

## GLOBAL CUMULATIVE INSTALLED PHOTOVOLTAIC CAPACITY AND RESPECTIVE INTERNATIONAL TRADE FLOWS

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### ABSTRACT

The installed capacity of photovoltaic (PV) systems is rising steadily. Most PV systems are installed in highly electrified countries as on-grid applications. Furthermore, there are heaps of small off-grid systems in rural areas of developing countries. Due to this, reliable installation rates for PV are available only for a small number of countries. For the end of 2010 EPIA reports 39,529 MWp giving data for 21 countries, whereas 2,075 MWp are not allocatable to specific countries. IEA-PVPS provides data for 34,953 MWp installed in 22 countries. This study is based on data from several recognized sources like EPIA and IEA-PVPS, and in addition, considers the international customs database of the International Trade Centre, complemented by interviews of experts from selected countries. In result, PV installations are localized in more than 190 countries claiming 38,534 MWp. Not allocatable PV is reduced by about 1,000 MWp in reference to EPIA. Finally, this work provides an overview on cumulative installed PV capacity for more than 190 countries in the world and presents insights on growth rates, specific installation ratios and a rough view on international trade flows for better understanding the PV diffusion patterns.

### Keywords

PV Markets, Installed Capacity, PV Installation, Trade Flows

## 1 EXAMINATION METHOD

The European Photovoltaic Industry Association (EPIA) provides an estimate of 2,075 MWp for countries, commonly named as Rest-of-World (RoW). [1] However, for these RoW countries no reliable estimation is available on installed PV capacity, because a considerable part is represented by off-grid systems, with a lack in public authority monitoring. To enhance a reliable valuation of developing countries' PV markets, the examination of several sources is necessary ensuring a credible estimation.

Basic source is the international customs database, monitored by the 'Market Analysis and Research' section of the International Trade Centre (ITC), which is an agency of UN's World Trade Organization. This database contains the customs data of all countries worldwide since the year 2001, receiving the data from the particular national customs authorities. The database provides the opportunity to evaluate the total value of imported and exported products for each country per year. Furthermore, a possibility of evaluating bilateral trades for a specific product is given. Products are classified in several specific product numbers, so-called HS Codes, being obligated by more than 200 countries, customs and economic unions, representing more than 98% of world's trade [2]. HS Code group 854140 represents 'photosensitive semiconductor devices, photovoltaic cells and light emitting diodes'. More specific descriptions with detailed determination in codes between light emitting diodes and PV are available for approximately 95% of the data. Otherwise an experienced ratio of 80% PV and 20% light emitting diodes is used. Surprisingly, a large number of developing countries'

customs agencies have reported detailed data. It is valid that: *'imports A from B' = 'exports B to A'*. Data have been assigned for 193 countries in a period from the year 2001 until 2010. Basis of the calculation of PV capacities per country is the following assumption: *'import A' - 'exports A' + 'production A' = 'market A'*. The production volumes refer to the publications of the magazine 'Photon' on the production output of the years 2001 until 2010 [3]. Regarding this, attention is paid to the fact that approximately 25% of annual productions are installed in the following year.

Since data are including monetary value of the products, a conversion to PV capacities is necessary. For this purpose a reliable estimation of PV prices per Wp for every country is needed. These price data refer to a worldwide annual average PV price per Wp [4]. Since prices depend on countries' locations and market sizes, there is a great degree of divergence. Therefore all countries are classified in five main groups with one of them having two subgroups, each representing a group of countries that are nearly comparable in market size and economic conditions. World's average price is multiplied by a factor quoting the ratio of the countries' price for each of these groups. The ratio is based on experiences and statements of several countries' experts that have been contacted [5-14]. Since the given world's average annual PV prices are selling prices of module producers, a factor of 10% is added considering distributor margins, shipping, etc. Therewith, prices for the year 2010 are diverging between 1.85 \$/Wp for advanced PV market countries and 4.52 \$/Wp for small PV applications in African and Asian low-income countries as it can be seen in Table 1.

[USD/Wp]	year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
<i>average world price:</i>	100%	5.17	4.96	4.36	4.13	4.24	4.55	5.07	4.57	4.38	2.53	2.05
<b>countries &gt;100MW/y</b>	90%	4.66	4.47	3.92	3.72	3.82	4.09	4.56	4.11	3.94	2.28	1.85
<b>countries &gt;10MW/y</b>	110%	5.69	5.46	4.79	4.55	4.67	5.00	5.57	5.02	4.82	2.78	2.26
<b>countries &gt;5MW/y</b>	150%	7.76	7.44	6.54	6.20	6.36	6.82	7.60	6.85	6.57	3.79	3.08
<b>countries &lt;5MW/y</b>	180%	9.31	8.93	7.84	7.44	7.63	8.19	9.12	8.22	7.89	4.55	3.70
<b>countries &lt;1MW/y</b>	200%	10.35	9.93	8.71	8.27	8.48	9.10	10.13	9.14	8.76	5.06	4.11
Africa & Asia	220%	11.38	10.92	9.59	9.10	9.33	10.01	11.14	10.05	9.64	5.57	4.52
Europe & NA & LA	190%	9.83	9.43	8.28	7.86	8.06	8.64	9.62	8.68	8.33	4.81	3.90

**Table 1:** PV module price in USD/Wp for conversion of customs values into PV capacity in dependence of annual installation rates and geographic location [4]. Abbreviations stand for: North America (NA) and Latin America (LA).

To lower the probability of error, further sources with installation rates are used estimated by EPIA [1,15], International Energy Agency Photovoltaic Power Systems Programme (IEA-PVPS) [16], Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) [17], the World Bank [18], Journal du photovoltaïque [19], EuPD Research [20], Infinergia Consulting [14] and Photon International [3].

