Trends of global PV market and emerging PV 2024

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PVSEC 11/11/2025 – Bangkok, Thailand

What is IEA PVPS?

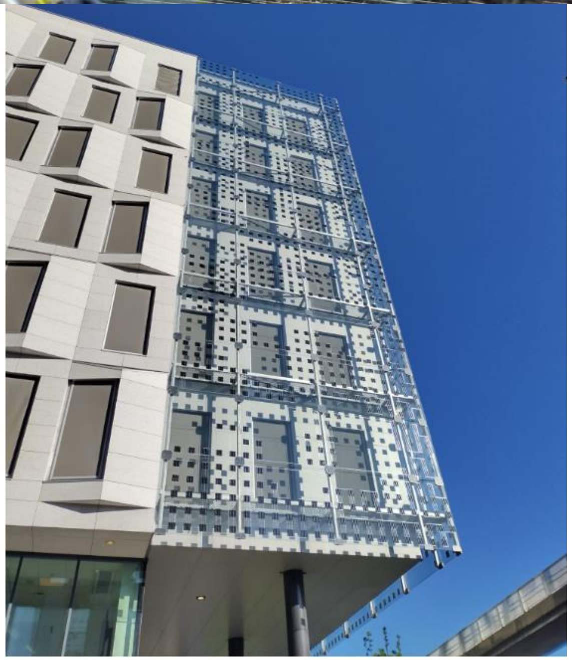
- The International Energy Agency (IEA), founded in 1974, is an autonomous body within the framework of the Organization for Economic Cooperation and Development (OECD).
- The Technology Collaboration Programme was created with a belief that the future of energy security and sustainability starts with global collaboration. The programme is made up of thousands of experts across government, academia, and industry dedicated to advancing common research and the application of specific energy technologies.

SERIS Solar Energy Research Institute of Singapore

SolarPower Europe

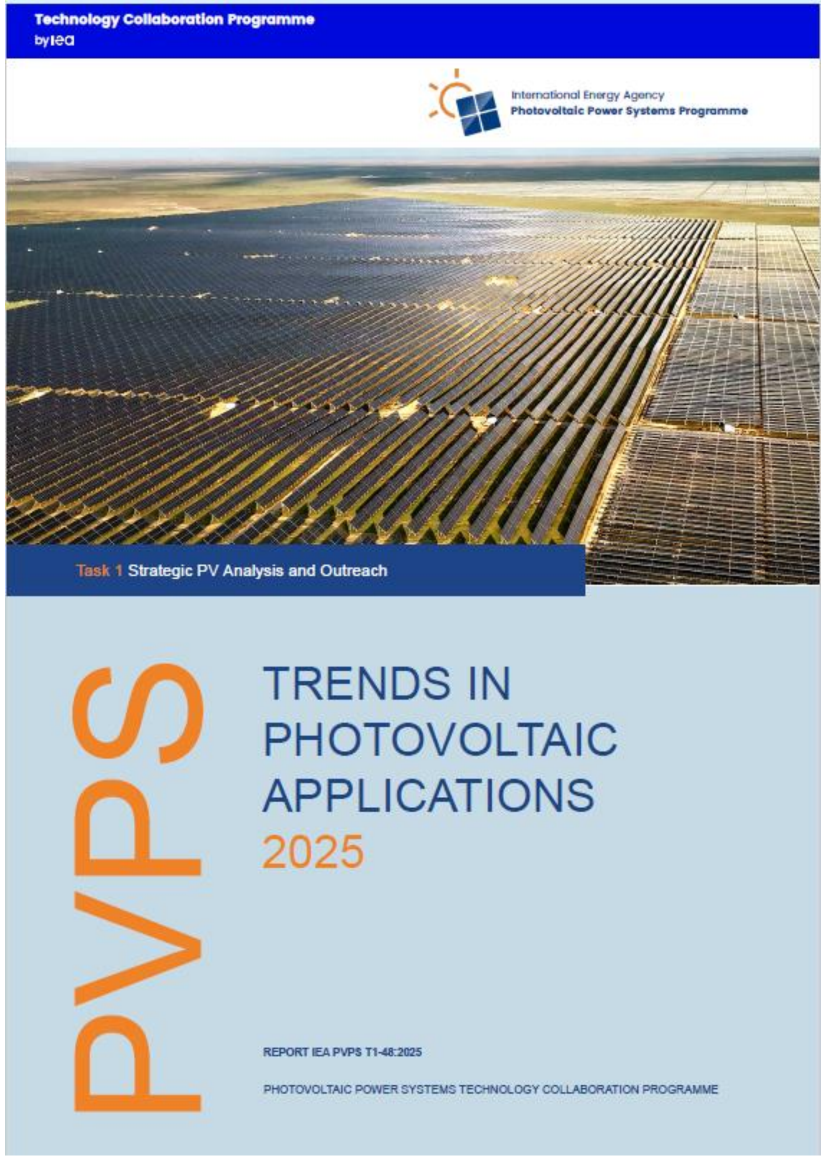
Disclaimer

- Data for non-IEA PVPS countries are provided by official contacts or experts in the relevant countries.
- Data are valid at the date of publication and should be considered as estimates in several countries due to the publication date.
- Please mention our references if you use these figures.



IEA PVPS Trends in PV – 2025 edition

- Looks at what happened in 2024 in PV markets around the world



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TRENDS IN PHOTOVOLTAIC APPLICATIONS // 2025

PHOTOVOLTAIC POWER SYSTEMS PROGRAMME WWW.IEA-PVPS.ORG

WORLDWIDE cSi MODULE PRODUCTION

700 GW

in 2024

TOP 5 PV MARKETS IN 2024

CHINA	357 GW
EU	66 GW
USA	47 GW
INDIA	32 GW
PAKISTAN	18 GW

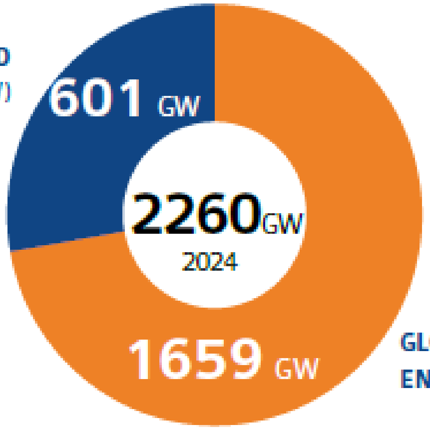
PV CONTRIBUTION TO ELECTRICITY DEMAND

10.8%

Share of PV in the global electricity demand in 2024

GLOBAL PV CAPACITY END OF 2024

ANNUAL INSTALLED CAPACITY IN 2024 (GW)



GLOBAL PV CAPACITY END OF 2023 (GW)

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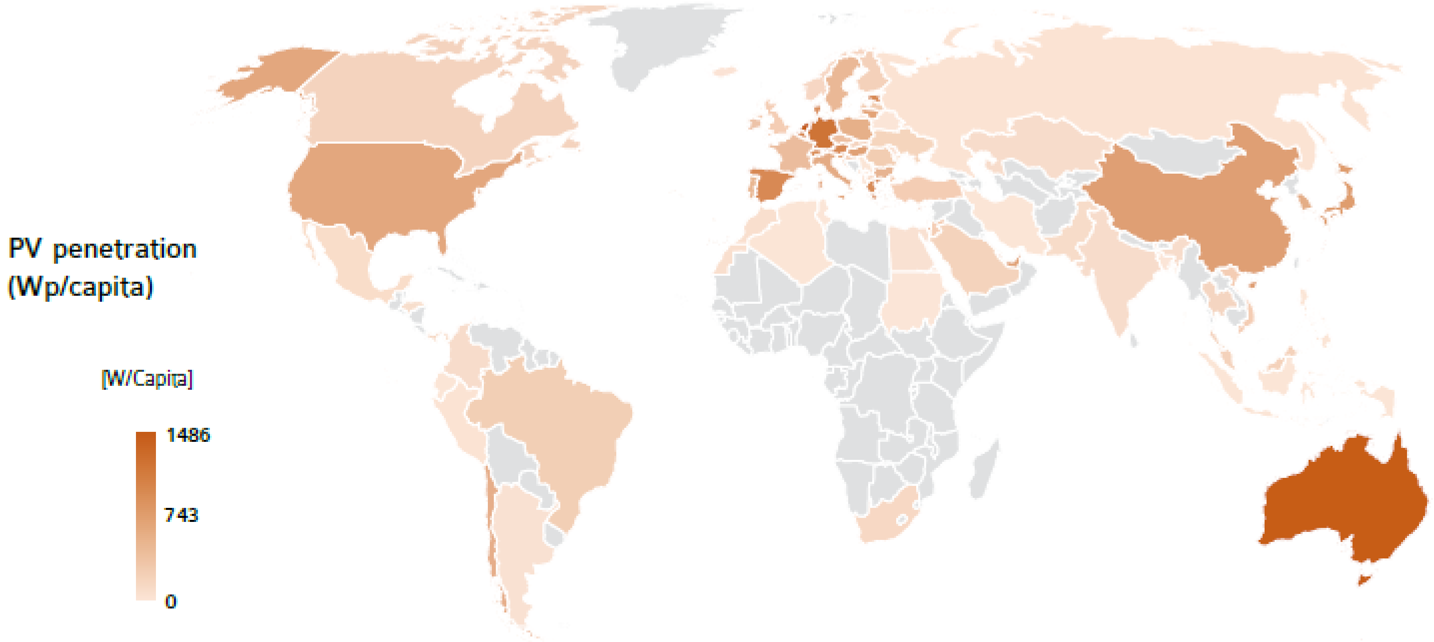
More countries with more volume

