



SolarPower
Europe

Solar-powering the EU

**Reaching the Solar
TW-level by 2030**

March 2022

Key take-aways REPower EU Communication

EU Commission's REPower EU objectives

- **Short term** (end of 2022): Minus 2/3 of Russian fossil energy imports (100 bcm)
- **Long term** (2027): phase out fossil fuels imports from Russia

SolarPower Europe's feedback

Short term:

- Lack of ambition on rooftop PV development, which can drive additional renewable deployment by next winter
- Frontloading investments in 2022 in utility-scale can be realised by focusing on shovel-ready projects in the pipeline that can be accelerated

Long term:

- The EU lacks ambition for solar PV deployment as the revised ambition level (525 GW) is still below our pre-war Business-as-usual Scenario

Opportunities to reduce the dependency on fossil fuels and from Russia in particular:

- Improved conditions could push solar EU market to 100 GW+ in annual installations within 3 years
- An Accelerated High Scenario could push the total PV fleet to over 450 GW by end of 2025 (corresponding to 50 bcm saved per year) and reach 1 TW solar by 2030 (corresponding to 117 bcm saved per year)

Deploying innovative PV solutions will support EU energy independence

Building heating



Solar + heat pumps – fast installation, can be coupled with renovation works

Power



Solar PV plants + storage or hybrid solar installation: baseload power generation at lower costs

Industrial uses



Solar PV PPAs + fast-tracked electrification of industrial processes; Solar hydrogen available by 2025 with the right signals

Electric flexibility



Demand-side response thanks to digitalization & home battery systems; Solar & storage projects

Short term: by 2022, the EU must be more ambitious on rooftop PV deployment and frontload shovel-ready large-scale projects

Developing new utility-scale solar PV in 9 months will be challenging, due to supply chain constraints and permitting constraints. Land identification, project engineering, procurement takes at least one year, if not more.

However, the EU can focus on accelerating shovel-ready projects, which are scheduled for operation post 2022, and through earlier repowering of projects. SolarPower Europe has launched a survey to the solar industry in that perspective.

Rooftop PV can be accelerated quickly and significantly mobilising all the rooftop surfaces available (residential, businesses, carports, ...). Our Accelerated High Scenario foresees an extra 6.7 GW of rooftop PV by the end of 2022 compared to pre-war BAU Scenario, provided the right measures are in place and taking the opportunity of renovation programmes.

This will require clear political signals: mandatory deployment of PV on new and renovated rooftop, investment support (20% of CAPEX) in target regions (CEE).

	EC REPower EU Scenario	SPE BAU Scenario (pre-war)	SPE High Scenario (pre-war)	SPE Accelerated High Scenario (increased support for rooftop PV)
Total 2022	57.5 GW	29.9 GW	35.7 GW	39 GW
Rooftop	15.0 GW (=15 TWh)	16.6 GW	20.0 GW	23.3 GW
Utility-scale	42.5 GW _{DC} (=34 GW _{AC})	13.3 GW	15.7 GW	15.7 GW

Different scenarios for the year 2022. The Business-As-Usual (BAU) Scenario is based on SolarPower Europe EMO Medium Scenario, High Scenario is based on SolarPower Europe EMO High scenario. The Accelerated High Scenario corresponds to the High Scenario with support to install an additional 3 GW of rooftop solar PV. SolarPower Europe capacity numbers are always expressed in DC, unless otherwise indicated.