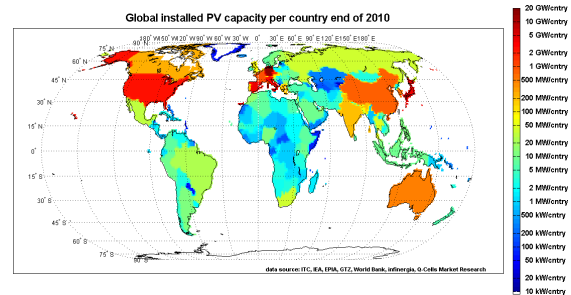
For some countries EPIA and GIZ provide data only for 2009 [15,17]. For these countries data for the additional installation in 2010 has been estimated based on the ITC database for the same year [2].

Besides, all sources are weighted in a certain order. For countries that have own cell or module production, the arithmetic mean of all sources except customs data is taken for estimation of installation rates, due to production margins and local PV value chain structures influencing the reliability of the customs database. In case of countries having no production, the arithmetic average of all sources is taken.

Due to statistical impacts of additional datasets for the year 2010, it is possible in very few cases that estimated installed PV capacities by end of 2010 can be slightly less than those estimated by end of 2009.

## 2 OVERVIEW ON PV INSTALLATIONS 2010

Within the use of this examination, world's total installed PV capacity is estimated to be up to 38,534 MWp at the end of 2010. It is expected that there are further 487 MWp that have been installed before 2001. PV installations can be found in almost all countries. The Appendix Table includes the results for the cumulative installed PV capacity for all countries in the world by end of 2010. The global cumulative installed PV capacity by the end of 2010 being allocated by the approach of this paper is depicted in Figure 1.

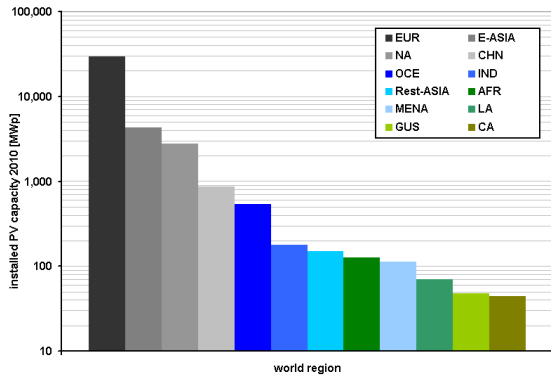


**Figure 1:** Total installed PV capacity per country by end of 2010. More details for all coloured countries can be found in the Appendix Table.

As it can be seen in Figure 1 Germany is dominating the market with a share of nearly 45%. The seven largest markets are Germany (17,210 MWp), Spain (3,840 MWp), Japan (3,610 MWp), Italy (3,490 MWp), the United States (2,529 MWp), the Czech Republic (1,950 MWp) and France (1,050 MWp), capturing 85% of worlds cumulative PV installations. Furthermore, there are ten additional countries claiming more than 100 MWp per country (China, Belgium, Korea, Australia, Canada, Greece, India, Slovakia, Portugal and Austria). However, several developing countries show a significant installed PV base, in particular Bangladesh (35 MWp), the Philippines (12 MWp), Nigeria (12 MWp), Indonesia (9 MWp), Kenya (9 MWp), Vietnam (7 MWp), Ethiopia (7 MWp) and many more. In these countries PV installations are mainly realized as off-grid systems, e.g. 5 MWp solar home systems with an average size of 50 Wp represent a solar power solution for 100.000 families.

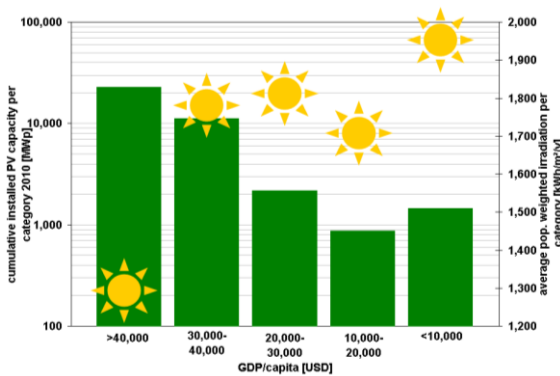
The cumulative installed PV capacity as of end of 2010 for each region of the world is displayed in Figure 2. Europe shows the highest PV installations, with 29,350 MWp claiming more than 75% of the world's PV installed base. Even without the dominating German market, Europe would be in the lead. East Asian and North American markets represent 4,290 MWp and 2,760 MWp respectively. In addition there are six regions having an installed PV base of more than 100 MWp per region (China, Australia and Oceania, India, Rest of Asia, Africa and MENA region). Only Latin American (70 MWp), the former Soviet Union (48 MWp) and Central American (44 MWp) markets show less than 100 MWp

of installed PV capacity.



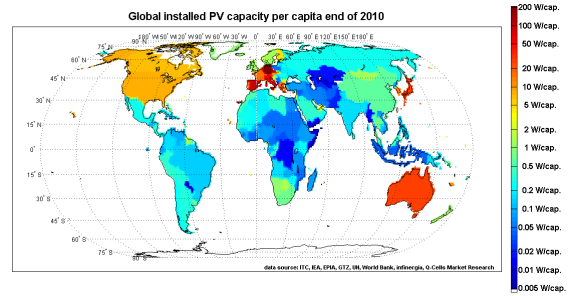
**Figure 2:** Installed PV capacity per world region by end of 2010. The abbreviations stand for: Europe (EUR), East Asia (E-Asia), North America (NA), China (CHN), Oceania (OCE), India (IND), rest of Asia (Rest-ASIA), Africa (AFR), Middle East North Africa (MENA), Latin America (LA), Former Soviet Union (GUS) and Central America (CA).

Nearly nine tenth of global installed PV capacity (33,960 MWp) is installed in countries that have a gross domestic production (GDP) per capita higher than 30,000 USD. In low income countries (GDP/capita <10,000 USD) PV is not used on the large-scale. They claim 1,450 MWp in 152 countries. Figure 3 gives a view on cumulative PV installations and irradiation, referring to categories of GDP per capita.



**Figure 3:** Total global installed PV capacity by end of 2010 (left axis) and indication of the average population weighted irradiation on fixed optimally tilted modules [21] (right axis) depending on GDP/capita.