PV PENETRATION PER CAPITA IN 2024



PV POWER PER CAPITA

1. THE NETHERLANDS (1 486 Wp/CAP)
2. AUSTRALIA (1 463 Wp/CAP)
3. GERMANY (1 203 Wp/CAP)
4. BELGIUM (982 Wp/CAP)
5. AUSTRIA (970 Wp/CAP)

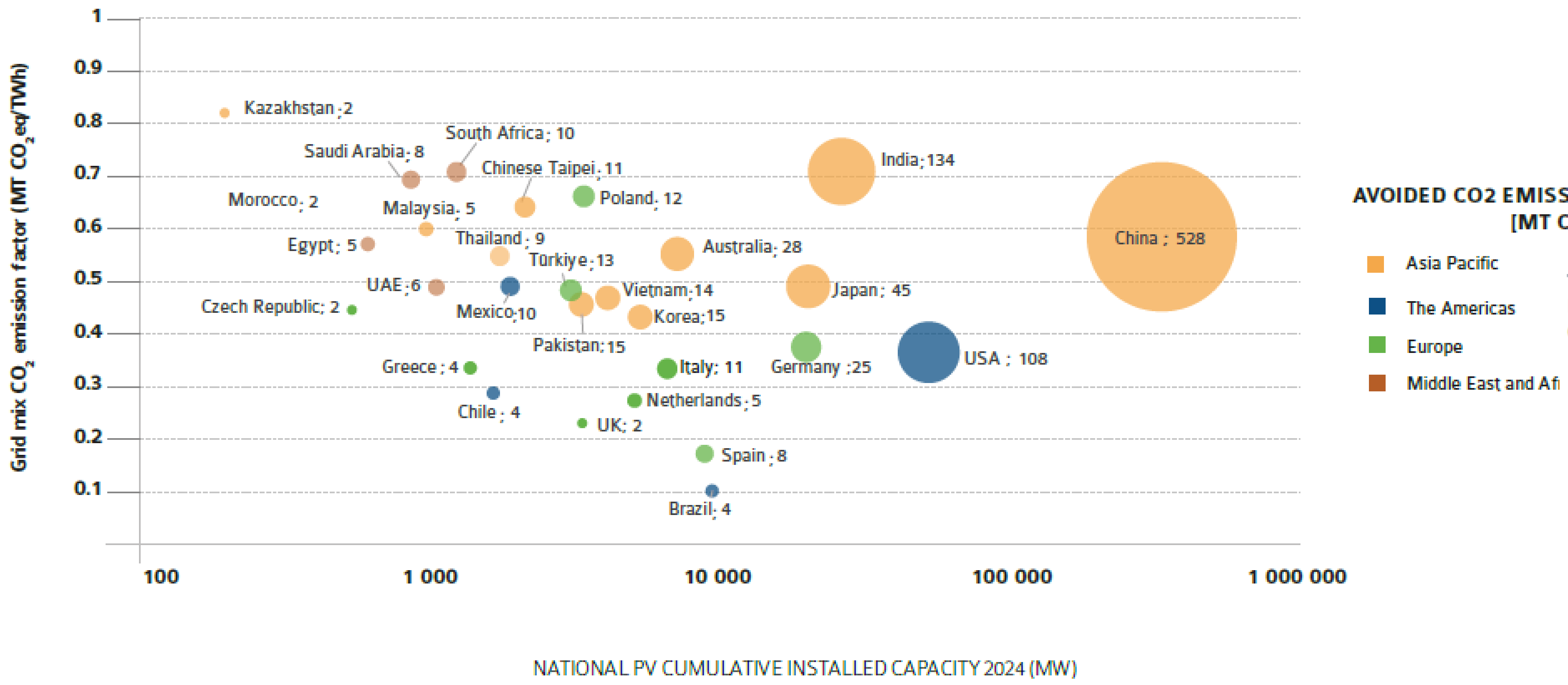
40 COUNTRIES
REACHED AT LEAST
4 GWp
IN 2024

34 COUNTRIES
INSTALLED AT LEAST
1 GWp
IN 2024

SOURCE: IEA PVPS & OTHERS

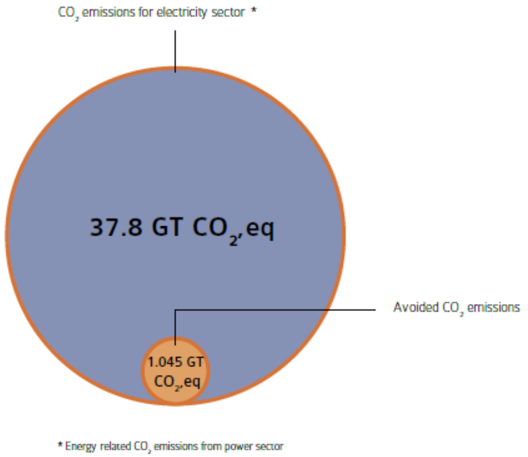
Contribution to decarbonisation – saving 1045 MT CO_2eq

