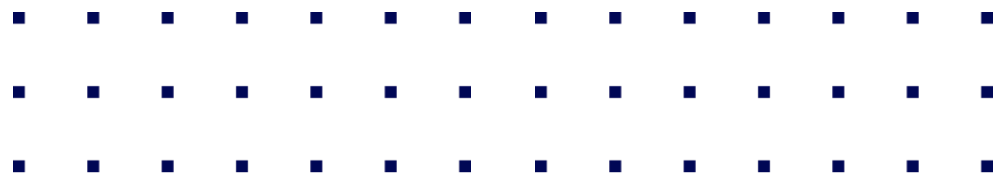





BECQUEREL INSTITUTE
Strategy Consulting in Solar PV

PV Market & Storage

Gaëtan Masson





“First they
ignore you,
then they
laugh at
you, then
they fight
you, then
you WIN.”

Mahatma Gandhi

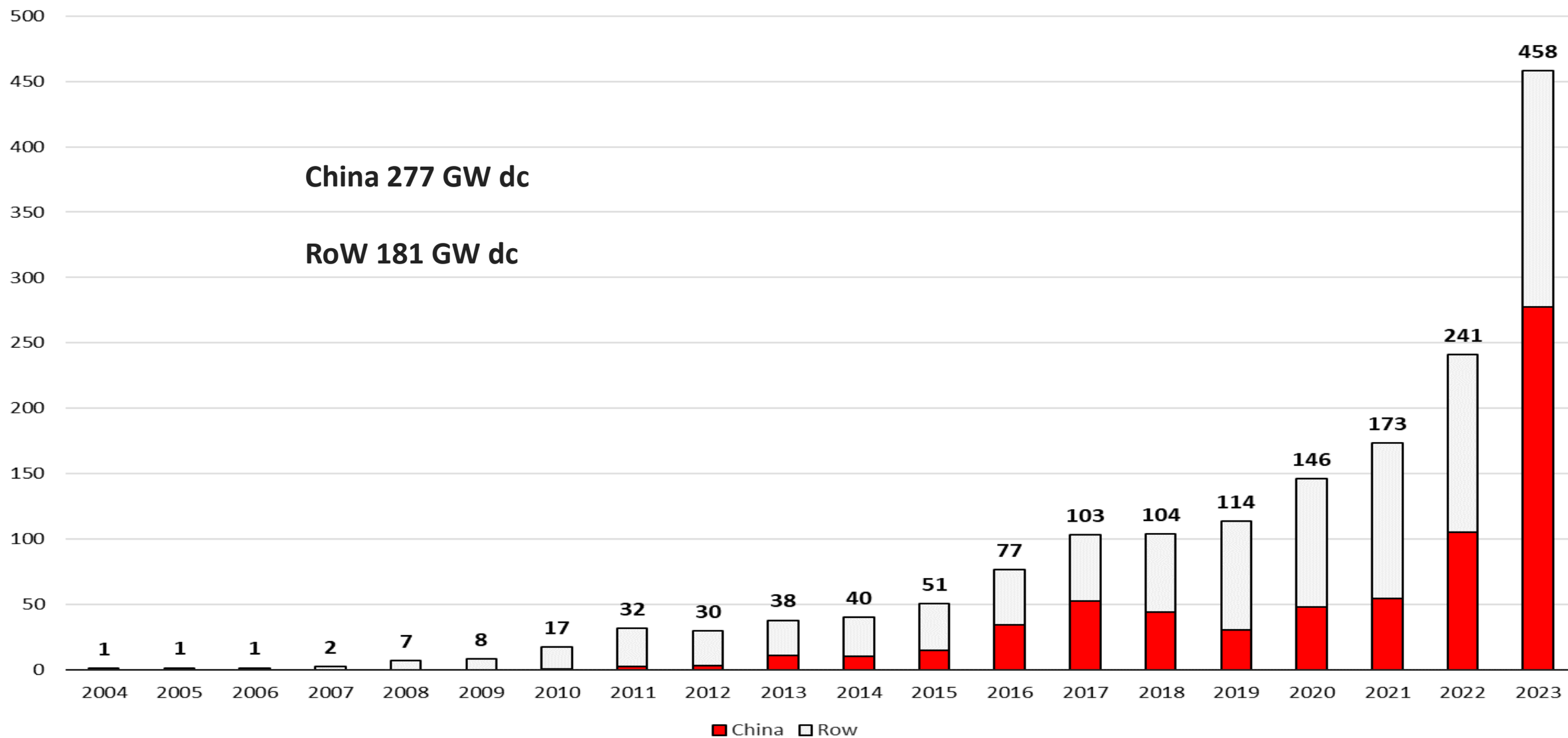
***That's exactly
what is
happening to
solar energy for
20 years...***