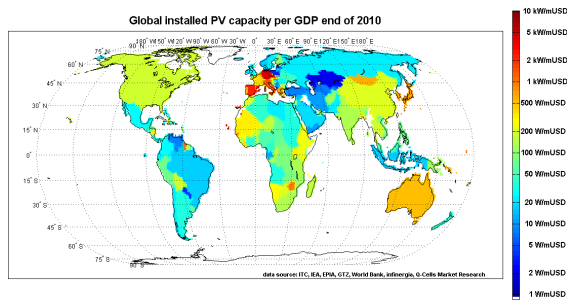
As it is able to be seen easily in Figure 3 the majority of PV is located in countries with moderate irradiation but high income. In those being predestined for using PV due to their high insolation, PV is mainly used as off-grid applications. If the reliable and sustainable solar energy source was used on a large scale in every country, solar powered electricity might help realize an effective improvement in local power supply.



**Figure 4:** Installed PV capacity per capita by end of 2010. Population data are taken from the United Nations [22]. More details for all coloured countries can be found in the Appendix Table.

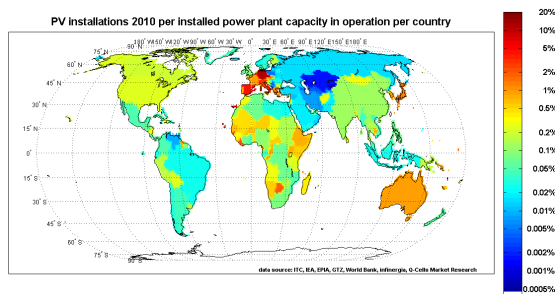
The PV installations per capita per country are shown in Figure 4. It is recognizable that a small number of countries claim high rates of PV installations per capita. Germany (206 Wp/capita) and the Czech Republic (187 Wp/capita) are the only ones with more than 100 Wp/capita. Especially highly developed countries in Europe, North America, East Asia or Australia with respective electricity consumption per capita show significant rates. However, Southern African and Asian emerging markets like South Africa, Namibia, Botswana, China or Mongolia show a raised PV capacity per head compared to similar countries. Central African regions represent fewer PV capacities per capita, yet high numbers of small scale solar home systems can be found there. In world's average, every human claims 5.6 Wp PV in the statistical view.

An indicator of how much invested relatively in PV is recognizable in installed PV capacities per countries' GDP (Figure 5). With the use of this comparative parameter markets are able to be compared. Few countries have reached significant ratios of PV installations per one million USD of GDP. One can see that the Czech Republic is the country that relatively invests most of its economic power into PV (9 kWp/mUSD), even ahead of the German market (4.7 kWp/mUSD). Other small countries that are rarely recognized due to having installed only a few MWp can be distinguished. Thus, countries like Cape Verde (4.6 kWp/mUSD), Djibouti (1.6 kWp/mUSD), Guyana (kWp/mUSD), Kiribati (1.1 kWp/mUSD) or Guinea-Bissau (1.1 kWp/mUSD) invest more of their economic power in PV than a bulk of highly developed countries. In comparison to this, the United States or Canada (0.17 kWp/mUSD each) have a vast potential of investing more capital in PV. In particular some typical off-grid PV countries, most of them in Africa have realized PV is about to significantly improve the people's living conditions and save enormous financial means in the mid- to long-term. Due to fast amortization of PV systems in rural areas of developing countries [23], these markets have no need for subsidies and make off-grid PV countries frontrunners in proportion of PV expenditures to GDP.

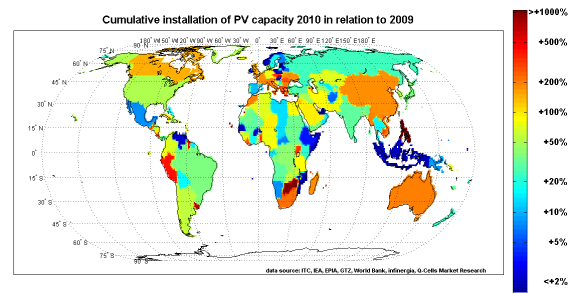


**Figure 5:** Global overview on cumulative PV installations per million USD of GDP as of end 2010. Data for GDP are taken from the World Bank [24]. More details for all coloured countries can be found in the Appendix Table.

As a consequence of high ratios of PV to GDP, various countries have already reached a measurable share of PV in respect to their total power plant capacities (Figure 6). Thus, an equivalent of 13% of the German power generation capacity is achieved by PV. The Czech Republic and Cape Verde are claiming 12% and 9% of their total power plant capacity upgraded by PV. Especially European and African countries show high ratios of PV in their power plant capacities. When closer examining the African countries that display high ratios of PV in their power plant capacities, it becomes obvious they are the ones using a high proportion of diesel power plants for generation of electricity. Countries leading in usage of diesel power, due to their remote location like islands or a couple of African countries, are leading in shares of PV in their total power plant capacity. This might be an indicator that PV is not only used as small off-grid solar home systems and pico systems for sustainable electrification of rural areas, but also as a sustainable alternative for larger solutions as applied in hospitals or, schools and supply for commercial appliances. This is especially prevailing in the background of high diesel prices and remote areas to be supplied with affordable electricity [23,25].

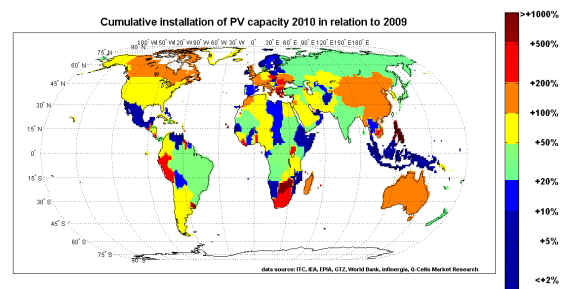


**Figure 6:** Global overview on cumulative PV installations per total power plant capacity per country for the year 2010. Some countries have already broken the 10%-threshold. Data for total power plant capacity are taken from Platts World Electric Power Plants database [26]. More details for all coloured countries can be found in the Appendix Table.