FIGURE 5.1: CO_2 EMISSIONS AVOIDED BY PV



SOURCE: IEA PVPS &

FIGURE 5.3: AVOIDED CO_2 EMISSIONS AS PERCENTAGE OF ENERGY SECTOR TOTAL EMISSIONS

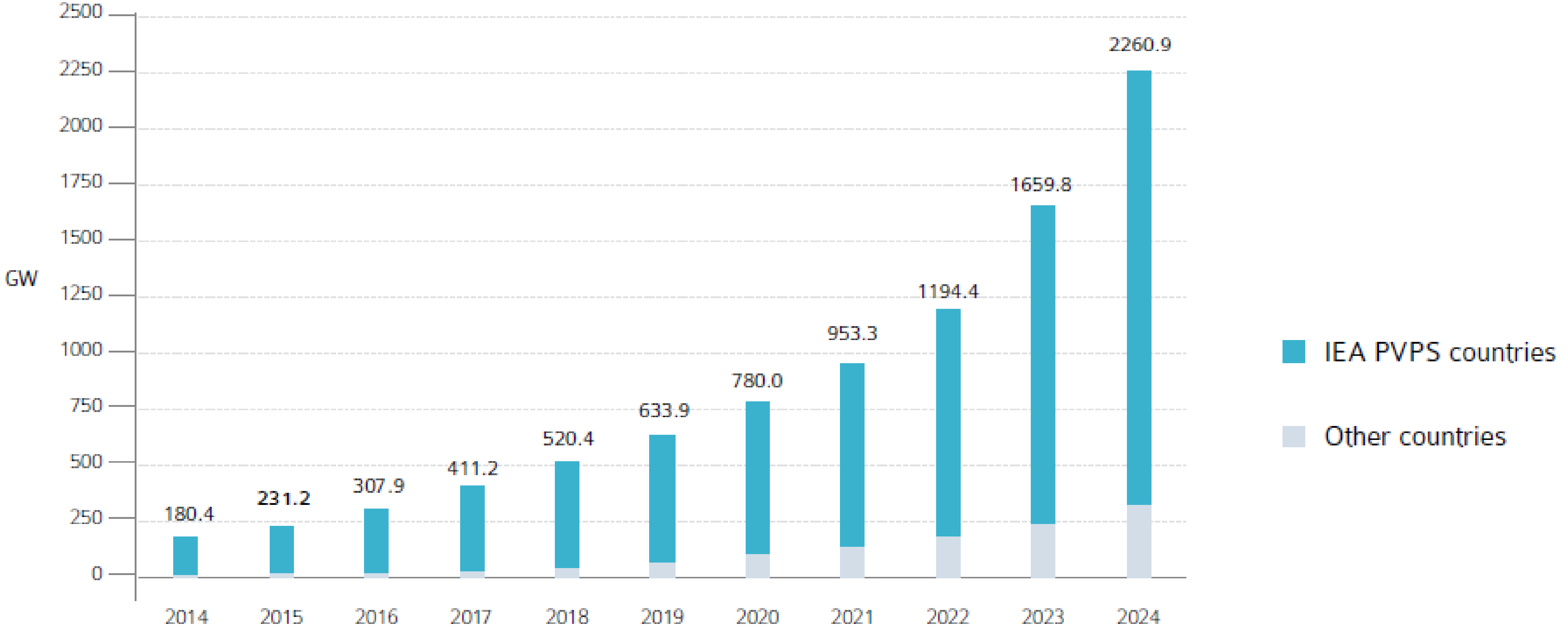


SOURCE: IEA PVPS, IEA, EMBER & OTHERS

PV

2.26 TW globally

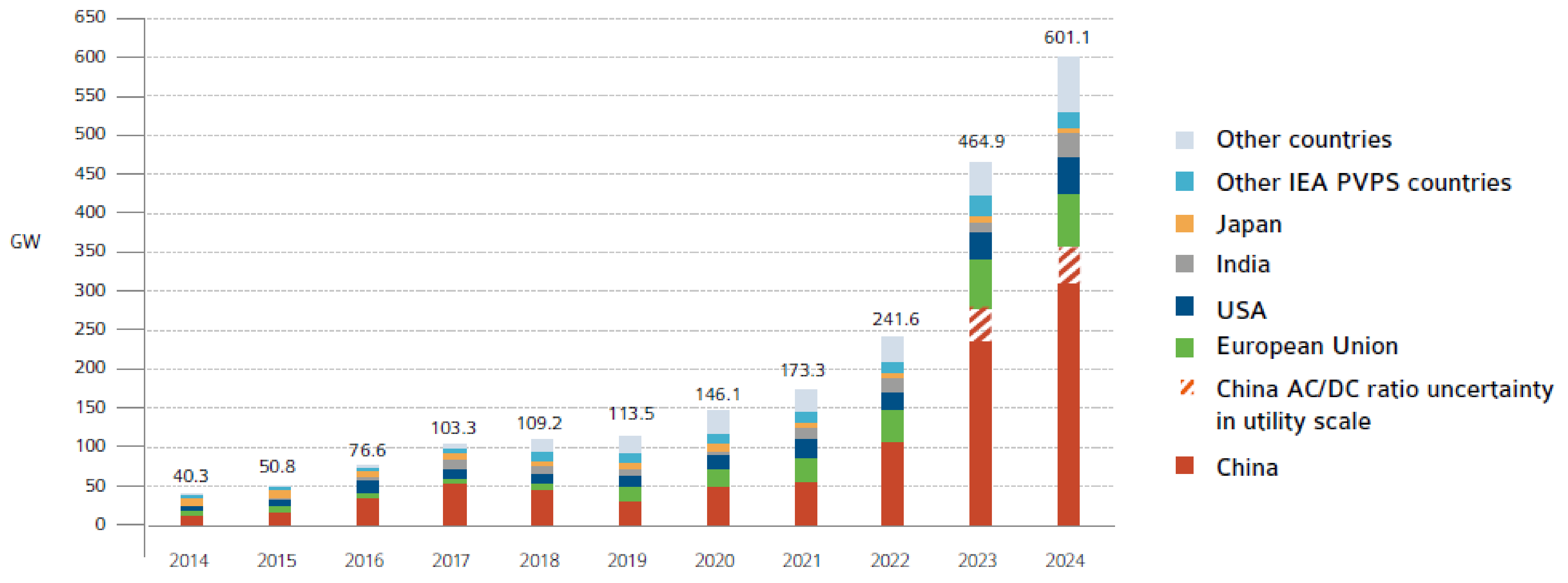
FIGURE 2.1: EVOLUTION OF CUMULATIVE PV INSTALLATIONS



SOURCE: IEA PVPS & OTHERS

600 GW +

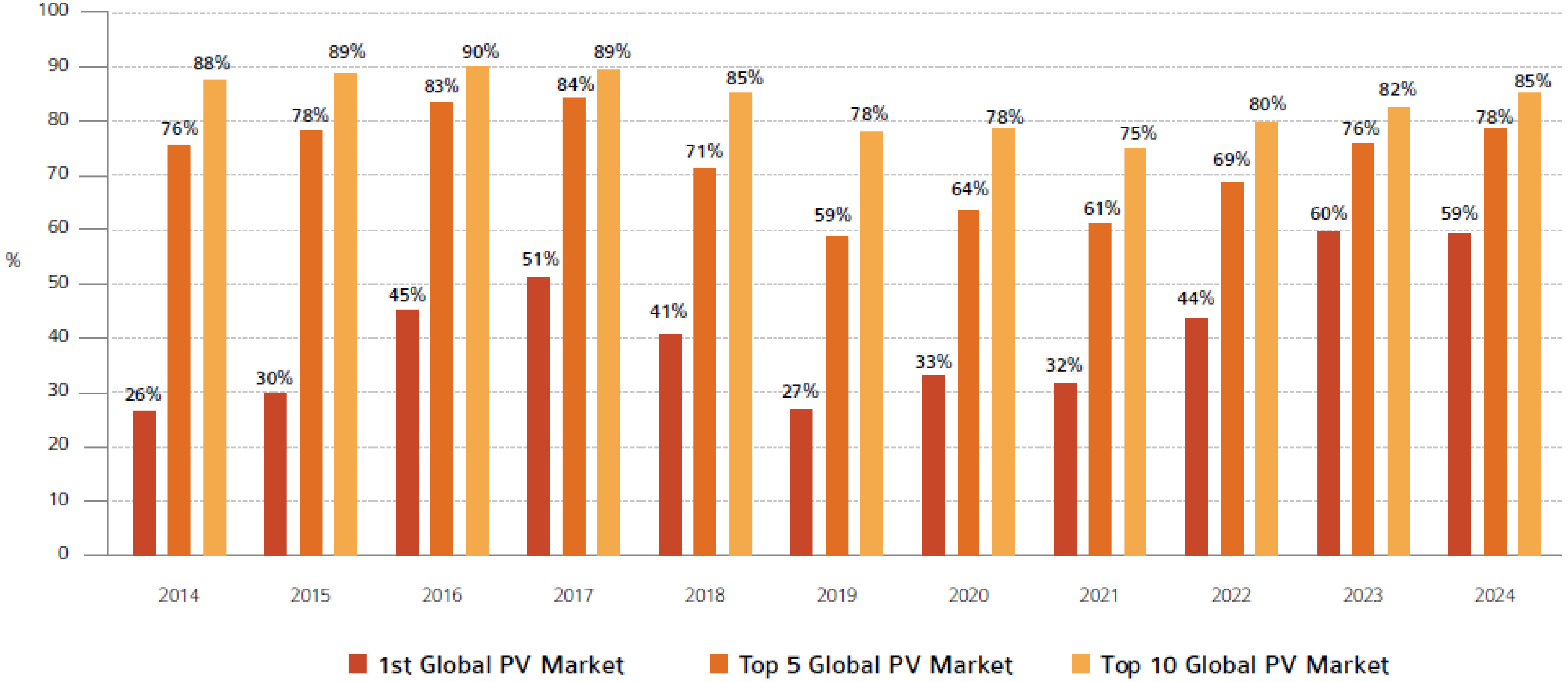
FIGURE 2.3: EVOLUTION OF ANNUAL PV INSTALLATIONS IN MAJOR MARKETS



SOURCE: IEA PVPS & OTHERS

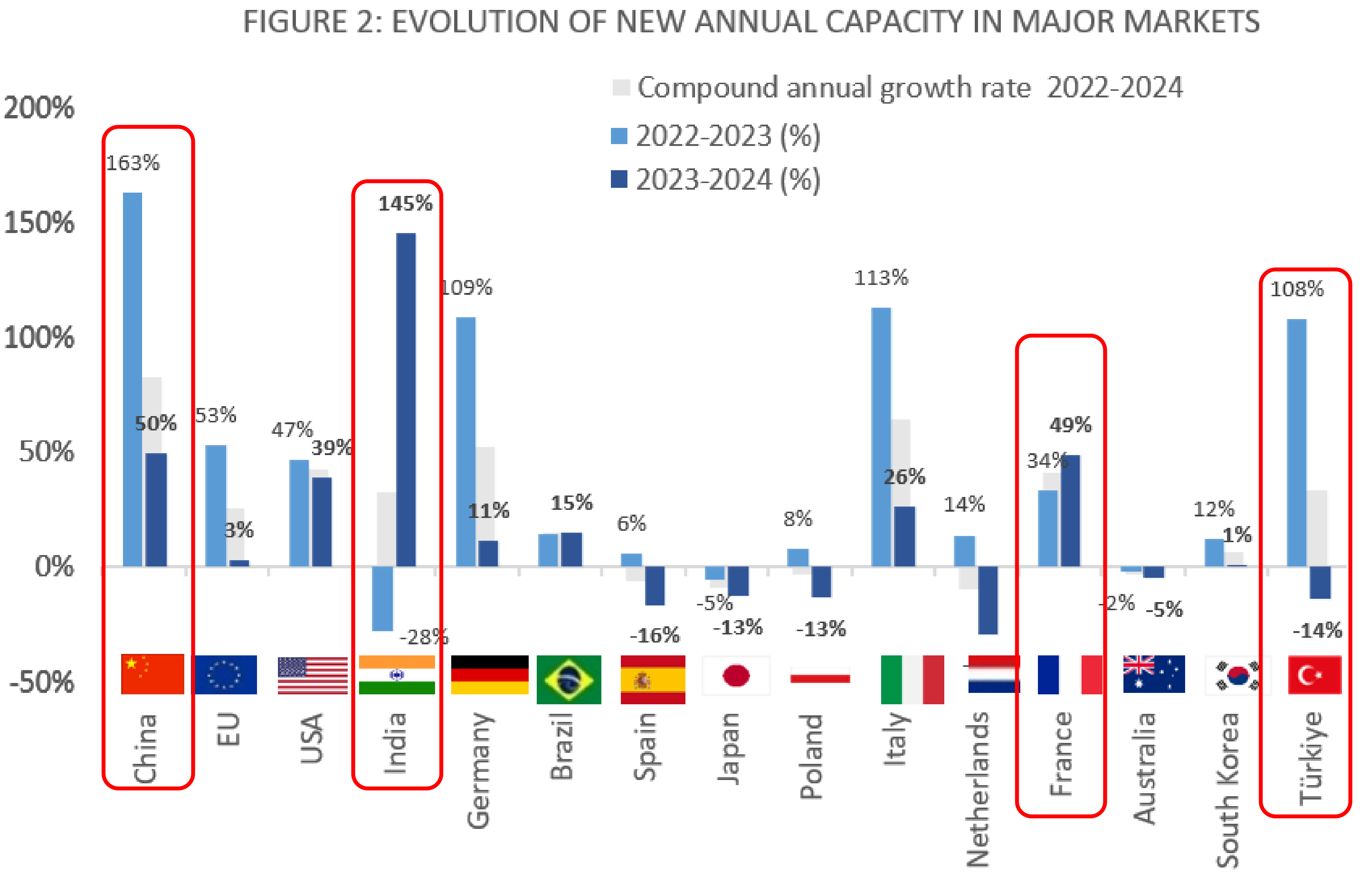
Market dominance

FIGURE 2.4: EVOLUTION OF MARKET SHARE OF TOP COUNTRIES



SOURCE: IEA PVPS & OTHERS

Evolution of Annual PV in Major Markets*



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* Snapshot data

TOP 10

TABLE 1: TOP 10 COUNTRIES FOR ANNUAL AND CUMULATIVE INSTALLED CAPACITY IN 2024

FOR ANNUAL INSTALLED CAPACITY			FOR CUMULATIVE CAPACITY		
1	China	357.3 GW*	1	China	1048.5 GW*
(2)	*European Union*	66.3 GW	*(2)*	*European Union*	358.2 GW
2	USA	47.1 GW	2	USA	225.0 GW
3	India	31.9 GW	3	India	124.6 GW
4	Pakistan	18.0 GW	4	Germany	100.4 GW
5	Germany	17.2 GW	5	Japan	97.0 GW
6	Brazil	14.3 GW	6	Brazil	52.1 GW
7	Spain	8.7 GW	7	Spain	47.6 GW
8	Italy	6.7 GW	8	Australia	39.8 GW
9	France	6.0 GW	9	Italy	37.0 GW
10	Japan	5.6 GW	10	South Korea	30.7 GW