Solar and Storage

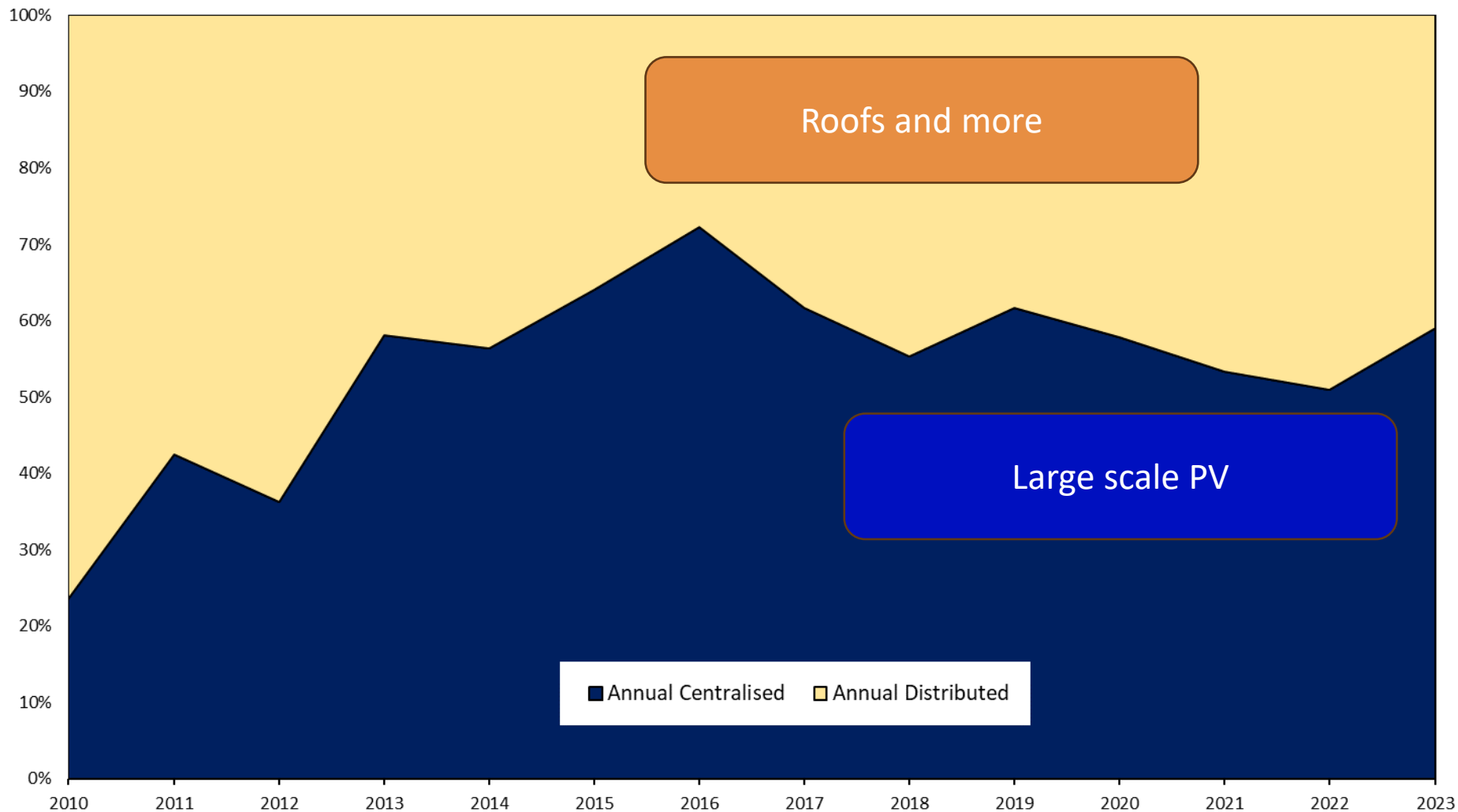
- Solar is poised to become the cheapest source of electricity everywhere in the coming years, cheaper than coal, wind or gas.
 - Solar needs to be completed by other sources of decarbonized electricity
 - ... and storage
 - Conventional storage (pumped hydro...) is expensive
 - Battery storage has improved dramatically in recent years
-
- Business Models
 - Energy displacement towards evening/night
 - Providing ancillary services to the grid
 - Stationnary storage
 - Cloud storage
 - EV storage