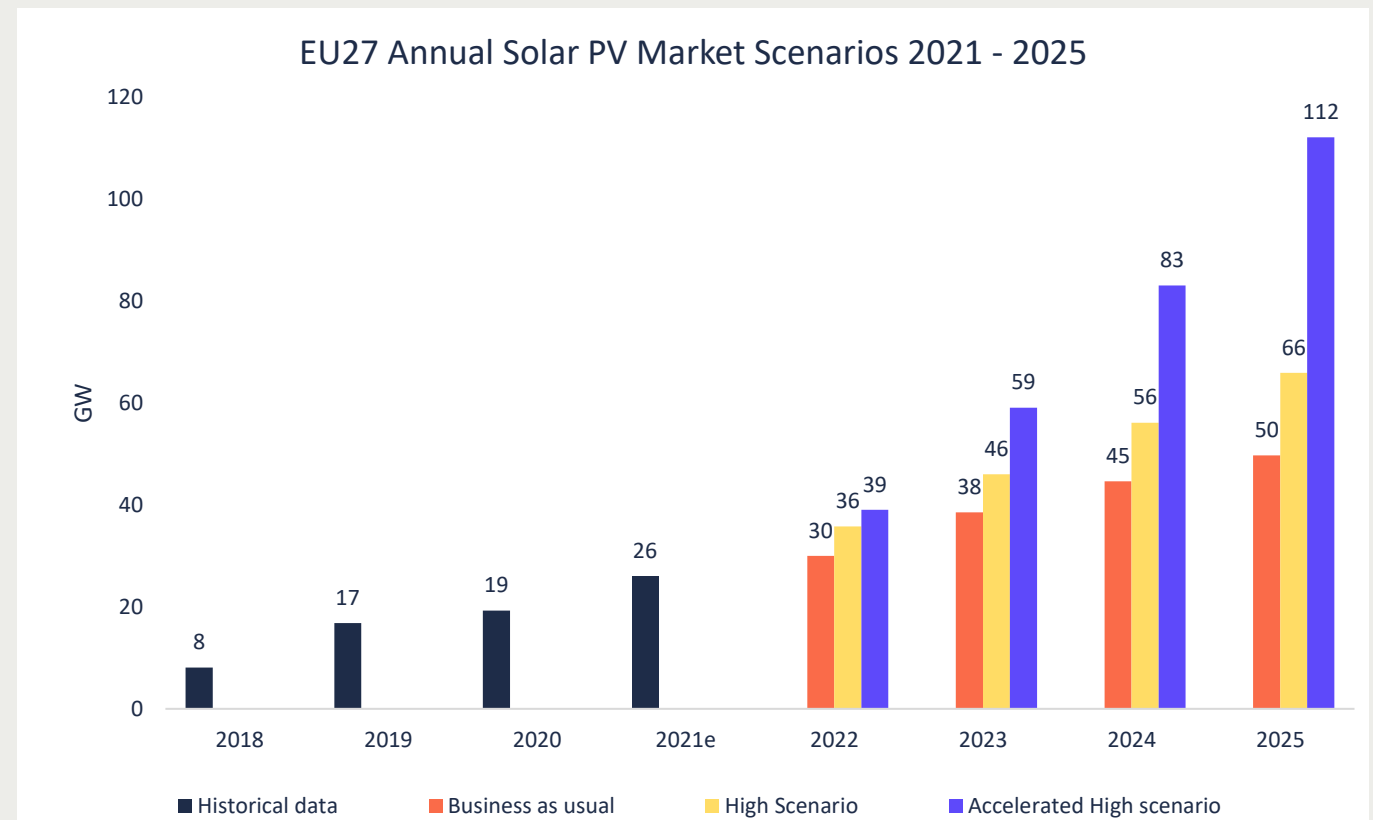
Mid term: improved conditions could push EU market to above 100 GW annual installations within 3 years

When taking into consideration the geopolitical component on top of climate change – and implementing push and pull measures immediately, a 100 GW+ market size in 2025 is possible, according to our Accelerated High Scenario.

As global demand for PV is higher than supply – and modules largely allocated for this year, time-wise it is probably too short to achieve a strong increase in market size above SolarPower Europe's current High Scenario of 36 GW in 2022*. Additional rooftop systems could drive the market up to 39 GW.

With much new silicon capacity announced to come online in China by end of year, the EU market is expected to be able to speed up installations if push and pull measures are implemented immediately.