Note: The European Union grouped 27 European countries in 2024, out of which Germany, Spain, Italy, France also appear in the Top Ten, either for the annual installed capacity or the cumulative installed capacity. The European Commission is a member of IEA-PVPS through its Joint Research Centre (EC-JRC). *IEA-PVPS preliminary assessment is higher than official China reporting

Source: IEA PVPS

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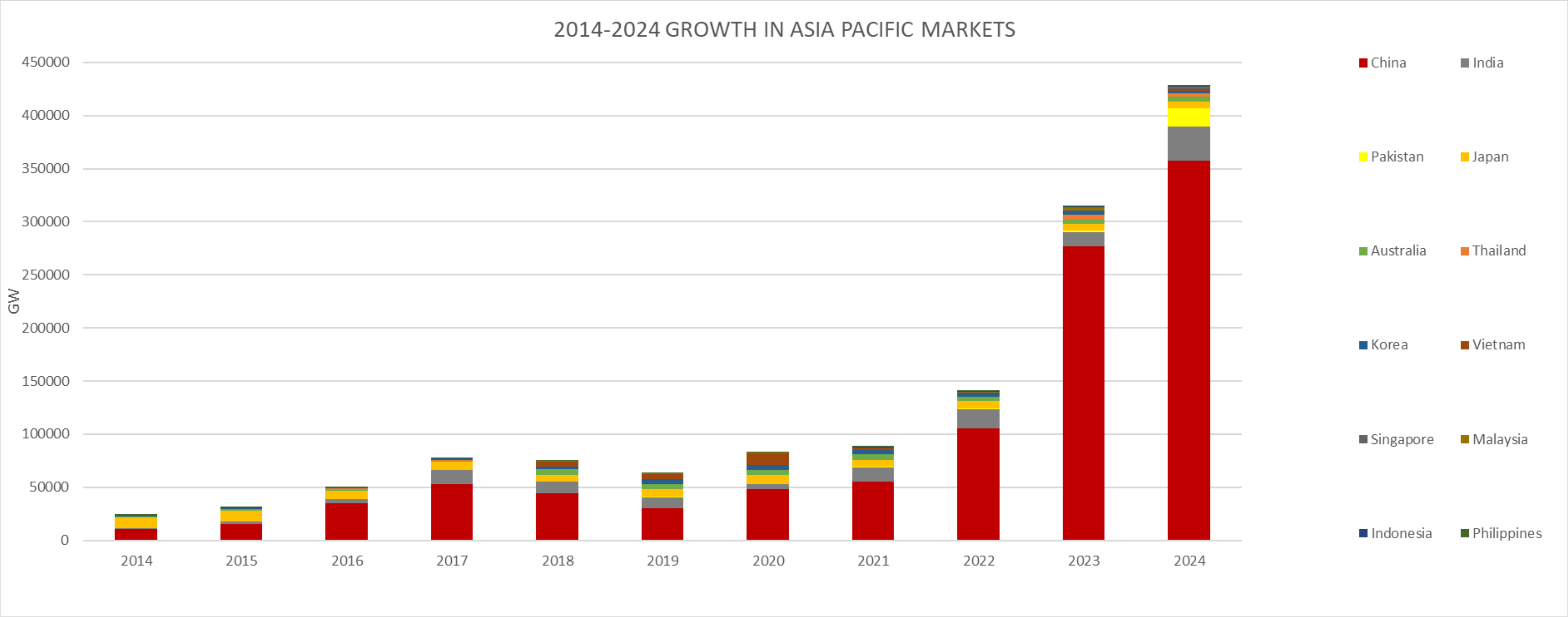
Asia Pacific in 2024



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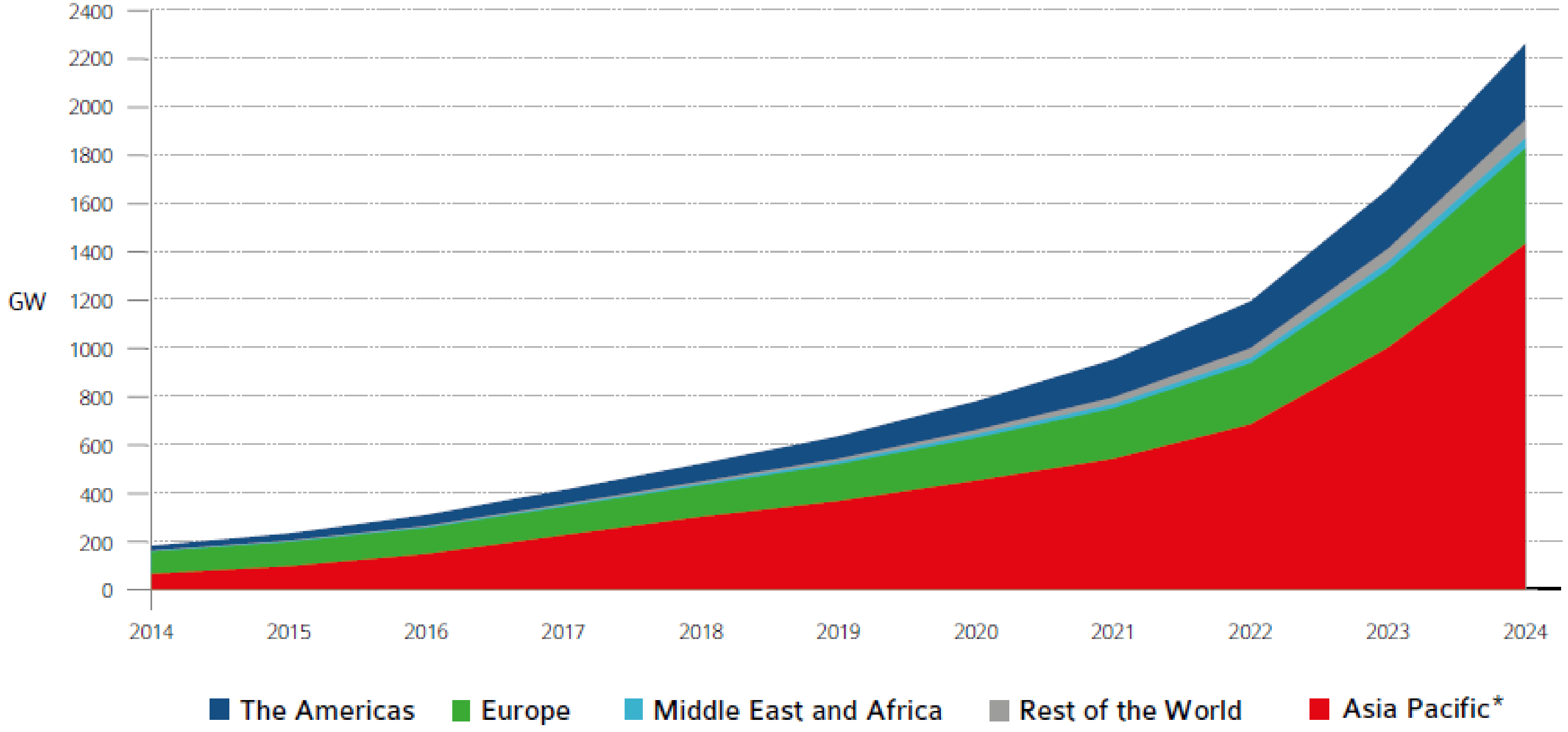
Asia first