Global PV markets



Global PV market: Segments evolution

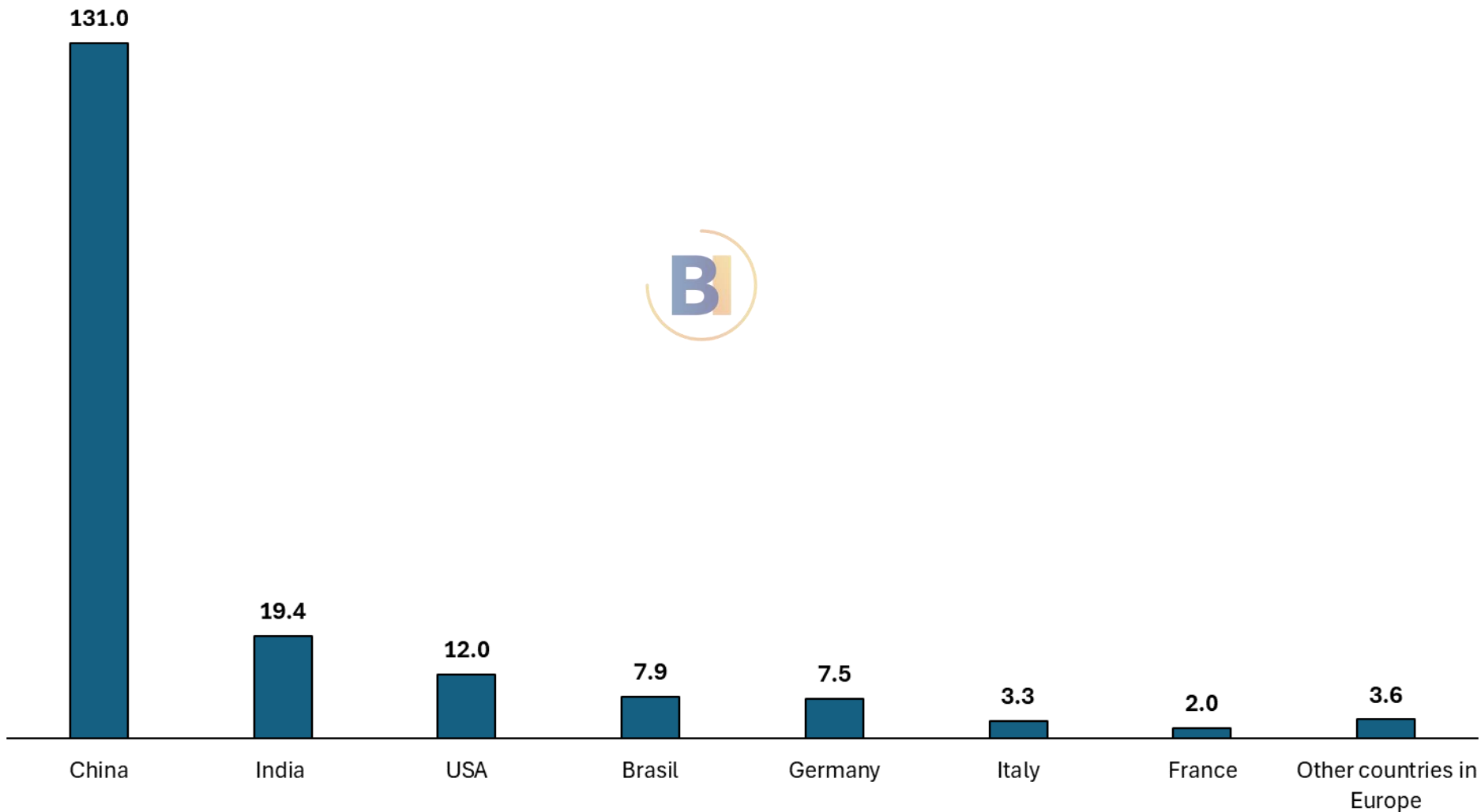


In 2023:
Centralised: 59%
Distributed: 41%

But PV is also...