**Figure 7:** Growth rate of cumulative installed PV capacity in the year 2010. Displayed is the ratio of added PV capacity in 2010 to cumulative PV installations in 2009 [27]. More details for all coloured countries can be found in the Appendix Table.

Figure 7 gives an overview on PV market growth in 2010. Some countries have reached huge growth rates in 2010. The Cape Verde PV market has grown more than 4500% due to having installed a 7.5 MWp PV power plant. But not only developing countries show high growth rates in 2010. Slovakian cumulative PV installations in 2010 are more than 1700% higher than by the end of 2009. Respective growth rates are reached in nearly all regions in the world. Several European PV markets have more than doubled in cumulative installed PV capacity (Czech Republic, Romania, Greece, Bulgaria, Italy, UK, France and Belgium). The dominant German market reached a growth rate of 78%, while other countries show growth rates not higher than 10% (e.g. Spain and Finland). Chinese PV installations have grown by about 180%. East Asian PV markets show growth rates typically in the order of about 40% - 50%, whereas South and South East Asian markets seem to explode with several countries reaching growth rates of more than 100% - 200% (the Philippines, Cambodia, Maldives, Vietnam, Myanmar, Mongolia, Laos, Nepal and Singapore). The Australian market has reached a growth rate of 190%. Most of the African markets grew very fast. Especially Cape Verde, Botswana, Djibouti, Zimbabwe, Togo, Swaziland, Uganda and the Comoros need to be distinguished. Growth rates in the Americas are quite different. While the markets of Uruguay (750%), Guyana (490%), Peru (420%), Costa Rica (380%), Barbados (250%), Guatemala (240%) and Canada (180%) have grown on a high scale, markets like Venezuela (2%), Mexico (8%) and Bolivia (14%) remained nearly static. The Brazilian market has grown by 38% and the PV installations in the United States grew by about 50%. Further, Figure 8 gives an overview on growth categories for all countries.



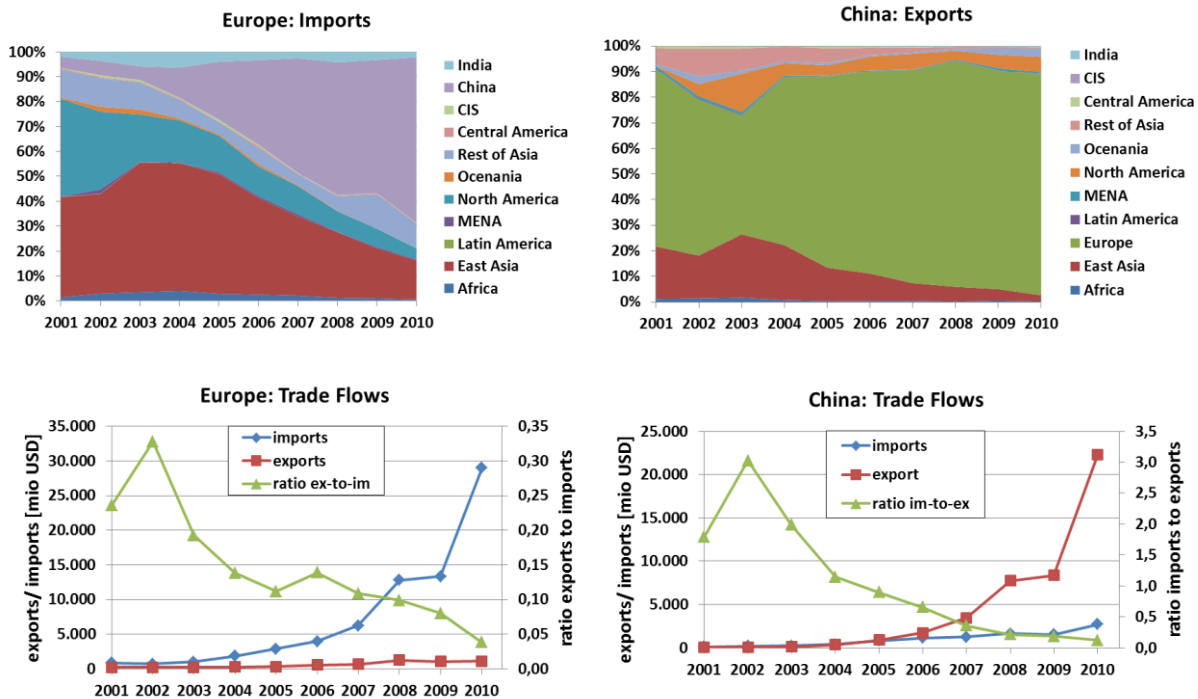
**Figure 8:** Growth categories of cumulative installed PV capacity in the year 2010. The figure is based on the data

depicted in Figure 7.

### 3 DYNAMICS IN PV TRADE FLOWS

The ITC customs database comprises the monetary exchange of all trade partners across national borders. The ITC classification covers solar cells and PV

modules, thus the major cost components of internationally traded PV products are accessible by the database. For the period from the year 2001 to 2010 the major importing and exporting world regions are chosen for a deeper view. Therefore Europe and China are taken for displaying the major changes in global PV value creation over the last decade (Figure 9).



**Figure 9:** Trade flows for Europe (left) and China (right) in the 2000s. At the end of the 2000s, the major PV importing region in the world has been Europe (left) characterised by the origin of imports (top) and absolute and relative value of the imported and exported PV products (bottom). At the end of the 2000s, the major PV exporting region in the world has been China (right) characterised by the destination of exports (top) and absolute and relative value of the exported and imported PV products (bottom). Data are taken from ITC customs database [2].

As end of 2010 about 75% of global cumulative installed PV capacity was located in Europe (Figure 1). Europe itself has imported significant proportions of installed PV capacity in the 2000s, however the ratio of exports to imports declined from about 25%-30% in the begin to less than 5% at the end of the 2000s (Figure 9). This has been accompanied by a fundamental shift in the sourcing regions, since in the year 2001 East Asia (Japan) and North America (the US) contributed to about 40% each to the European imports, whereas in the year 2010, Japan and Taiwan contributed to less than 20% and the US to less than 5% to the European imports but Chinese manufacturers have conquered an import market share of nearly 70%.