FIGURE 2.7: EVOLUTION OF REGIONAL PV INSTALLATIONS



*inlcudes 42 GW China AC/DC ratio uncertainty

SOURCE: IEA PVPS & OTHERS

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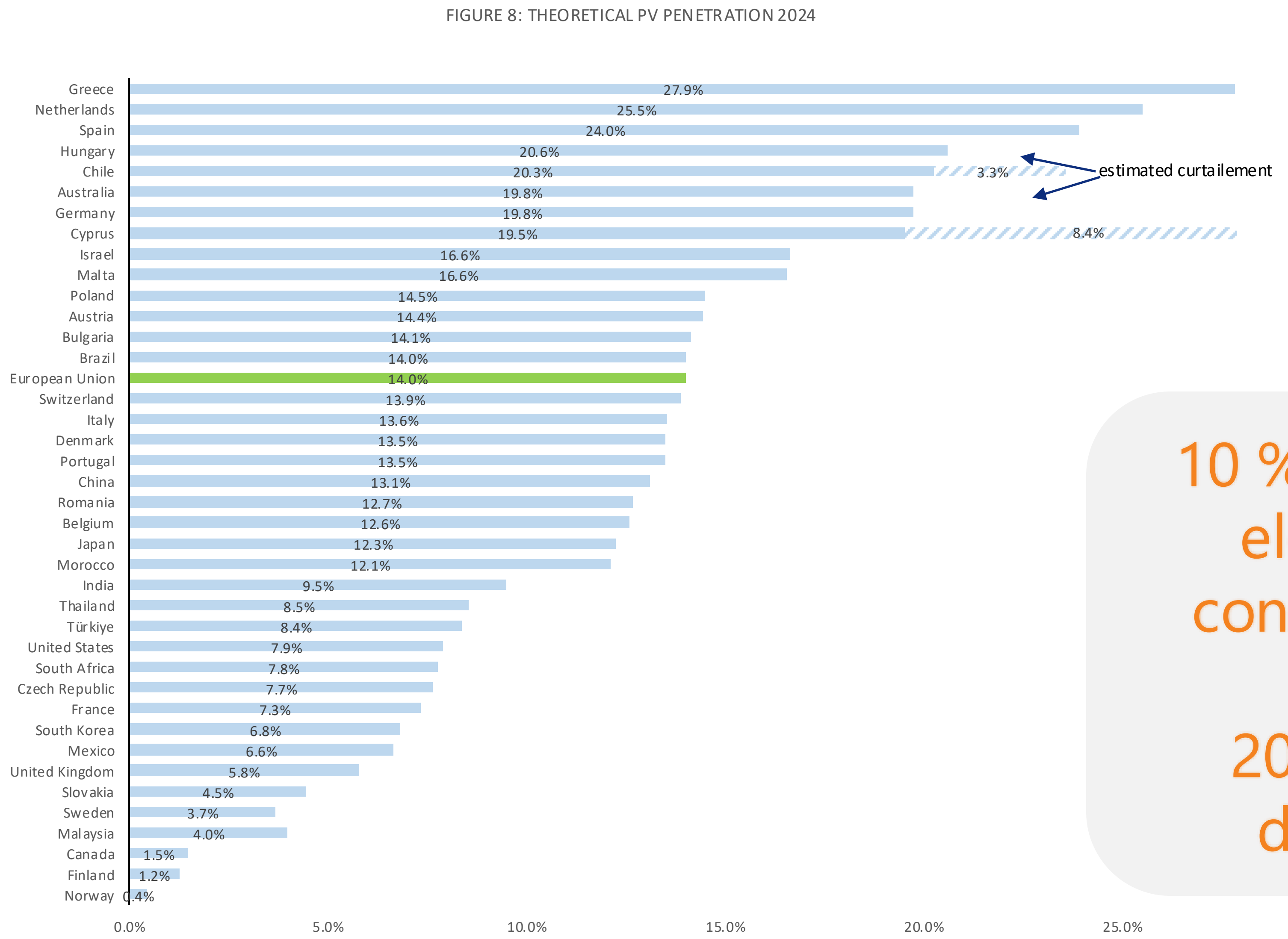
PV PENETRATION (production/consumption)

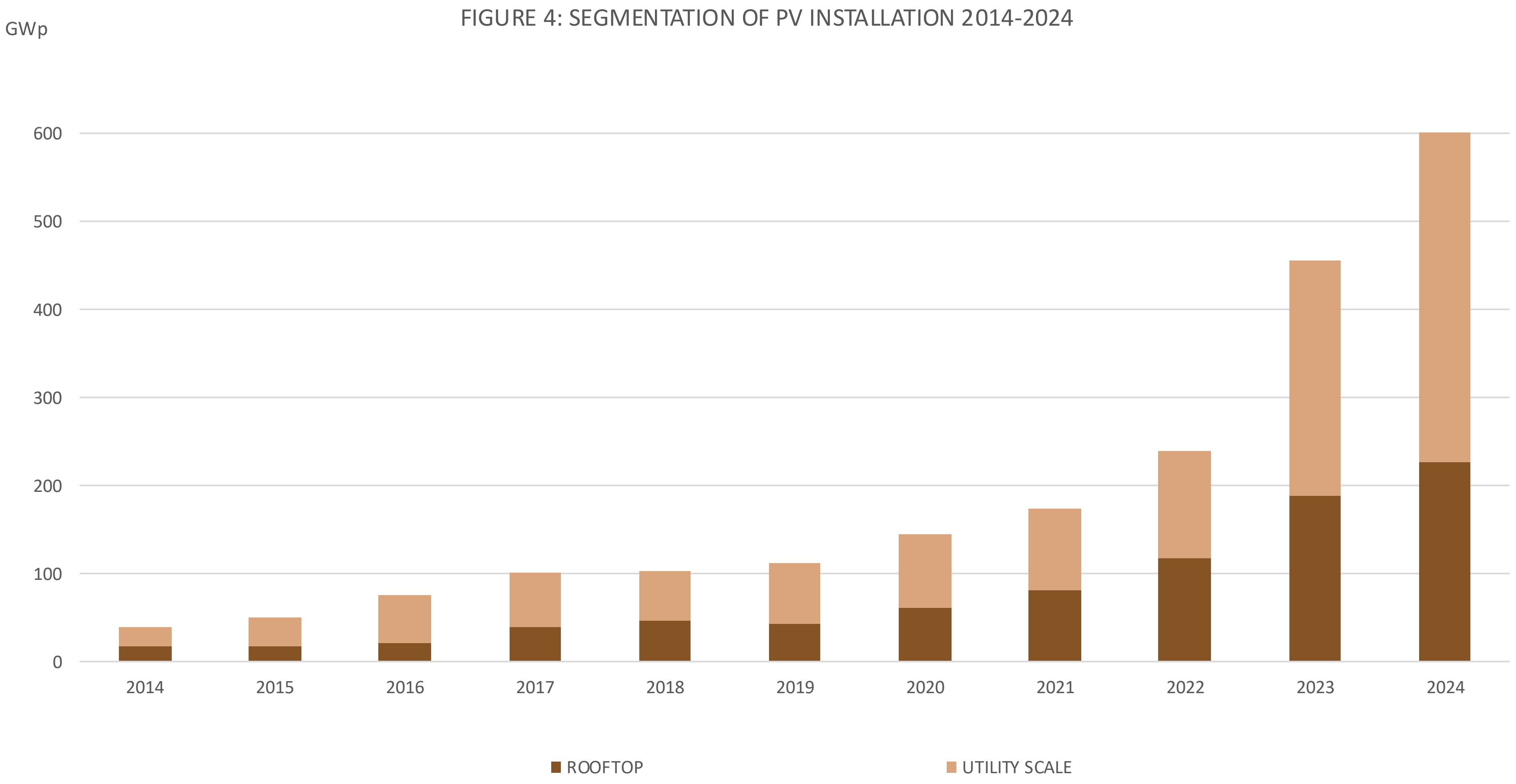


10 % of global electricity consumption

–

20% of EU demand

Utility-scale developing faster



Niche markets

BIPV: < 1%

Floating

AgriPV

Linear PV

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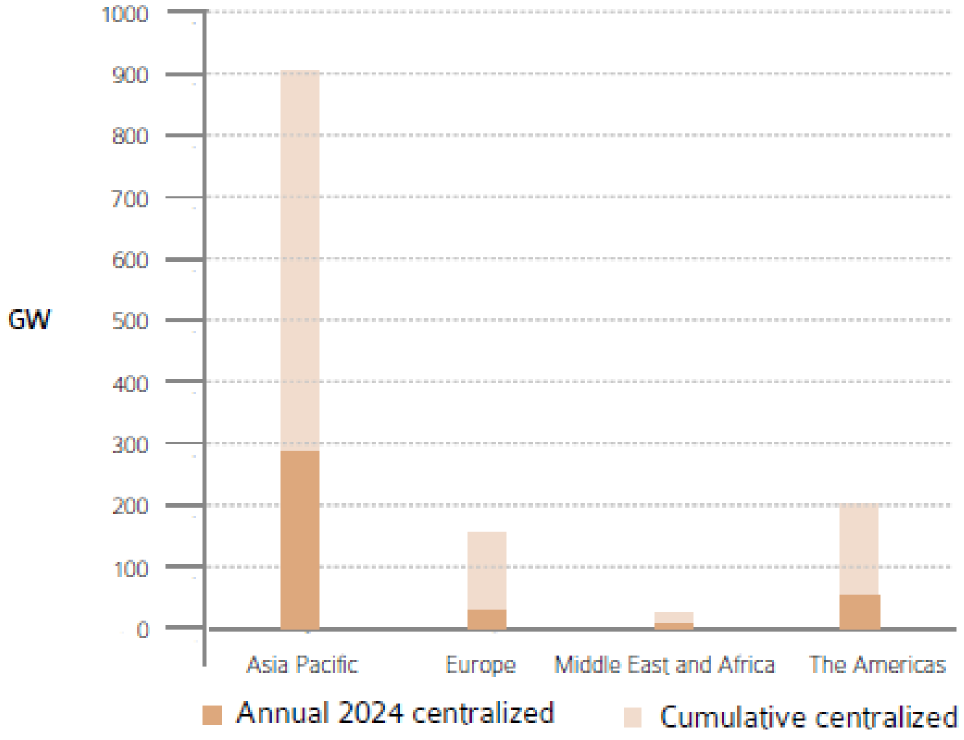
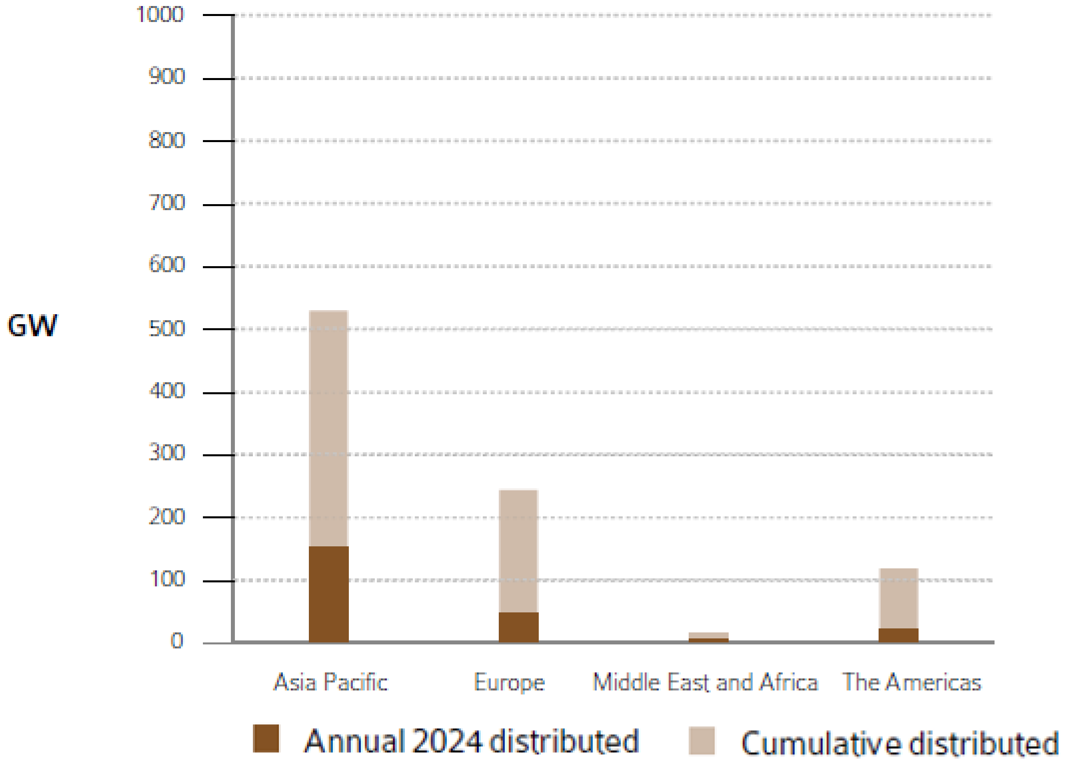
Especially in Asia-Pacific and the USA