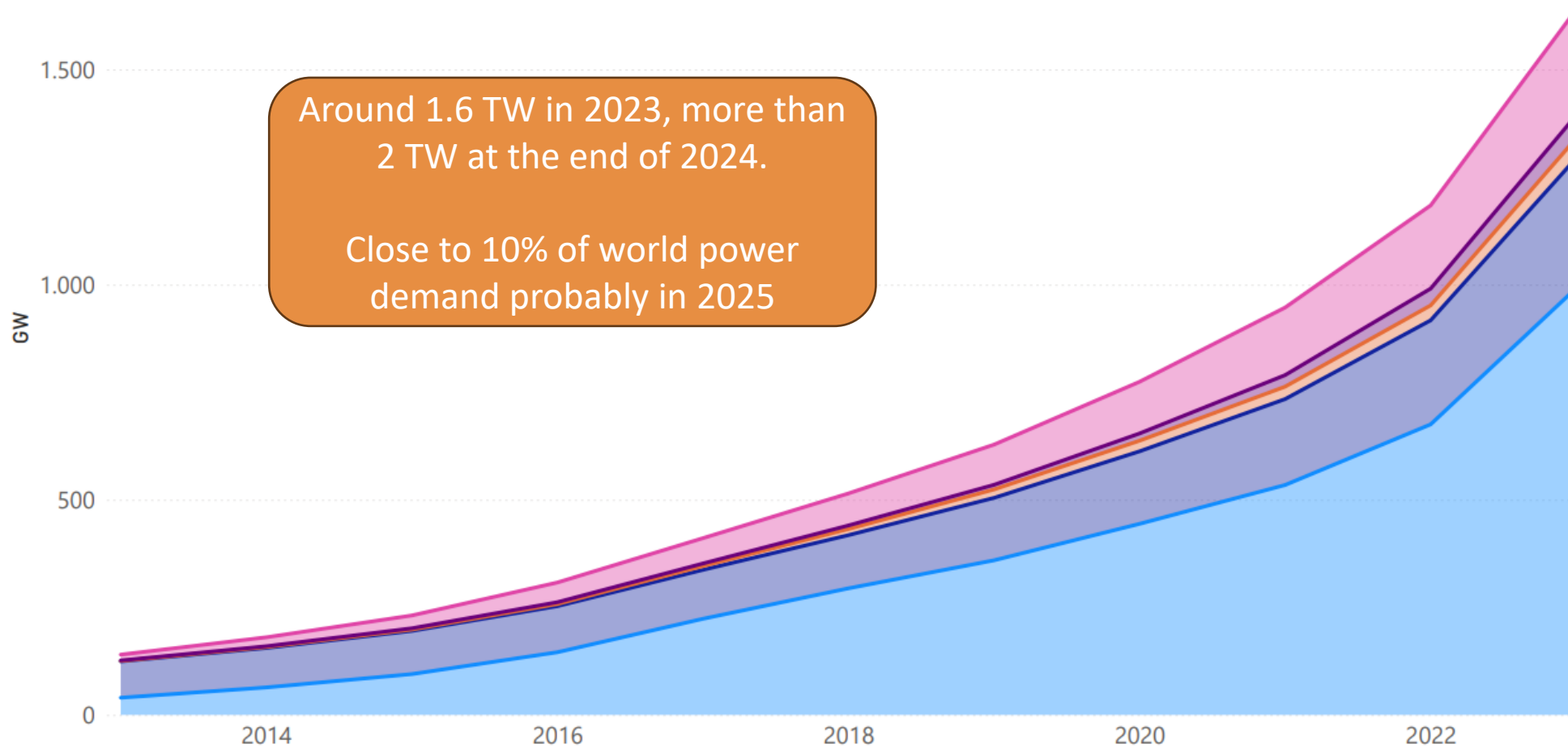
- Floating
- Agriculture
- Cars and trucks
- Roads and railways
- Integrated in buildings
- Everywhere 😊

Preliminary results for H1 2024: Approximately 187 GW has already been