The view on the Chinese trade flows (Figure 9) reveals two significant insights. Firstly, Europe has been the key destination for Chinese manufactures over the entire 2000s, since the export share of Europe increased from about 70% in the year 2001 to about 85%. This happened at very high annual growth rates in absolute exports. Secondly, China changed from a net importing to a net

exporting country, the first time in the year 2005 and has since dramatically increased industrial output, in particular from the year 2009 to 2010.

The trade flows for Europe and China document the high dynamics in shifting the global PV manufacturing base from the historically leading triad, i.e. Japan, the US and Europe (mainly Germany), to China. This happened over a time period of slightly more than half a decade and further highlights the enormous dynamics in the PV industry.

### 4 CONCLUSIONS

38,534 MWp can be allocated to 193 countries (Appendix Table). By combining all available data it is possible to reduce RoW by about 1,000 MWp in reference to EPIA. Analysis of ITC customs data for the years 2001 to 2010 enables an allocation of 120 MWp in 88 countries for which no other data source is available. Insights of local experts and examination of reports



complement all other data. Resulting 1,075 MWp expected to be installed in RoW cannot be explained, however 487 MWp are assumed to have been installed before 2001, i.e. it is not possible to generate PV market insights by ITC customs data before the year 2001. Further 512 MWp of assumed PV installations of the years 2001 to 2010 cannot be allocated or might not exist, due to breakage etc.

One can clearly see that every world region has the potential to become a great PV market. Enormous growth rates in specific regions of the world show that PV is on the way to become an important part of electricity supply. Notably, the majority of the 193 countries covered in this analysis grew by more than 50% in the cumulative installed PV capacity in the year 2010, and 55 countries grew by even more than 100%. Some developing countries are on the road to solar electrification. Lower energy costs enabled by reduced dependence on energy imports, will contribute to lead these countries to sustainable development and stable growth.

The trade flow analysis for the major importing region (Europe) and the major exporting region (China) documents the very high dynamics in the PV industry, since the global PV manufacturing base has been shifted within slightly more than half a decade from the historically leading triad to China. On the one hand, this seems to confirm the assumption that China is the only country in the world where the true potential of PV [28] is fully understood and on the other hand, that in Japan, the US and Germany the governments and administrations dramatically lag behind the strategic policy-making in China. However, the pressing energy related problems in the world can only be tackled by a sustainable move of China, which might already be underway.

Energy should not be among the large problems mankind is faced to, because the best and most powerful energy source is to be found our heads – recognized by more and more nations in the world.

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## APPENDIX

**Appendix Table:** List of 193 countries and respective data for cumulative installed PV capacity as end of 2010 and 2009, the growth rate of cumulative installed capacity, PV per capita, PV per GDP, PV share in ratio to total power plant capacity, population, GDP for 2009, GDP per capita, total power plant capacity and population weighted irradiation on optimally fixed tilted modules.

	PV capacity cumulative installed as end of 2010	PV capacity cumulative installed as end of 2009	Growth Rate in 2010	PV per capita by end of 2010	PV per GDP	PV share in power plant capacity	Population	GDP for the year 2009	GDP per capita	total power plant capacity	Population weighted irradiation on optimally fixed tilted modules
references		[27]					[22]	[24]		[26]	[21]
units	[MWp]	[MWp]	[%]	[Wp/capita]	[Wp/mUSD]	[%]	[mio pop]	[bnUSD]	[USD]	[MW]	[kWh/m <sup>2</sup> /y]
<b>Afghanistan</b>	<b>1.30</b>	1.20	6%	0.043	122.91	0.29%	29.1	10.2	349	431.3	2,164
<b>Albania</b>	<b>0.03</b>	0.00	n/a	0.009	2.44	0.00%	3.2	12.3	3,880	1,693.0	1,923
<b>Algeria</b>	<b>7.10</b>	4.10	73%	0.200	40.66	0.08%	35.4	173.9	4,909	9,271.1	1,993
<b>Andorra</b>	<b>0.05</b>	0.05	0%	0.577	0.00	0.11%	0.1	n/a	n/a	46.6	n/a
<b>Angola</b>	<b>2.90</b>	2.20	31%	0.152	34.54	0.26%	19.0	83.4	4,390	1,112.0	2,084
<b>Antigua and Barbuda</b>	<b>0.09</b>	0.06	50%	1.016	73.47	0.13%	0.1	1.2	13,834	68.9	n/a
<b>Argentina</b>	<b>11.70</b>	7.50	56%	0.287	35.57	0.04%	40.7	328.4	8,075	29,935.9	1,962
<b>Armenia</b>	<b>0.07</b>	0.02	250%	0.023	5.87	0.00%	3.1	11.9	3,856	3,216.9	1,830
<b>Australia</b>	<b>532.00</b>	184.00	190%	24.718	523.76	0.97%	21.5	1015.2	47,193	54,765.6	1,914
<b>Austria</b>	<b>101.00</b>	45.00	124%	12.009	241.90	0.54%	8.4	416.4	49,643	18,632.7	1,389
<b>Azerbaijan</b>	<b>0.18</b>	0.01	1700%	0.020	3.89	0.00%	8.9	46.3	5,178	7,053.8	1,685
<b>Bahamas, The</b>	<b>0.21</b>	0.18	17%	0.607	30.28	0.04%	0.3	6.9	20,059	562.7	2,198
<b>Bahrain</b>	<b>0.05</b>	0.04	25%	0.062	3.16	0.00%	0.8	15.8	19,610	5,113.1	n/a
<b>Bangladesh</b>	<b>34.70</b>	22.20	56%	0.211	438.76	0.56%	164.4	79.0	480	6,216.3	1,908
<b>Barbados</b>	<b>0.14</b>	0.04	250%	0.546	41.07	0.05%	0.3	3.4	13,288	262.1	n/a
<b>Belarus</b>	<b>2.10</b>	2.00	7%	0.218	34.66	0.03%	9.6	60.3	6,289	7,998.1	1,264
<b>Belgium</b>	<b>796.00</b>	318.00	150%	74.377	1599.02	4.66%	10.7	497.6	46,514	17,065.8	1,203
<b>Belize</b>	<b>0.03</b>	0.03	0%	0.096	21.95	0.02%	0.3	1.4	4,368	130.9	1,807
<b>Benin</b>	<b>0.55</b>	0.16	244%	0.060	82.34	0.49%	9.2	6.7	725	112.0	n/a



