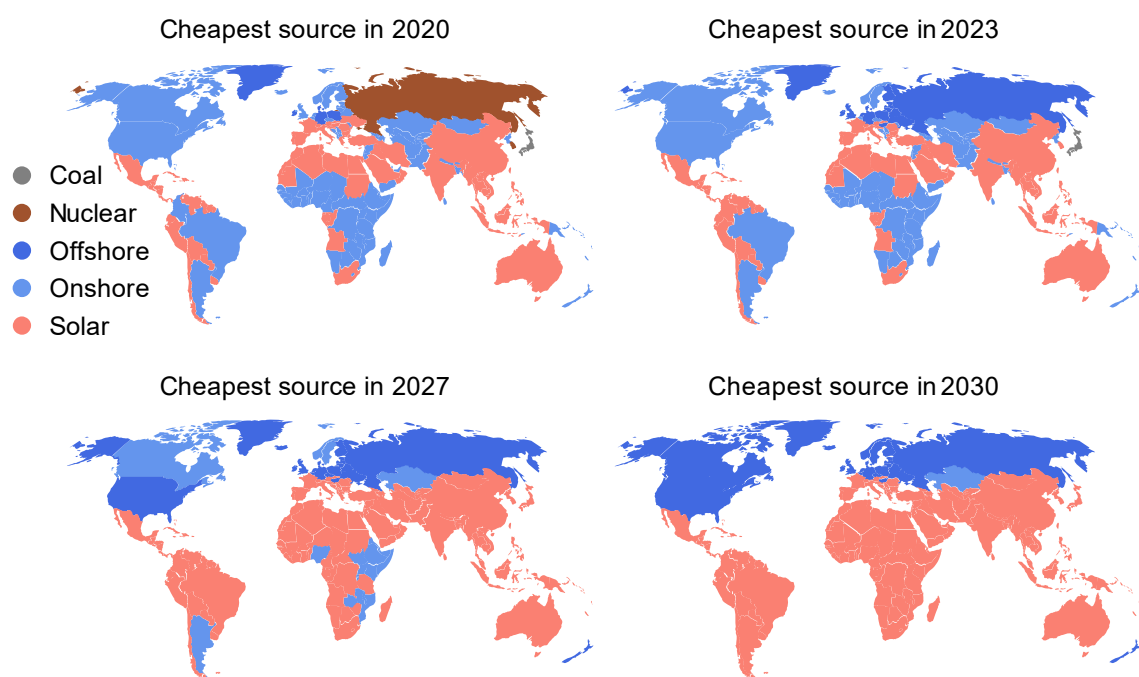
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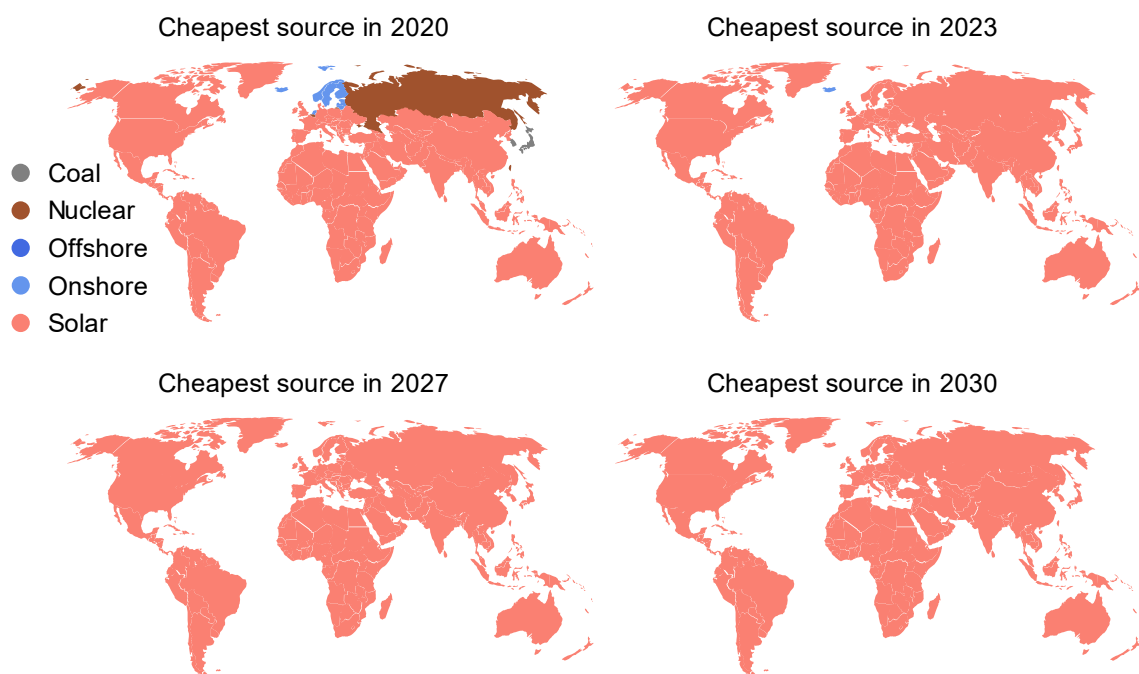
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