confirmed in the major markets.



Evolution of regional PV installations, cumulative market

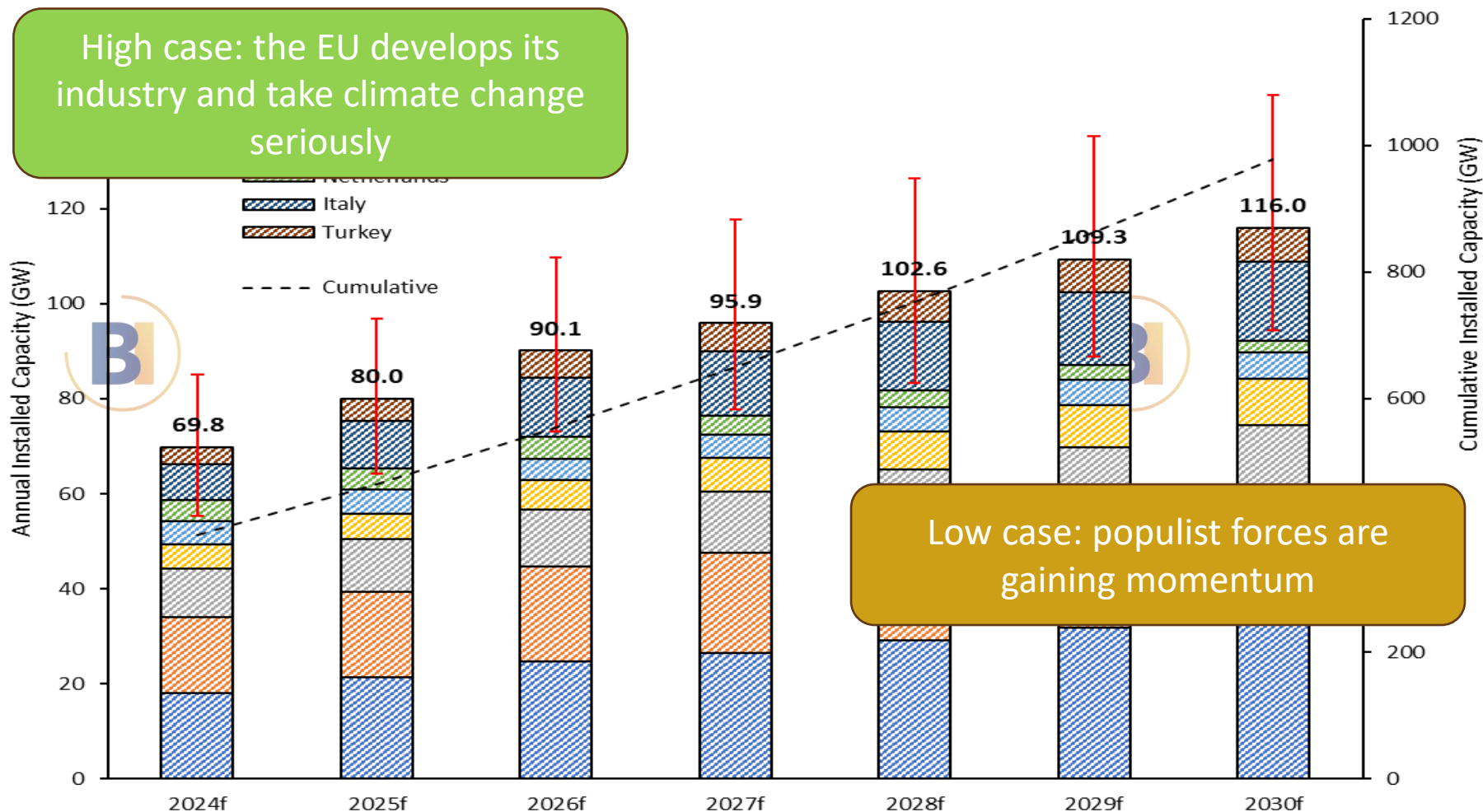
Region ● Asia Pacific ● Europe ● Middle East and Africa ● RoW ● The Americas