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<b>Bermuda</b>	<b>0.22</b>	0.15	47%	3.385	37.57	0.10%	0.1	5.9	90,084	213.9	n/a
<b>Bhutan</b>	<b>0.02</b>	0.02	0%	0.028	14.72	0.00%	0.7	1.4	1,918	1,501.5	1,943
<b>Bolivia</b>	<b>3.10</b>	2.70	15%	0.308	185.17	0.24%	10.0	16.7	1,662	1,268.7	2,037
<b>Bosnia-Herzegovina</b>	<b>0.13</b>	0.08	63%	0.035	7.05	0.00%	3.8	18.5	4,908	3,598.4	1,548
<b>Botswana</b>	<b>2.70</b>	0.11	2385%	1.382	210.76	1.76%	2.0	13.0	6,558	155.6	2,302
<b>Brazil</b>	<b>26.60</b>	19.30	38%	0.136	16.52	0.03%	195.4	1612.5	8,252	103,198.2	1,883
<b>Brunei</b>	<b>0.01</b>	0.01	0%	0.025	0.87	0.00%	0.4	11.5	28,181	959.3	1,915
<b>Bulgaria</b>	<b>17.40</b>	6.00	190%	2.323	348.96	0.16%	7.5	49.9	6,656	10,764.6	1,606
<b>Burkina Faso</b>	<b>1.80</b>	2.00	0%	0.108	220.81	0.64%	16.3	7.9	488	275.1	2,164
<b>Burundi</b>	<b>0.19</b>	0.15	27%	0.022	163.37	0.46%	8.5	1.2	137	40.9	1,803
<b>Cambodia</b>	<b>2.10</b>	0.53	296%	0.138	216.94	0.75%	15.1	9.6	636	276.0	1,937
<b>Cameroon</b>	<b>0.98</b>	0.54	81%	0.049	41.89	0.11%	20.0	23.4	1,172	898.9	1,875
<b>Canada</b>	<b>240.00</b>	97.20	147%	7.081	171.39	0.19%	33.9	1400.1	41,313	126,081.0	1,554
<b>Cape Verde</b>	<b>7.90</b>	0.17	4556%	15.441	4575.14	9.68%	0.5	1.7	3,375	81.8	2,283
<b>Central African Republic</b>	<b>0.15</b>	0.14	7%	0.033	76.14	0.57%	4.5	2.0	437	26.2	2,031
<b>Chad</b>	<b>0.54</b>	0.48	13%	0.047	64.59	0.29%	11.5	8.4	727	187.0	2,222
<b>Chile</b>	<b>3.70</b>	2.30	66%	0.218	22.04	0.03%	17.1	169.5	9,890	12,946.5	2,124
<b>China</b>	<b>861.00</b>	301.00	186%	0.636	198.25	0.12%	1,354.7	4344.8	3,207	704,649.7	1,631
<b>Colombia</b>	<b>6.90</b>	4.00	71%	0.149	28.41	0.05%	46.3	242.3	5,233	14,287.8	1,732
<b>Comoros</b>	<b>0.16</b>	0.04	300%	0.231	301.89	1.13%	0.7	0.5	767	14.2	2,287
<b>Congo, DR</b>	<b>0.99</b>	0.69	43%	0.015	85.43	0.07%	67.8	11.6	171	1,469.8	1,848
<b>Congo, Republic of the</b>	<b>1.70</b>	1.20	37%	0.452	158.89	0.90%	3.8	10.7	2,846	189.0	1,638
<b>Costa Rica</b>	<b>1.00</b>	0.86	381%	0.218	33.85	0.04%	4.6	29.8	6,430	2,290.7	1,735
<b>Croatia</b>	<b>11.30</b>	6.00	88%	2.556	162.55	0.28%	4.4	69.3	15,723	3,976.9	1,586
<b>Cuba</b>	<b>2.10</b>	1.10	91%	0.189	0.00	0.05%	11.2	n/a	n/a	4,221.9	1,987
<b>Cyprus</b>	<b>6.20</b>	0.63	891%	7.100	293.56	0.40%	0.9	21.3	24,186	1,560.2	2,244
<b>Czech Republic</b>	<b>1,950.00</b>	463.00	322%	187.550	9019.32	12.26%	10.4	216.5	20,794	15,921.1	1,251
<b>Denmark</b>	<b>6.00</b>	4.10	48%	1.090	17.59	0.06%	5.5	342.7	61,955	10,596.3	1,287
<b>Djibouti</b>	<b>1.40</b>	0.21	562%	1.581	1588.57	1.40%	0.9	0.9	995	99.5	2,318
<b>Dominica</b>	<b>0.04</b>	0.02	100%	0.601	109.89	0.17%	0.1	0.4	5,472	23.9	2,386
<b>Dominican Republic</b>	<b>1.90</b>	1.30	55%	0.190	42.37	0.05%	10.2	45.8	4,478	3,910.1	1,995
<b>Ecuador</b>	<b>1.20</b>	0.98	81%	0.087	22.73	0.03%	13.8	52.6	3,817	4,086.8	1,660