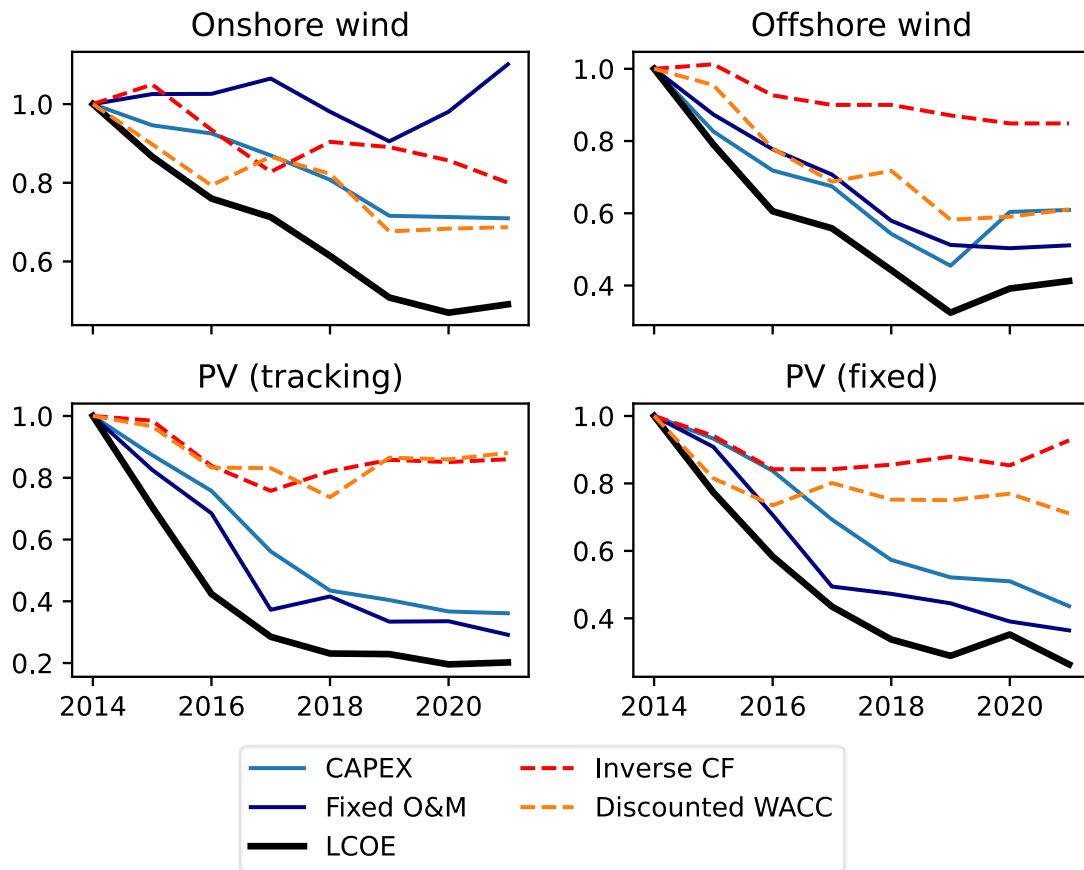
Supplementary Figure 1: Share of energy generation by region. The same as Figure 1 of the main manuscript, grouped by region.