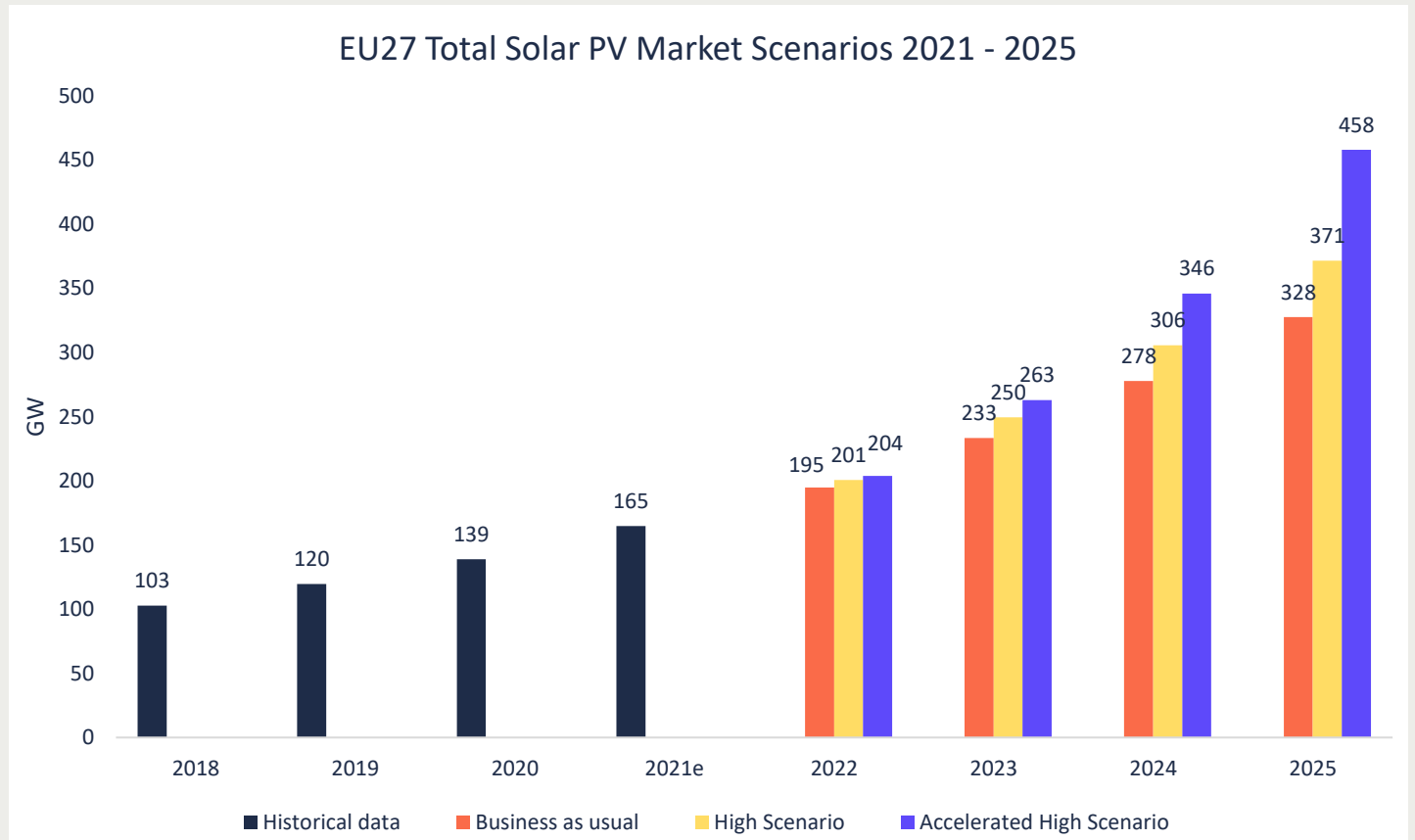
Such measures need to fix permitting issues, put into effect new support schemes and legal requirements, such as mandatory solar on all new buildings in EU, financing for local manufacturing. If implemented in 2022, this will result in much stronger deployment as of 2024 and grow annual market to 100 GW+ level by 2025.



Mid term: an Accelerated High Scenario could push the total fleet to over 450 GW by end of 2025, 40% higher than BAU

The Accelerated High Scenario estimates the EU-27 solar power generation fleet to grow to 458 GW by end of 2025, 39% higher than the 328 GW in the Business-as-usual Scenario of our pre-war Dec. 2021 published EU Market Outlook, and 293 GW more than today.

A total 458 GW of solar could produce over 500 TWh in 2026. This is equal to about 50 bcm imported per year.