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<b>Egypt</b>	<b>5.50</b>	3.00	82%	0.065	33.52	0.02%	84.5	162.8	1,927	22,719.0	2,242
<b>El Salvador</b>	<b>0.32</b>	0.24	33%	0.052	14.47	0.02%	6.2	22.1	3,570	1,341.0	2,206
<b>Equatorial Guinea</b>	<b>0.54</b>	0.29	86%	0.779	29.15	1.02%	0.7	18.5	26,717	52.8	1,632
<b>Eritrea</b>	<b>0.41</b>	0.34	21%	0.078	247.88	0.28%	5.2	1.7	317	144.0	2,215
<b>Estonia</b>	<b>3.00</b>	3.00	2%	2.251	130.58	0.10%	1.3	23.1	17,238	3,150.5	1,298
<b>Ethiopia</b>	<b>6.90</b>	6.70	3%	0.081	261.07	0.83%	85.0	26.5	312	832.0	2,205
<b>Federated States of Micronesia</b>	<b>0.15</b>	0.14	7%	1.350	0.00	0.47%	0.1	n/a	n/a	31.8	2,016
<b>Fiji</b>	<b>0.47</b>	0.37	27%	0.550	133.26	0.21%	0.9	3.5	4,130	221.2	1,976
<b>Finland</b>	<b>26.10</b>	24.30	7%	4.881	96.18	0.16%	5.3	271.3	50,747	16,538.8	1,181
<b>France</b>	<b>1,050.00</b>	372.00	183%	16.694	369.30	0.91%	63.1	2853.1	45,205	115,630.7	1,441
<b>French Guiana</b>	<b>0.00</b>	0.00	0%	0.000	0.00	0.00%	0.2	n/a	n/a	227.3	1,785
<b>Gabon</b>	<b>0.17</b>	0.15	13%	0.113	11.78	0.04%	1.5	14.4	9,615	378.9	1,667
<b>Gambia, The</b>	<b>0.69</b>	0.67	3%	0.394	882.35	1.11%	1.8	0.8	447	62.3	2,129
<b>Georgia</b>	<b>0.36</b>	0.33	9%	0.085	28.14	0.01%	4.2	12.8	3,032	3,454.2	1,678
<b>Germany</b>	<b>17,210.00</b>	9,690.00	78%	209.740	4711.59	13.01%	82.1	3652.8	44,516	132,257.1	1,222
<b>Ghana</b>	<b>0.84</b>	0.55	52%	0.034	51.79	0.04%	24.3	16.1	663	1,951.7	1,852
<b>Greece</b>	<b>206.00</b>	57.80	256%	18.417	577.26	1.39%	11.2	356.8	31,904	14,866.3	1,753
<b>Greenland</b>	<b>0.06</b>	0.04	50%	1.047	0.00	0.04%	0.1	n/a	n/a	141.5	n/a
<b>Grenada</b>	<b>0.10</b>	0.08	25%	0.958	156.74	0.20%	0.1	0.6	6,115	51.2	2,317
<b>Guadeloupe</b>	<b>0.00</b>	0.00	0%	0.000	0.00	0.00%	0.5	n/a	n/a	650.0	2,344
<b>Guam</b>	<b>0.13</b>	0.00	n/a	0.695	0.00	0.02%	0.2	n/a	n/a	563.1	2,212
<b>Guatemala</b>	<b>1.80</b>	0.53	240%	0.125	46.18	0.09%	14.4	39.0	2,711	2,098.4	1,997
<b>Guinea</b>	<b>1.20</b>	0.74	62%	0.116	281.29	0.31%	10.3	4.3	413	381.1	2,046
<b>Guinea - Bissau</b>	<b>0.47</b>	0.25	86%	0.282	1081.40	3.04%	1.6	0.4	261	15.3	2,089
<b>Guyana</b>	<b>1.50</b>	0.25	492%	1.944	1278.07	0.86%	0.8	1.2	1,521	171.3	1,784
<b>Haiti</b>	<b>0.86</b>	0.59	46%	0.084	123.69	0.35%	10.2	7.0	682	244.8	2,146
<b>Honduras</b>	<b>1.10</b>	0.76	41%	0.141	76.01	0.07%	7.6	14.1	1,848	1,595.4	1,932
<b>Hong Kong</b>	<b>0.14</b>	0.14	0%	0.020	0.65	0.00%	7.1	215.4	30,463	0.000	1,506
<b>Hungary</b>	<b>1.80</b>	9.10	0%	0.175	11.31	0.02%	10.0	154.7	15,508	9,108.2	1,445
<b>Iceland</b>	<b>0.33</b>	0.19	74%	1.002	19.81	0.01%	0.3	16.7	50,589	2,388.7	n/a
<b>India</b>	<b>177.00</b>	136.00	30%	0.146	145.59	0.11%	1,214.5	1217.5	1,002	157,537.3	2,032
<b>Indonesia</b>	<b>9.20</b>	10.20	0%	0.039	17.85	0.02%	233.7	514.9	2,203	37,324.1	1,809