European market forecast per major market and segment



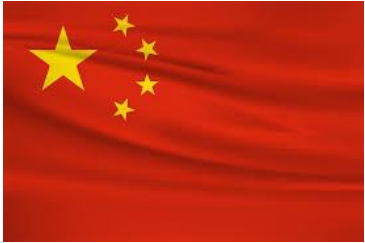
Forecast annual European market (2024-2030) in GW, per major market



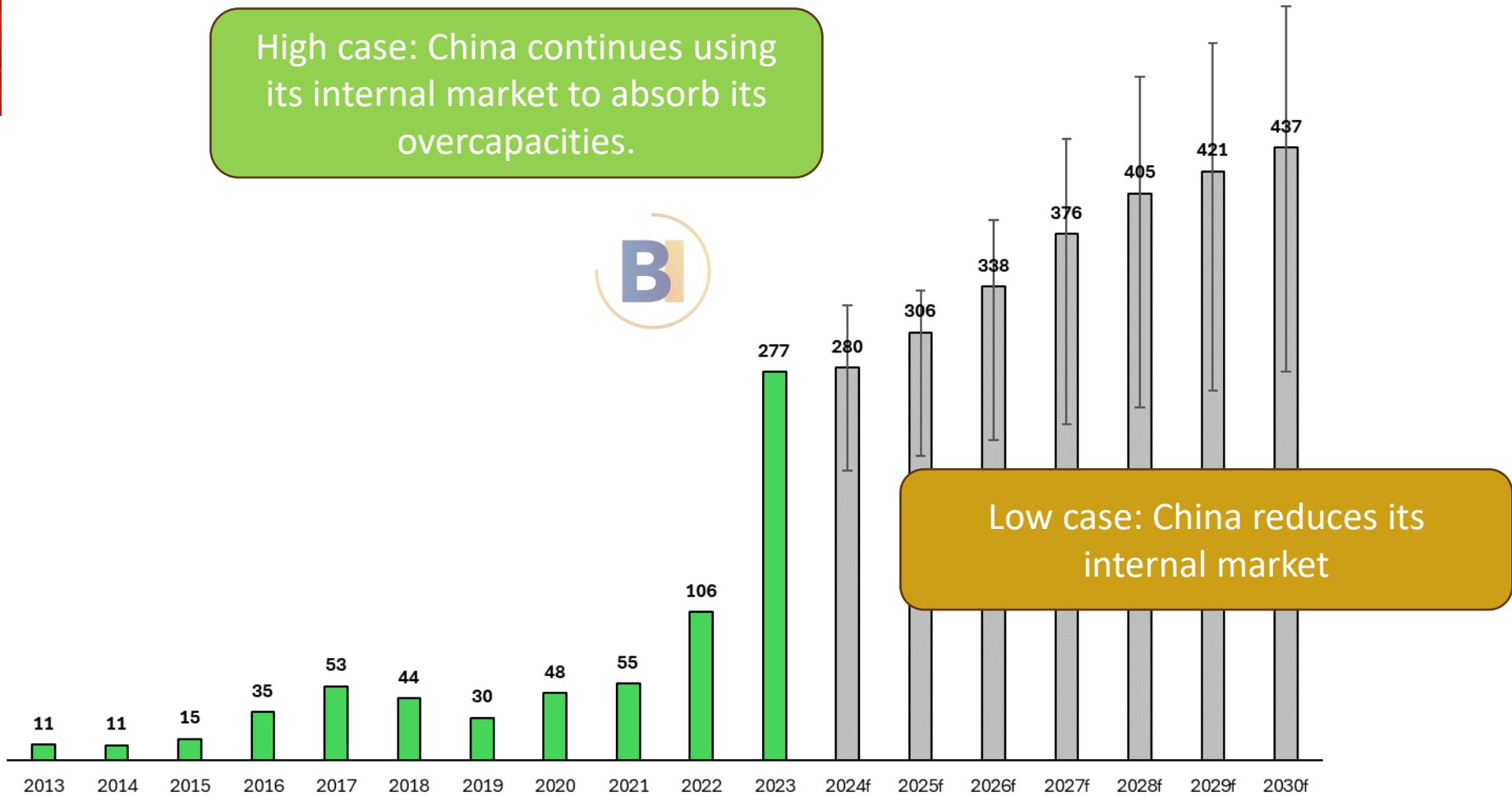
Sources: Becquerel Institute

2 | Focus on regional/country markets: China, Europe and India

Since 2013, China has been the leading annual market and is expected to continue dominating. It should maintain its annual pace until 2030, with an installed capacity ranging from around 275 to 425 GW per year.



High case: China continues using its internal market to absorb its overcapacities.