FIGURE 2.10: CENTRALISED PV - CUMULATIVE AND ANNUAL INSTALLED CAPACITY PER REGION 2024



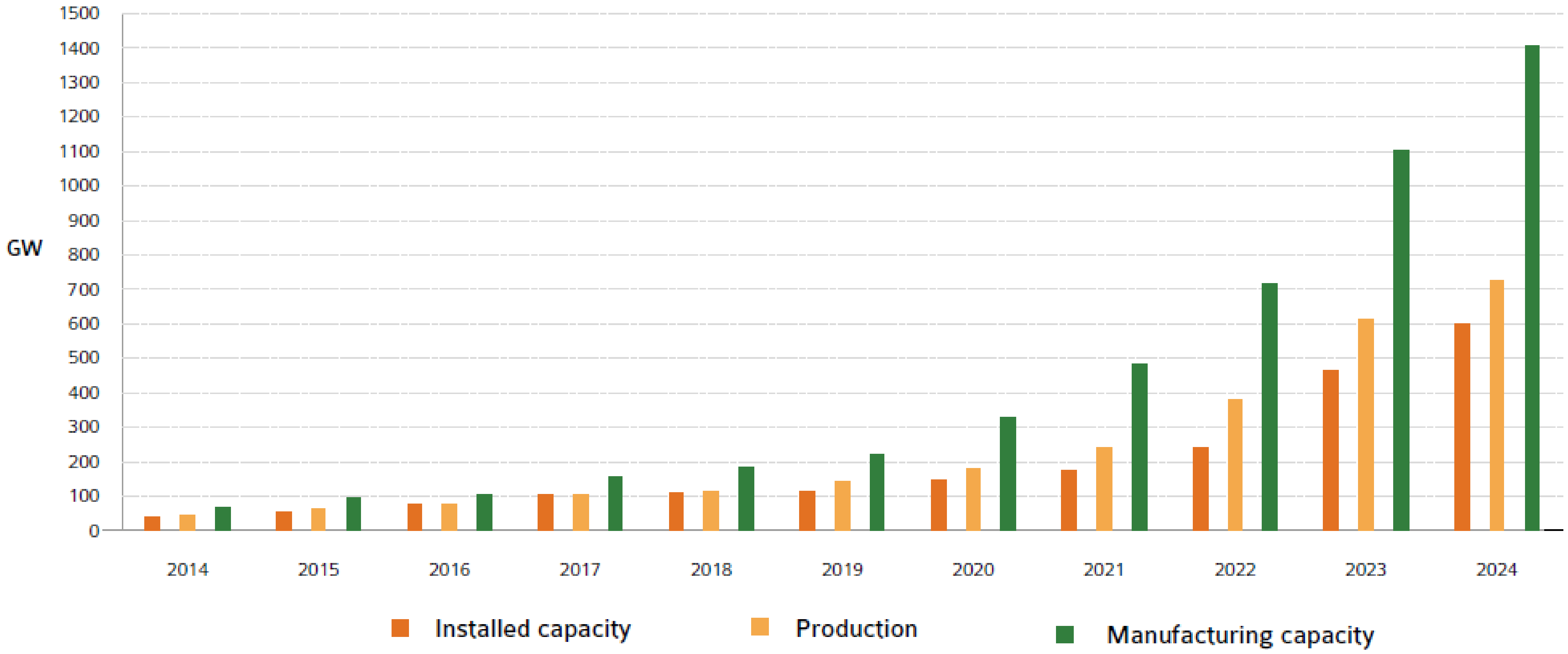
11: DISTRIBUTED PV - CUMULATIVE AND ANNUAL INSTALLED CAPACITY



SOURCE: IEA PVPS & OTHERS

Overcapacities

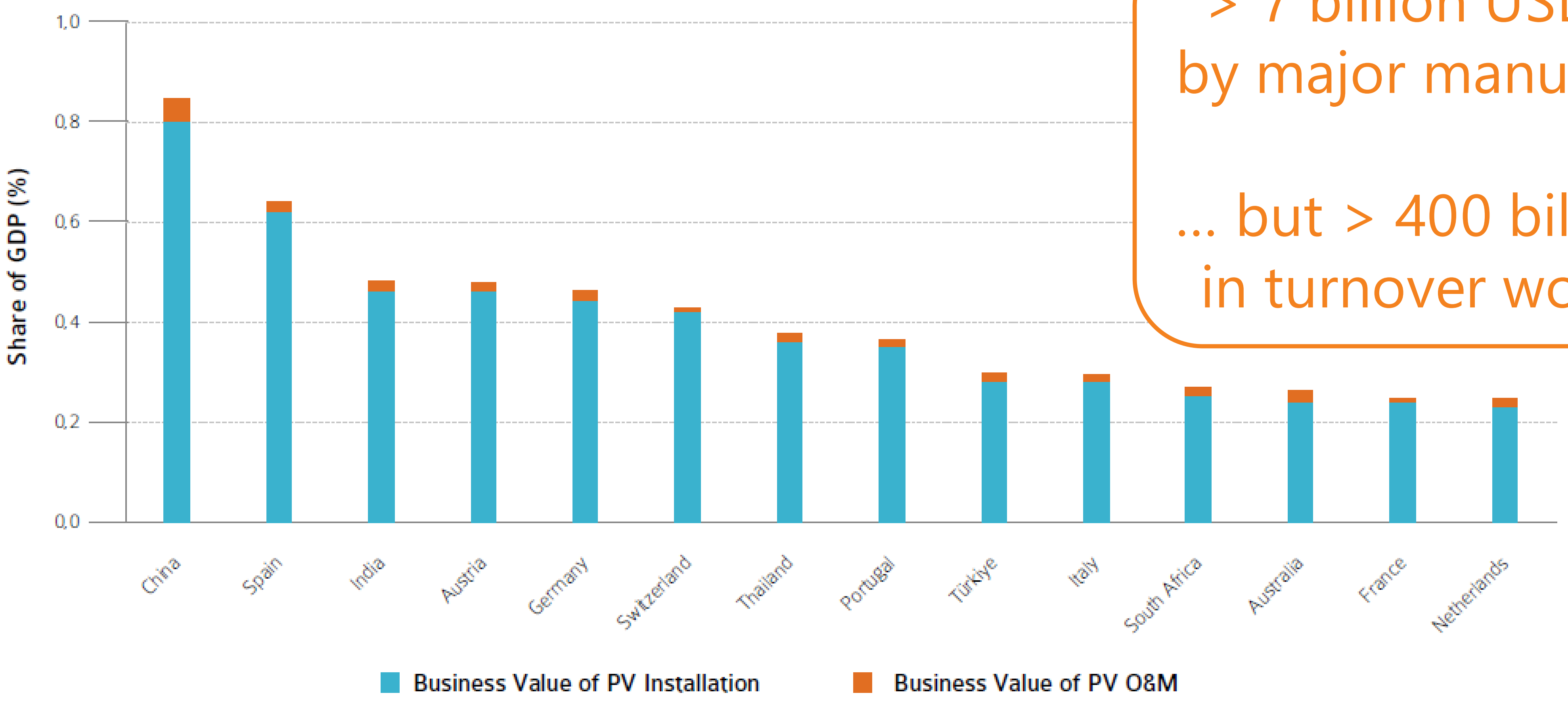
FIGURE 4.2: YEARLY PV INSTALLATION, PV PRODUCTION AND PRODUCTION CAPACITY 2014-2024 (GW)