Mid term: REPower EU must give visibility on the required solar volumes in the coming years to investors

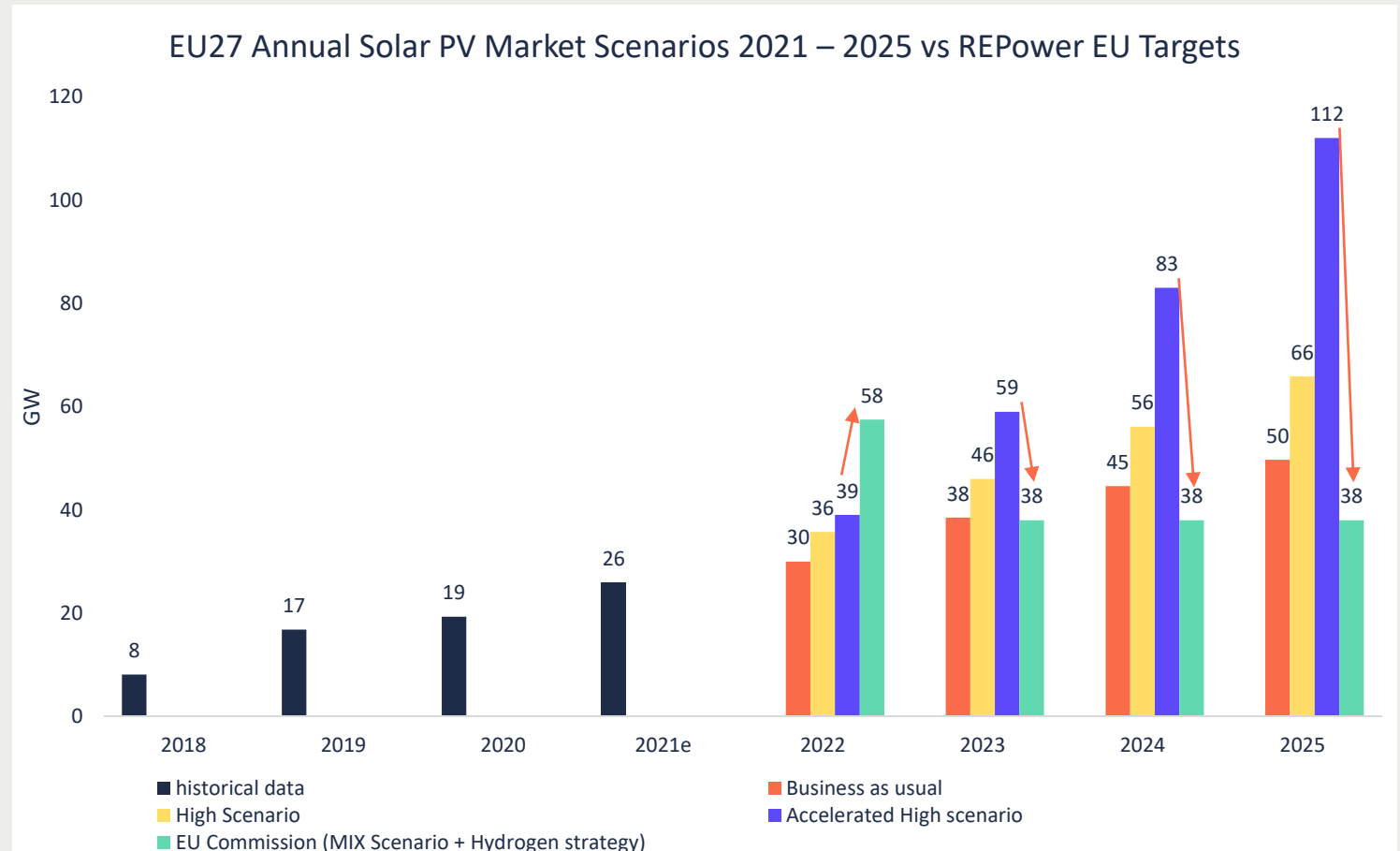
REPower EU short-term solar boost means mid-term bust

Frontloading future investments in 2022 would mean doubling the BAU pre-war scenario, and about 1.5x higher than Accelerated High Scenario.

It is very unlikely to achieve this level in such a short term under today's market conditions – high prices, shortage of installers, permitting issues, etc.

As 2030 targets are not increased, however, that would create boom-and-bust conditions, creating severe issues for the industry.

REPower EU Scenario's annual solar capacity additions until 2030 are significantly below the pre-war BAU Scenario, except for 2022, due to the brief frontloading spike.



Long term: the 2030 REPower EU solar PV target is still well below BAU Scenario and critically falls short of ambition

The 2030 solar ambition of the EU remains unchanged. The major increase is driven by increased renewable hydrogen production, but not by additional solar PV capacities on the electricity grid.