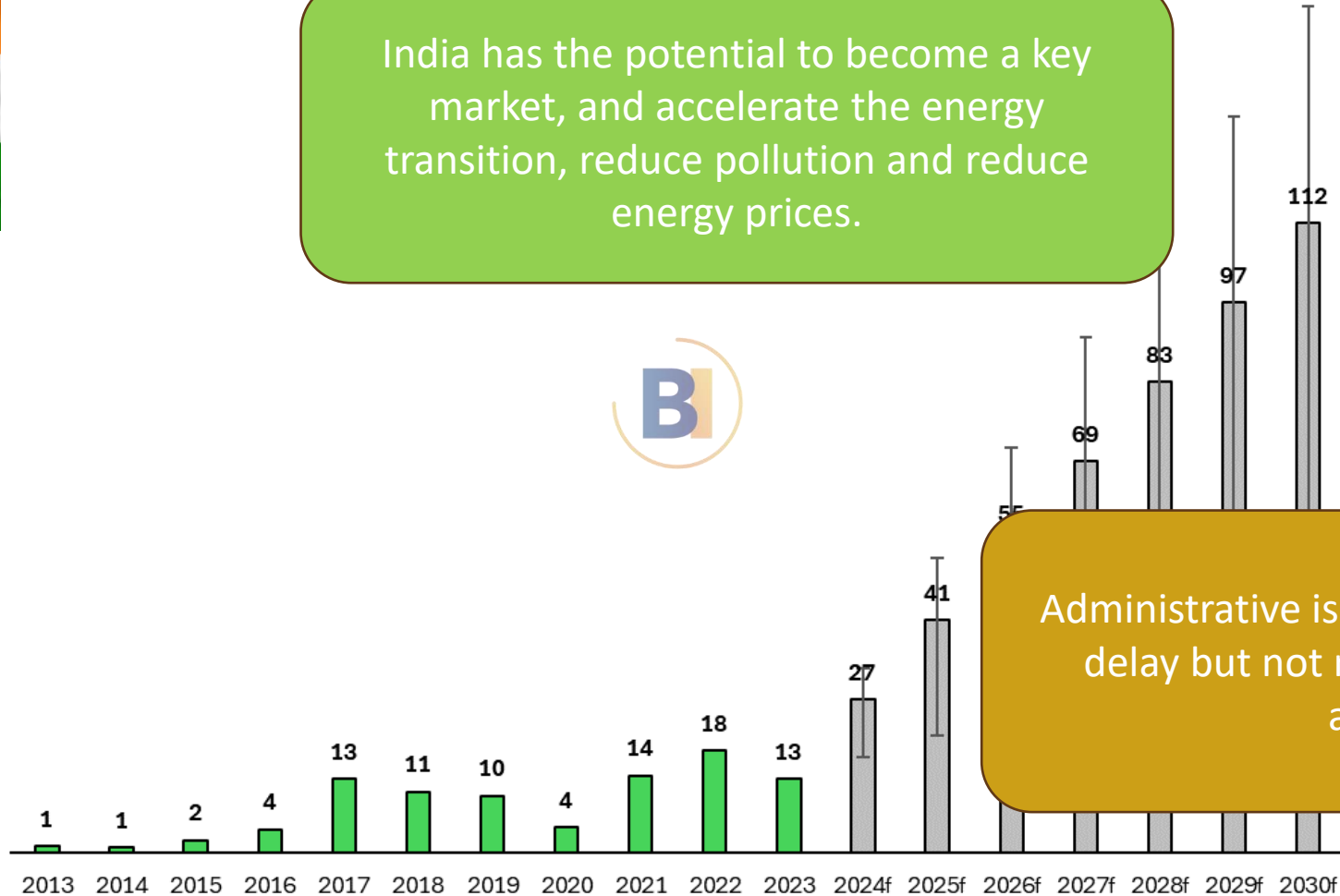


Low case: China reduces its internal market

India is projected to see significant growth until 2030, with installations potentially increasing up to eight times its current annual market. After a temporary slowdown for domestic industry development, promising market growth is now anticipated

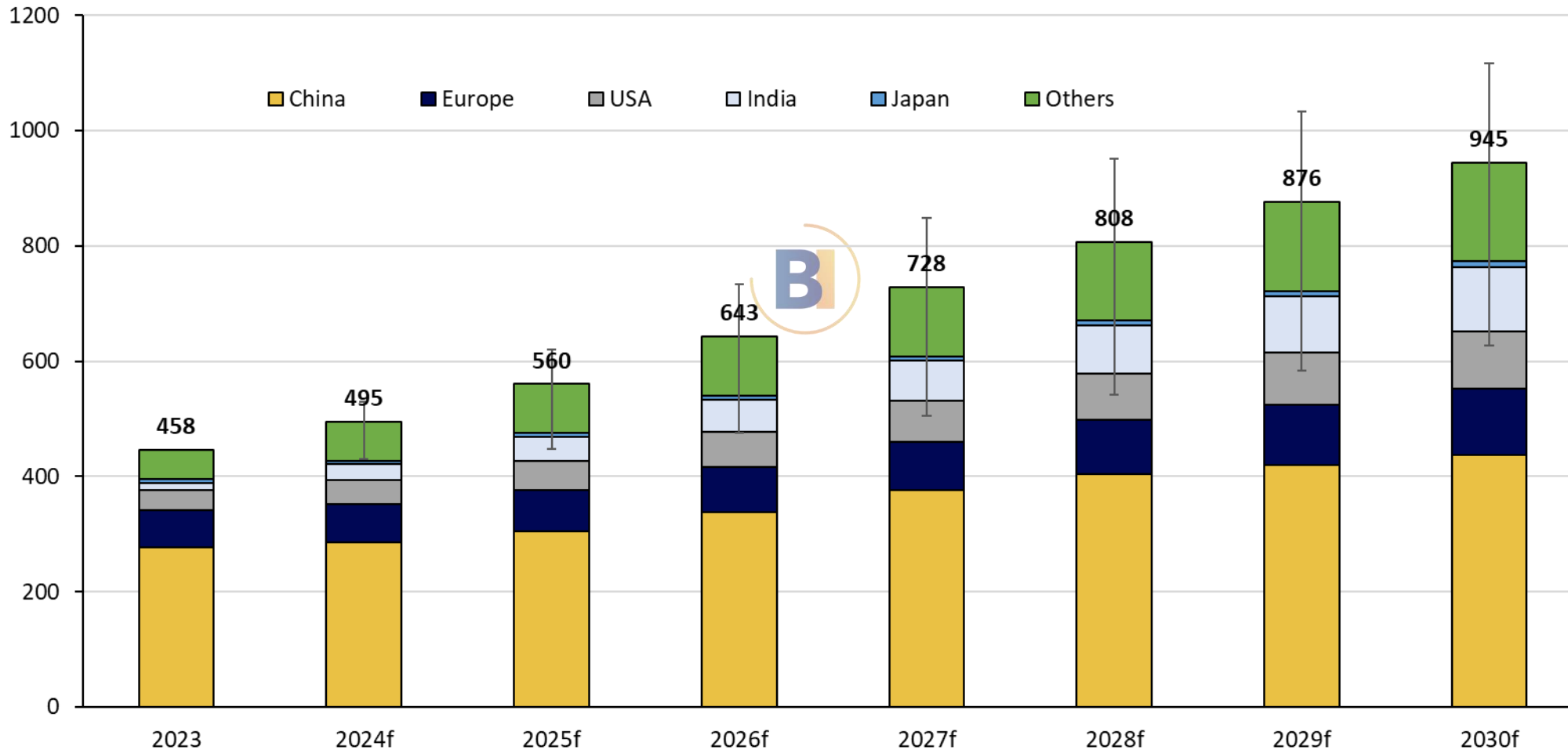


India has the potential to become a key market, and accelerate the energy transition, reduce pollution and reduce energy prices.