SOURCE : EA PVPS, RTS CORPORATION

Business value

FIGURE 5.4: BUSINESS VALUE OF THE PV MARKET IN 2024 IN SELECTED IEA PVPS COUNTRIES AS SHARE OF GDP %



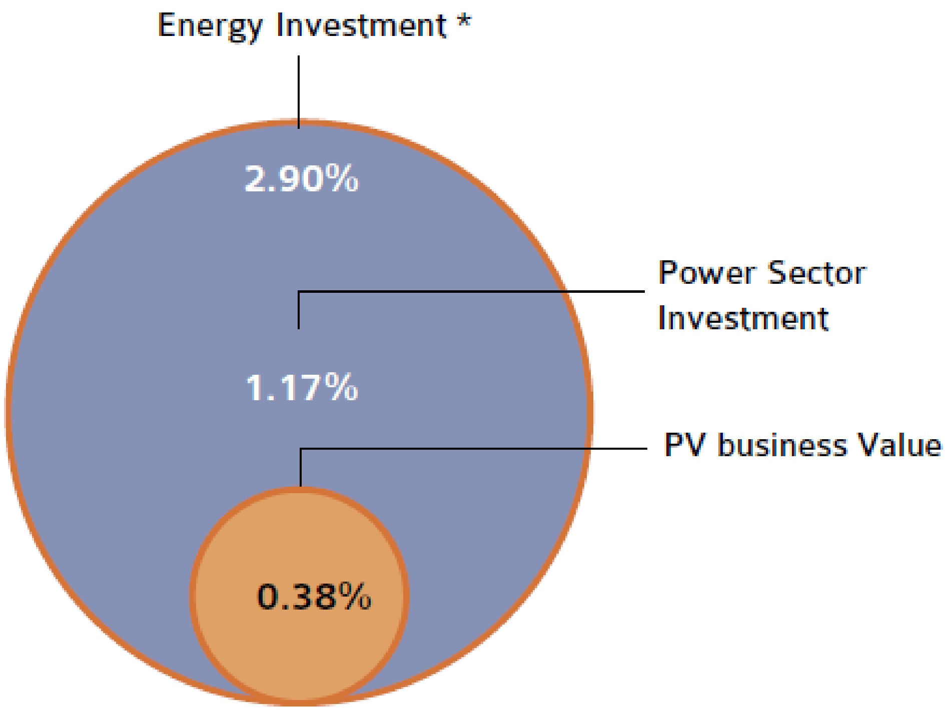
> 7 billion USD losses by major manufacturers

… but > 400 billion USD in turnover worldwide

SOURCE IEA PVPS & OTHERS

GDP

FIGURE 5.5: CONTRIBUTION TO GLOBAL GDP OF PV BUSINESS VALUE AND ENERGY SECTOR INVESTMENTS

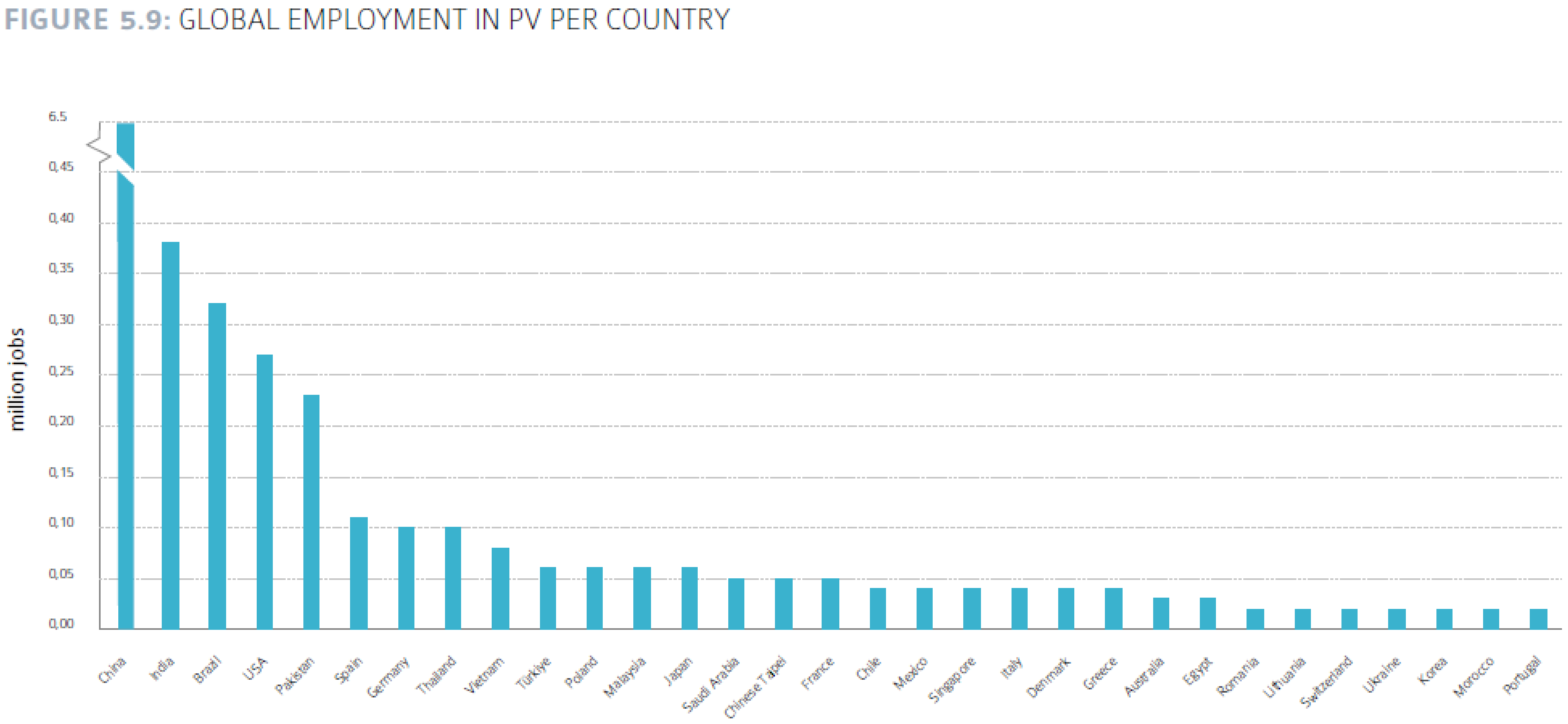


* Power sector

SOURCE: IEA PVPS & OTHERS

Jobs

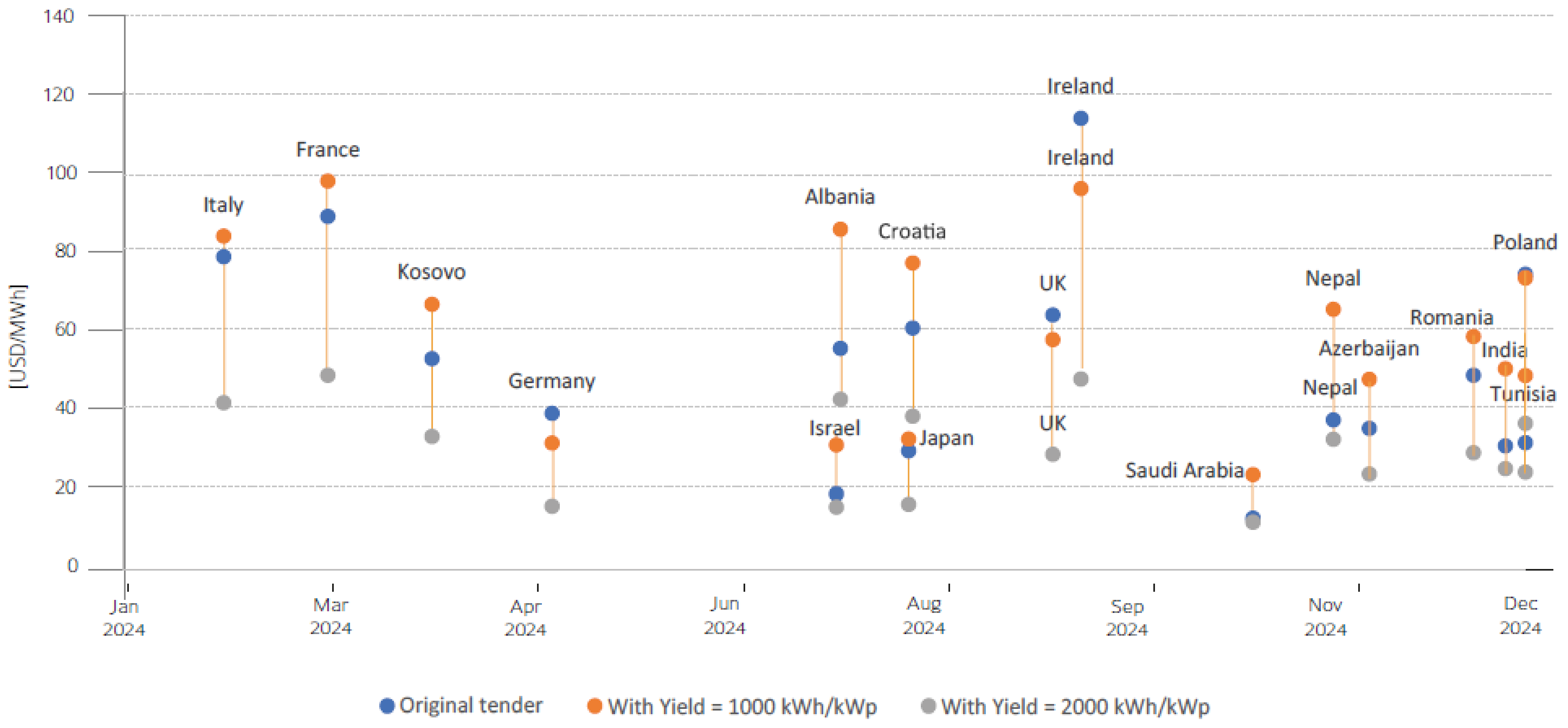
FIG. 5.9 GLOBAL EMPLOYMENT IN PV SELECTED COUNTRIES



SOURCE IEA PVPS & OTHERS

Fig. 6.