REPower EU Scenario's annual average solar capacity additions until 2030 are significantly below SolarPower Europe's pre-war BAU Scenario.

This lack of ambition fails granting the necessary visibility to investors to prepare for investments into new projects, but also to permit-granting authorities and grid operators.

Figures must be translated from AC to DC. SolarPower Europe uses DC capacity numbers.

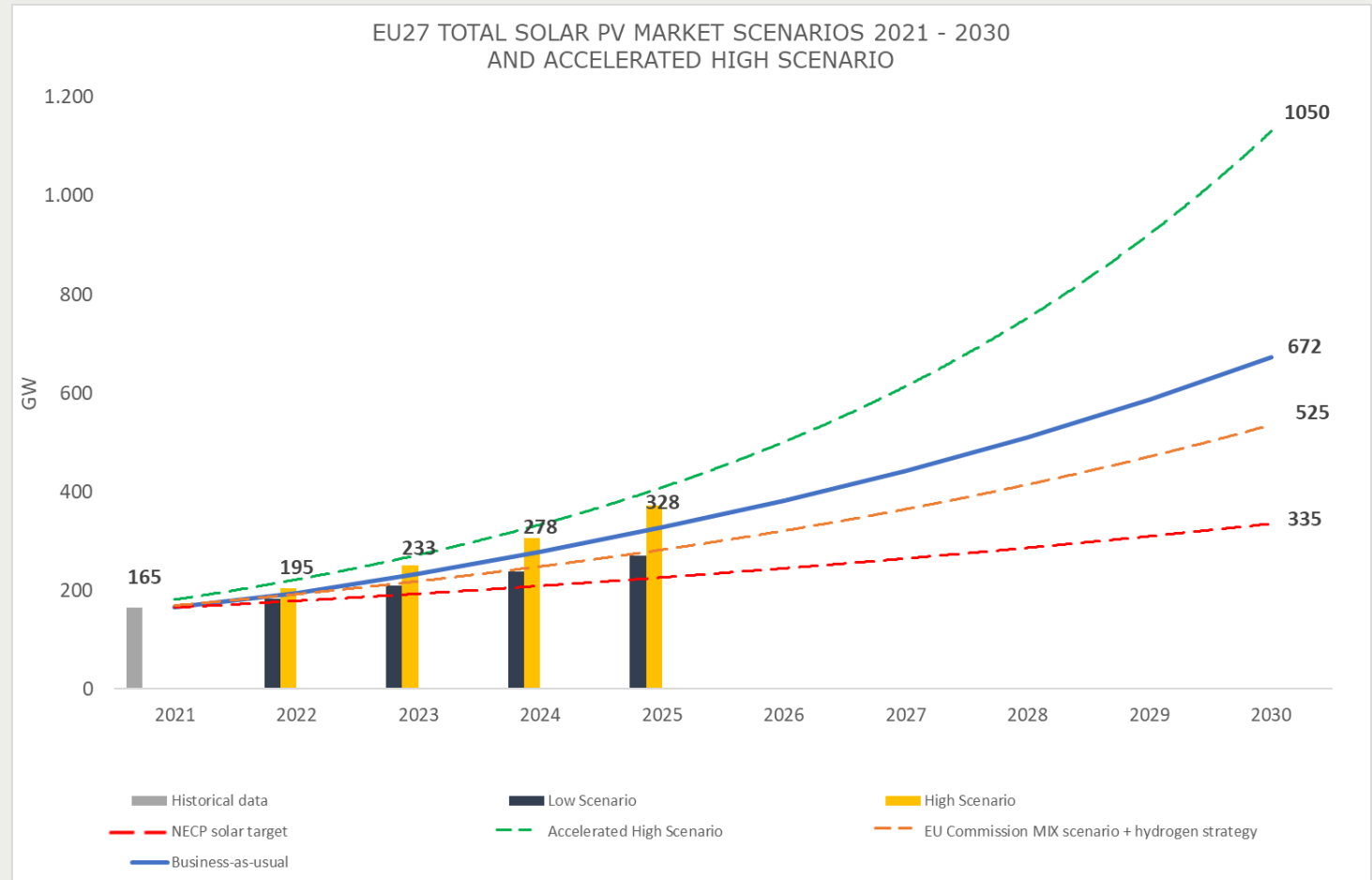
	EC Fit for 55 scenario (pre-war)	EC REPower EU scenario (solar PV MIX Scenario + H2 strategy)	SPE BAU scenario (pre-war)
Total installed capacity end 2021 (DC numbers)	165 GW _{DC}		
2030 objective (AC numbers)	383 GW _{AC}	420 GW _{AC}	
2030 objective (DC numbers)	479 GW _{DC}	525 GW _{DC}	672 GW _{DC}
Difference to SPE BAU scenario	-29%	-22%	
Average annual additions 2022 to 2030	34.9 GW _{DC}	40 GW _{DC}	56 GW _{DC}