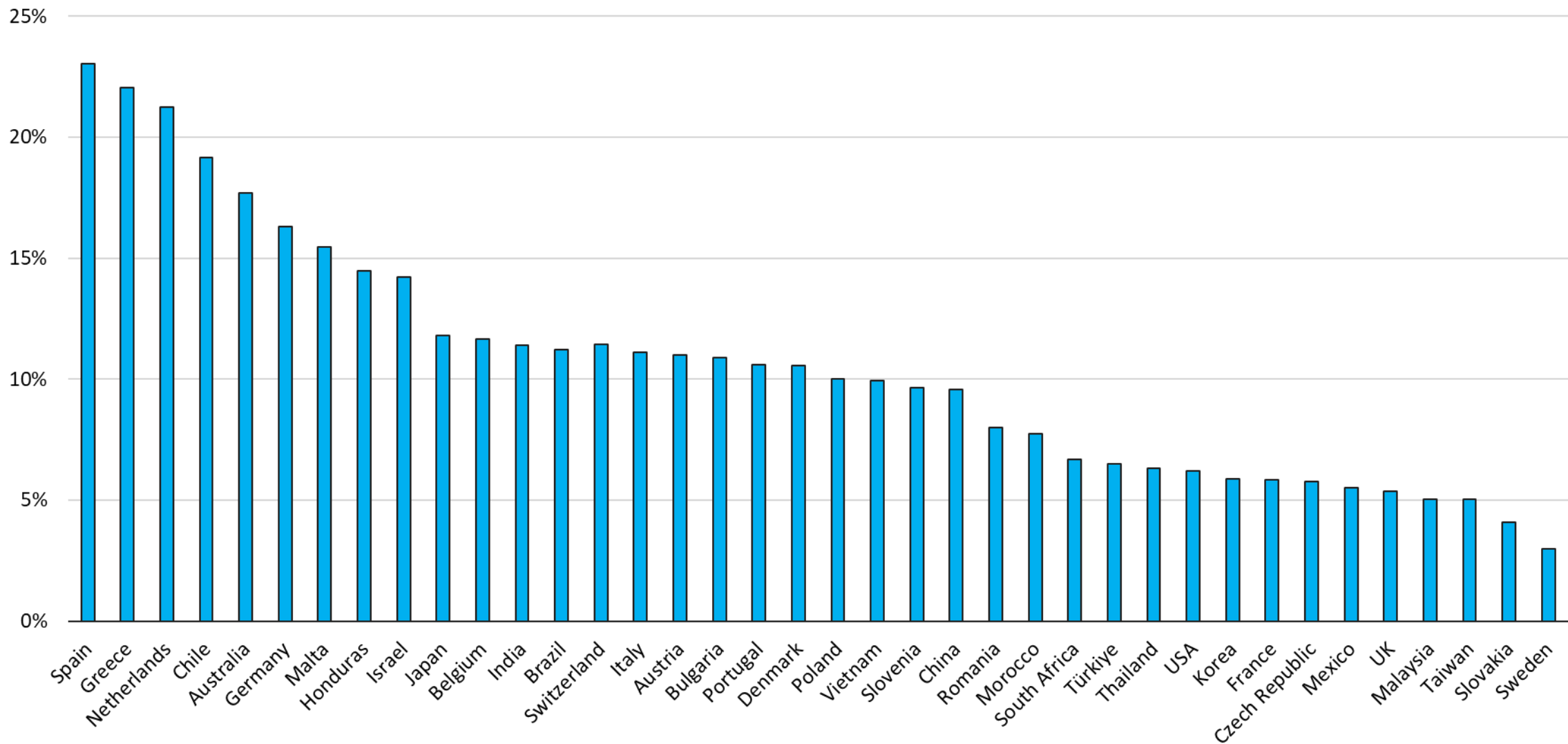


Administrative issues in some states could delay but not reduce significantly the ambitions

By 2030, global capacity is expected to reach nearly 1 TW per year, with China's contribution accounting for only 46% (from 60% in 2023)



PV contribution to electricity demand in 2024 (based on installed capacity end of 2023)



Some key elements

- **International Energy Agency: Solar PV is the Sun King of the 21st century**

- **China has contributed to lower the prices of PV components dramatically but...**
- **... local manufacturing is essential !**

- Sovereignty, job creation, control of the supply chains, political support

- New applications are going to boom:
 - Agrivoltaics (protect crops, increase farmers revenues, reduce land footprint...)
 - Floating PV (including at sea)
 - PV in buildings
 - Moving PV (VIPV, VAPV...)
 - Use of storage is essential today in remote location, weak grids, overloaded grids, high PV penetration
 - Storage business models are already a reality (battery, other technologies as niches)

Thank you !



Gaëtan Masson

CEO

g.masson@becquerelinstitute.eu