FIGURE 6.9: NORMALISED LCOE FOR SOLAR PV BASED ON RECENT PPA PRICES 2024

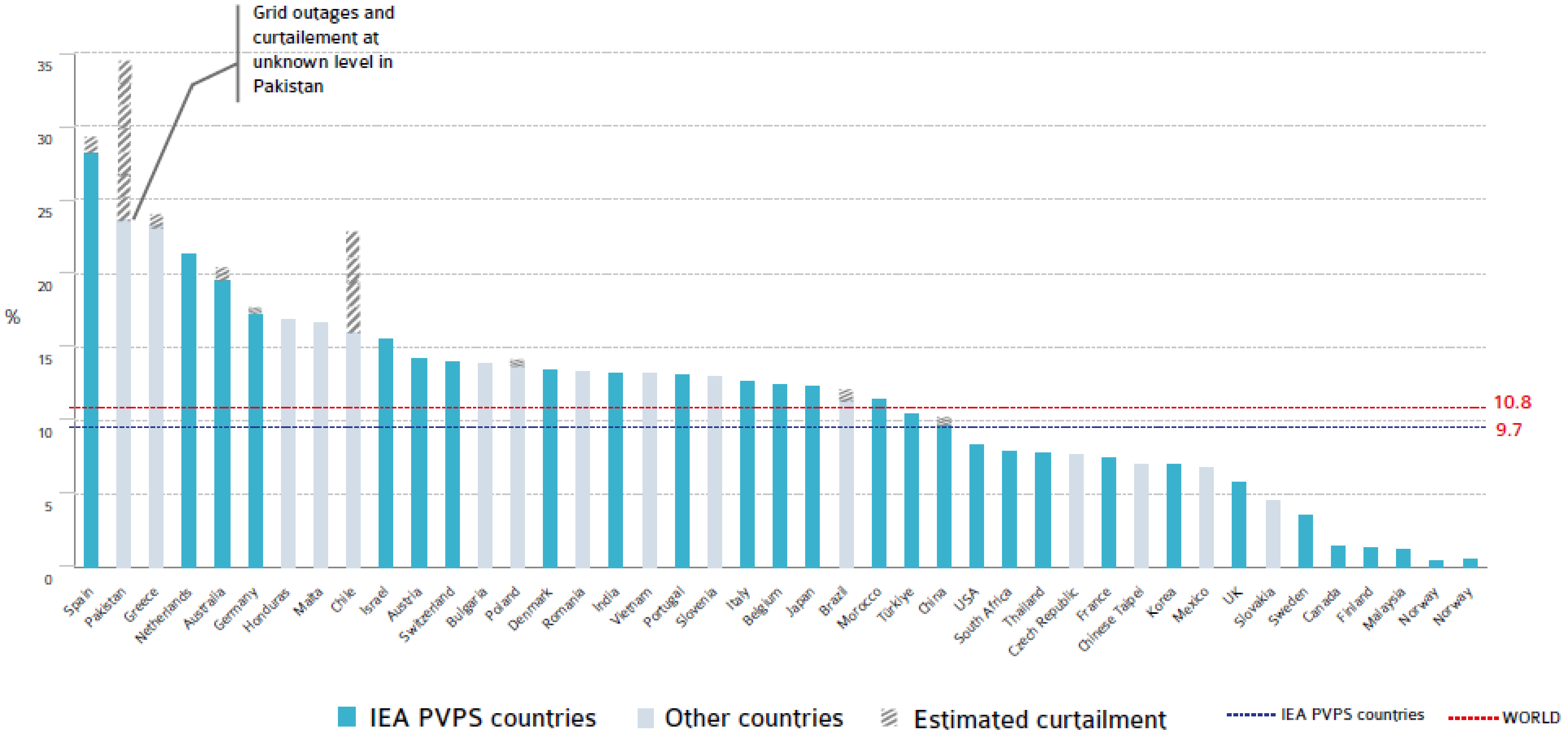


SOURCE: IEA PVPS & OTHERS

10% in reach

FIGURE 7.1: PV CONTRIBUTION TO ELECTRICITY DEMAND 2024

FIG. 7.



SOURCE IEA PVPS & OTHERS

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How much does this represent ?

10%

Global electricity demand

(nuclear 9%)

13% in 2025

16% in 2026…

600 GW added

In 2024 (750 TWh)

and 2.25 TW in total

1000 GW per year

In 2030

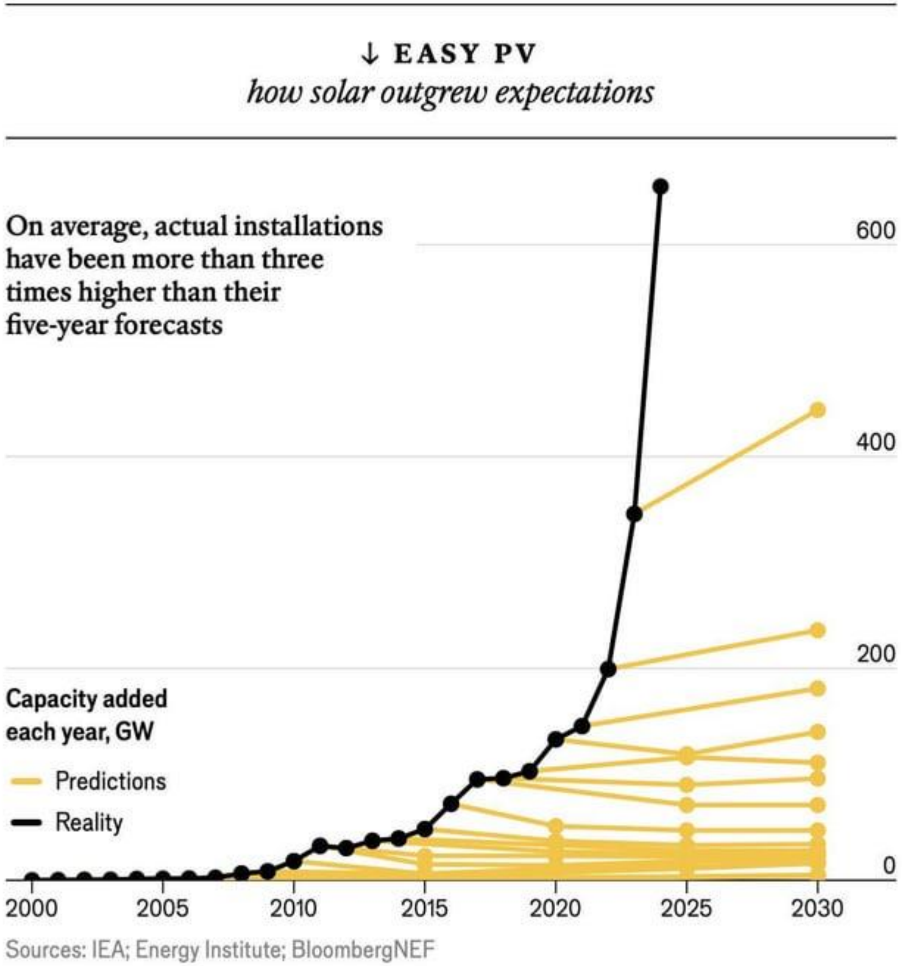

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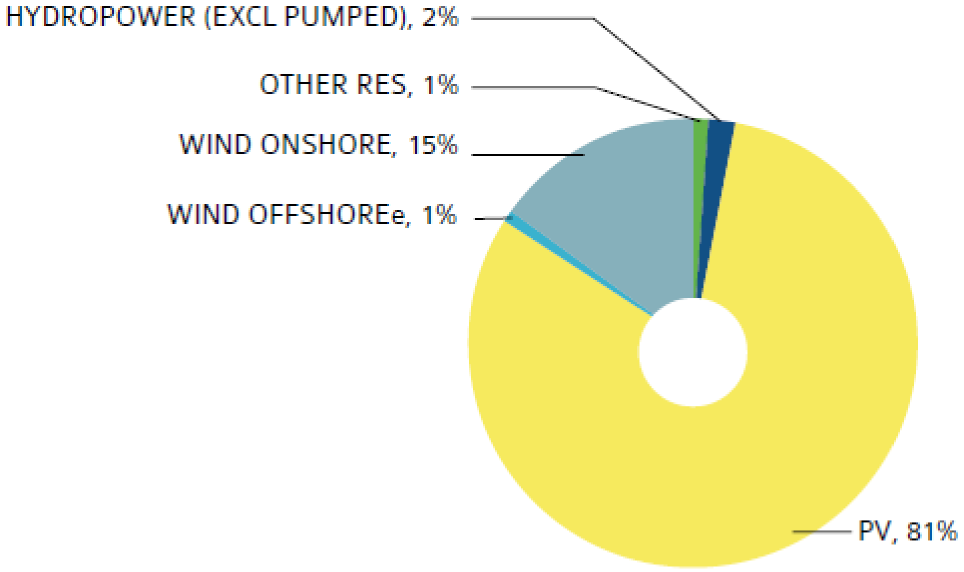
FIG.7.3 NEW RENEWABLE INSTALLED CAPACITY

FIGURE 7.3: NEW RENEWABLE INSTALLED CAPACITY IN 2024



SOURCE REN21, *GWEC, IHA, IEA PVPS

Conclusions

Market development is uneven

But growing

700 GW in 2025 ? But what after ?

Industry overcapacitiy has driven prices down

Endangering the industry

From policy driven to policy constrained

Trends report available in the coming days, check IEA-PVPS.org www.iea-pvps.org

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