Long term: the EU needs to increase significantly the solar ambition for 2030 and aim at 1 TW+ of solar by 2030 – at least 45 to 48% RES

While solar demand in the EU by 2030 is expected to double to 672 GW in a BAU Scenario, both the member states and the European Commission anticipate much lower levels. The EC MIX Scenario + H2 strategy reaches 525 GW; Member states NECPs in total reach 335 GW.

An Accelerated High Scenario would enable the EU to reach the TW level (1,050 GW) by 2030:

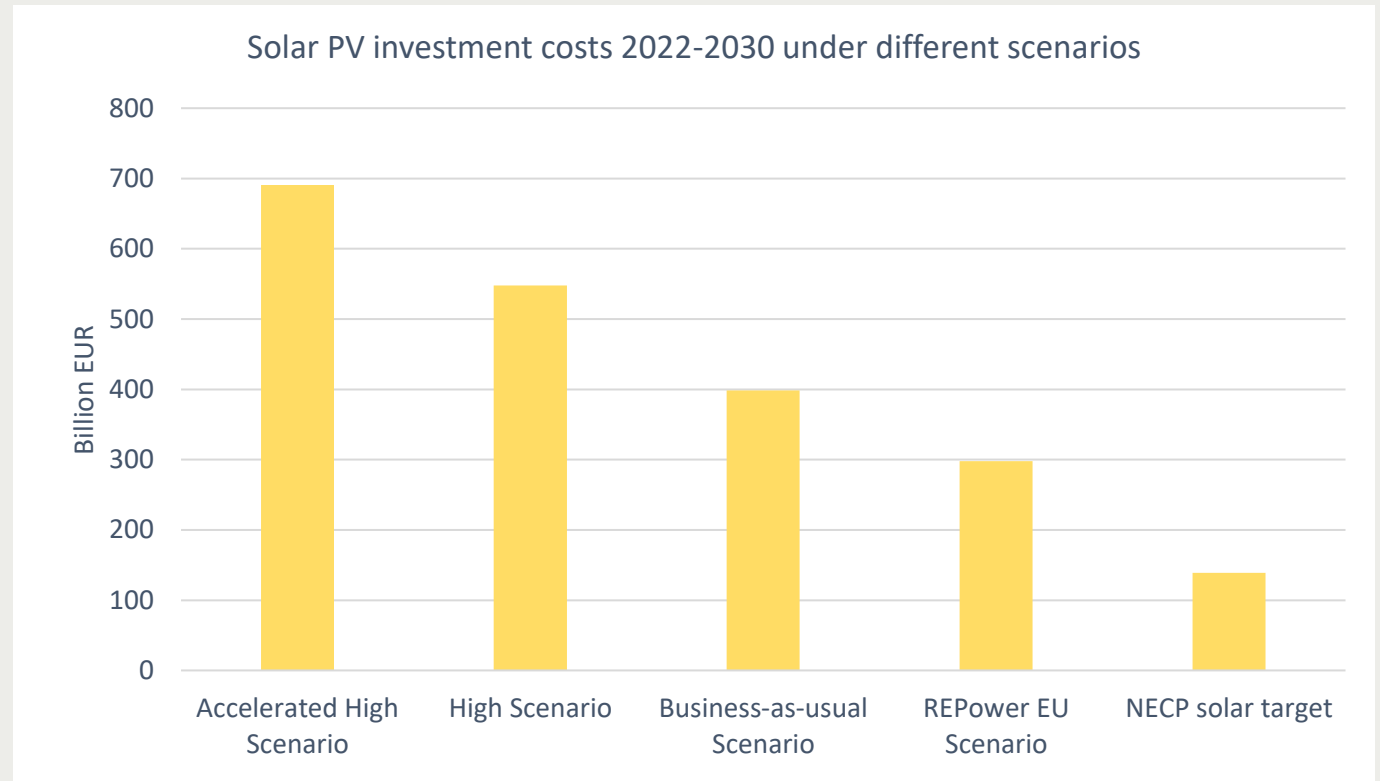
- over 3 times the NECPs
- 2 times the EC assumptions
- over 1.5 times the BAU scenario