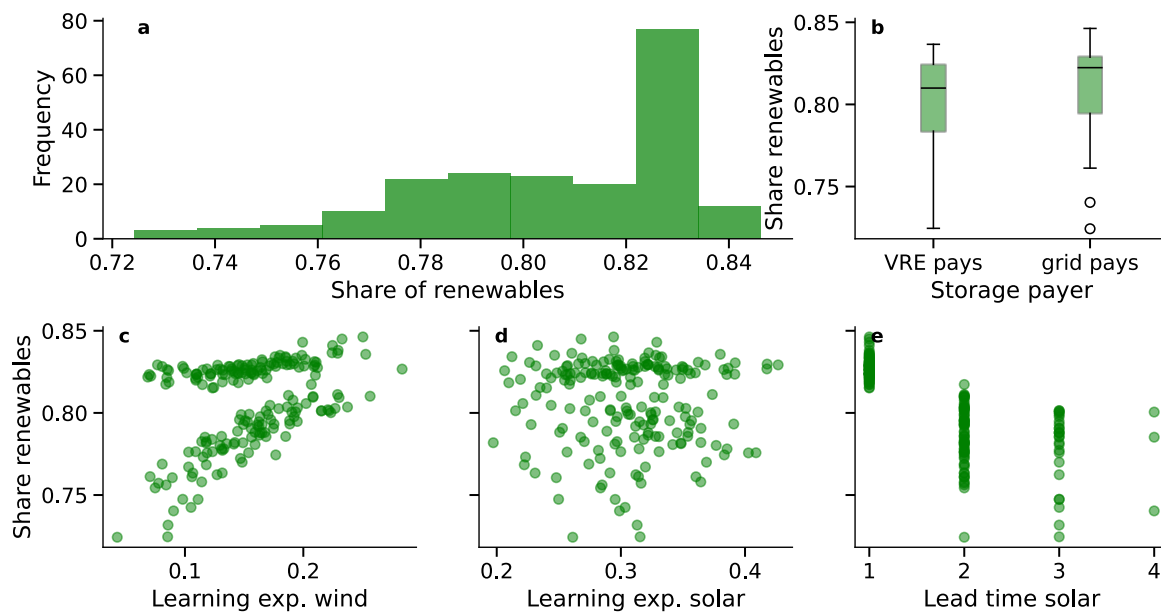
Supplementary Figure 2: the technology with the lowest system LCOE for the simulation runs with a very low share of solar power generation in 2050 (lowest 5% shares solar PV)



Supplementary Figure 3: the technology with the lowest system LCOE by region for the simulation runs with a very high share of solar power generation in 2050 (highest 5% shares solar PV)



Supplementary Figure 4 Contributions to cost reductions of a selection of renewable technologies between 2014 and 2021. In addition to capital expenditure (CAPEX) and fixed Operation and Maintenance (Fixed O&M), the inverse of the capacity factor (CF) is shown as well as the discounted Weighted Average Cost of Capital (WACC). Data derived from Bloomberg new Energy Finance.



*Supplementary Figure 5: Share of total renewables (wind + hydro + solar + geothermal) energy depending on key inputs, similar to Figure 5 of the main manuscript . **a**, The overall histogram of the 2050 shares of renewables. **b**, The shares of*

renewables depending on who pays for storage costs (variable renewable energy (VRE) sources, or the grid operator). Box plot elements: Centre line: median, box limit: upper and lower quartiles, whiskers: 1.5x interquartile range, points: outliers **c**, Shares of renewables depending on the learning rate of onshore and offshore wind energy, **d**, depending on the learning rate of solar PV and **e**, depending on the lead time for solar projects.