Long term: an Accelerated High Scenario implies higher investment costs than BAU scenario but many more jobs

Raising the European Union's total solar power capacity by 2030 to the TW-level, as modelled in our Accelerated High Scenario, would result in 691 billion EUR of investment costs. That is 73% higher than in the BAU Scenario, which would be anyway insufficient to comply with the 1.5° C Paris target.

Higher solar ambitions also means enhanced job creation. No other power technology is as job intense as solar, which creates 2 to 6 times more jobs than any of its peers during the construction phase. In our pre-war High Scenario, solar jobs in 2030 triple from today's level to more than 1.1 million FTEs across the EU. In the Accelerated High Scenario, job creation would be even stronger than that.



How to get to TW level: short-term solar actions to decrease Russia dependency

The key to faster development of solar power is **permitting** for any type of application and **clear investment signals** (market and regulated prices, ETS prices). They need to be flanked by several measures to enable massive uptick of solar installations in the short run:

1. Multiply Rooftop PV development

- Mandate solar PV, storage & heat pumps on any new buildings while banning new gas and oil boilers
- Leverage investments through combined renovation, digitalisation and rooftop PV programmes with emphasis on emerging EU solar markets

2. Facilitate utility-scale development

- Mandate all member states to identify suitable areas for solar PV development aiming at fast-tracked development of solar PV by end of 2022 to enable 2025 and 2030 targets
- Freeze of grid connection fees for the years 2022-2024

3. Ease State Aid approval procedures

- Develop temporary simplified and / or simple notification procedures, similar to the State Aid Temporary Framework, to allow member states to develop flexibly public support mechanisms.

4. Boost smart solar and hybrid solar projects

- Dedicate CEF-E funding and RRF funding for a hybrid auction programme in 2022
- Launch a Task Force in the EU for hybrid projects (solar, wind & storage) access to flexibility markets in the EU Commission

5. Accelerate the deployment of an EU manufacturing capacity

- € 1 bn de-risking funding using InvestEU and Innovation Fund (similar to the Chips Act) to re-establish full silicon solar manufacturing chain in EU for sustainable energy security

How to get to TW level: long-term solar actions to decrease Russia dependency

The Solar Strategy will be the opportunity to adapt the energy system to the massive deployment of solar PV capacities. It should set a clear objective of **1 TW of solar PV by 2030** to guide solar PV developers, investors, but also to permit-granting authorities and grid operators.

A win-win-win land and PV initiative, including an enabling framework for dual uses of land and a strategic mapping of land

An EU-level roadmap on the decentralisation of the energy system, addressing distribution grid modernisation, prosumer and distributed flexibility development

An European Skills Initiative for Solar PV / DERs, with structured cooperation with job platform & training bodies and dedicated funding

A European Solar Rooftops Initiative, leveraging the Innovation Fund / Social Climate Fund

A strategy for BIPV, building on the New European Bauhaus Initiative, including an harmonisation of certification processes of products

A strategic foresight of the raw materials and components needs in the PV industry, assessing vulnerabilities and identifying remedy actions

A Solar PV Act, with a Solar Fund to reinvest in solar PV manufacturing and a sustainability and circular economy framework

ANNEX

Rapid PV installation growth is possible – Example China

Solar market demand depends on price, regulatory environment - and primarily on political ambition. As an example, the world's largest PV market, China installed a new global annual record of 54 GW in 2021. Due to solar's competitiveness PV demand is expected to grow to 81-92 GW in 2022, according to BloombergNEF, while the Chinese PV Industry Association expects up to 90 GW this year.

China dominates the entire value chain with production capacities from silicon to modules, balance of system, process materials and production equipment, enabling very flexible adaptation to demand.

For the European Union, that means:

1. if you remove barriers, mostly permitting, rapid growth is possible
2. establish own manufacturing value chain to become truly energy independent