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<b>Iran</b>	<b>4.30</b>	2.20	90%	0.057	11.06	0.01%	75.1	385.1	5,130	55,211.9	2,041
<b>Iraq</b>	<b>2.20</b>	1.60	45%	0.071	0.00	0.02%	31.5	n/a	n/a	11,956.8	2,073
<b>Ireland</b>	<b>5.00</b>	13.00	0%	1.087	17.71	0.07%	4.6	281.8	61,402	7,263.6	1,055
<b>Israel</b>	<b>40.20</b>	18.20	120%	5.520	201.59	0.32%	7.3	199.5	27,385	12,590.8	2,247
<b>Italy</b>	<b>3,490.00</b>	1,180.00	195%	58.003	1519.87	3.32%	60.1	2294.7	38,163	104,897.3	1,720
<b>Ivory Coast</b>	<b>0.93</b>	0.80	16%	0.043	39.72	0.07%	21.6	23.4	1,085	1,293.1	1,818
<b>Jamaica</b>	<b>0.43</b>	0.24	82%	0.157	28.36	0.04%	2.7	15.1	5,520	1,116.4	2,132
<b>Japan</b>	<b>3,610.00</b>	2,630.00	37%	28.437	735.63	1.34%	127.0	4909.3	38,657	269,284.0	1,578
<b>Jordan</b>	<b>0.79</b>	0.31	154%	0.121	39.29	0.03%	6.5	20.0	3,092	2,294.2	2,103
<b>Kazakhstan</b>	<b>0.29</b>	0.17	71%	0.018	2.19	0.00%	15.8	132.2	8,394	19,077.0	1,709
<b>Kenya</b>	<b>8.70</b>	7.00	23%	0.212	251.56	0.59%	40.9	34.5	844	1,467.4	2,124
<b>Kiribati</b>	<b>0.15</b>	0.15	0%	1.507	1145.04	1.59%	0.1	0.1	1,316	9.4	2,178
<b>Korea, DPR</b>	<b>2.20</b>	0.00	n/a	0.091	0.00	0.02%	24.0	n/a	n/a	9,285.0	1,874
<b>Korea, Republic of</b>	<b>655.00</b>	439.00	49%	13.501	704.76	0.85%	48.5	929.1	19,157	77,082.3	1,770
<b>Kuwait</b>	<b>1.80</b>	1.40	35%	0.603	16.41	0.02%	3.1	112.1	36,750	10,967.0	2,134
<b>Kyrgyzstan</b>	<b>0.02</b>	0.01	100%	0.004	4.52	0.00%	5.6	4.4	796	3,762.7	1,840
<b>Laos</b>	<b>0.68</b>	0.31	119%	0.106	125.21	0.10%	6.4	5.4	844	681.3	1,829
<b>Latvia</b>	<b>0.11</b>	0.25	0%	0.049	3.23	0.00%	2.2	33.8	15,080	2,479.6	1,307
<b>Lebanon</b>	<b>0.71</b>	0.65	9%	0.167	24.77	0.03%	4.3	28.7	6,736	2,377.6	2,159
<b>Lesotho</b>	<b>0.01</b>	0.01	0%	0.005	6.17	0.01%	2.1	1.6	778	78.5	n/a
<b>Liberia</b>	<b>0.36</b>	0.10	260%	0.088	413.79	2.26%	4.1	0.9	212	15.9	1,781
<b>Libya</b>	<b>2.20</b>	2.00	13%	0.343	22.47	0.03%	6.5	99.9	15,266	7,956.5	2,110
<b>Lithuania</b>	<b>0.62</b>	0.93	0%	0.189	12.99	0.01%	3.3	47.3	14,543	4,755.1	1,277
<b>Luxembourg</b>	<b>30.10</b>	26.40	14%	61.271	555.35	1.77%	0.5	54.3	110,330	1,706.0	n/a
<b>Macedonia</b>	<b>0.38</b>	0.07	443%	0.186	39.91	0.02%	2.0	9.5	4,659	1,673.8	1,718
<b>Madagascar</b>	<b>1.50</b>	0.54	178%	0.074	167.22	0.38%	20.1	9.0	445	396.4	2,091
<b>Malawi</b>	<b>0.37</b>	0.13	185%	0.024	86.67	0.12%	15.7	4.3	272	310.9	2,088
<b>Malaysia</b>	<b>11.30</b>	11.00	2%	0.405	57.97	0.04%	27.9	194.9	6,983	25,591.4	1,766
<b>Maldives</b>	<b>0.23</b>	0.06	283%	0.733	182.54	0.23%	0.3	1.3	4,014	101.4	n/a
<b>Mali</b>	<b>3.00</b>	2.30	29%	0.224	340.96	0.51%	13.3	8.7	656	588.6	2,185
<b>Malta</b>	<b>1.10</b>	0.29	287%	2.740	150.80	0.19%	0.4	7.4	18,168	588.8	2,188
<b>Martinique</b>	<b>0.00</b>	0.00	0%	0.000	0.00	0.00%	0.4	n/a	n/a	416.9	2,323

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<b>Mauritania</b>	<b>0.91</b>	0.69	32%	0.270	318.40	0.43%	3.4	2.9	849	212.9	2,202
<b>Mauritius</b>	<b>1.30</b>	0.32	297%	0.980	146.80	0.16%	1.3	8.7	6,672	810.2	2,244
<b>Mexico</b>	<b>30.30</b>	28.20	8%	0.274	27.93	0.05%	110.6	1086.0	9,815	59,542.8	2,136
<b>Moldova</b>	<b>0.16</b>	0.08	100%	0.045	26.46	0.01%	3.6	6.0	1,691	2,999.6	1,492
<b>Mongolia</b>	<b>3.10</b>	1.10	178%	1.153	592.32	0.30%	2.7	5.3	1,947	1,028.7	1,910
<b>Morocco</b>	<b>16.80</b>	5.60	202%	0.520	194.97	0.30%	32.4	86.3	2,666	5,658.6	2,153
<b>Mozambique</b>	<b>1.20</b>	1.20	2%	0.050	121.11	0.05%	23.4	9.7	416	2,321.2	2,026
<b>Myanmar</b>	<b>0.71</b>	0.24	196%	0.014	0.00	0.04%	50.5	n/a	n/a	1,788.2	1,939
<b>Namibia</b>	<b>2.30</b>	2.10	7%	1.040	268.57	0.60%	2.2	8.6	3,872	385.6	2,352
<b>Nepal</b>	<b>3.20</b>	1.50	117%	0.106	249.70	0.44%	29.9	12.6	423	722.3	2,176
<b>Netherlands</b>	<b>86.10</b>	66.10	30%	5.077	100.08	0.40%	17.0	860.3	50,724	21,529.8	1,242
<b>New Caledonia</b>	<b>2.80</b>	2.10	33%	10.995	0.00	0.64%	0.3	n/a	n/a	437.0	2,129
<b>New Zealand</b>	<b>5.50</b>	4.40	24%	1.269	41.78	0.06%	4.3	130.7	30,369	9,681.4	1,644
<b>Nicaragua</b>	<b>2.20</b>	1.20	94%	0.384	339.05	0.31%	5.8	6.6	1,132	728.5	2,016
<b>Niger</b>	<b>0.80</b>	0.42	90%	0.050	149.42	0.59%	15.9	5.4	337	135.9	2,382
<b>Nigeria</b>	<b>11.60</b>	6.70	74%	0.073	54.84	0.10%	158.3	212.1	1,340	11,101.1	1,978
<b>Norway</b>	<b>7.30</b>	8.70	0%	1.504	16.22	0.02%	4.9	450.0	92,681	30,092.5	1,103
<b>Oman</b>	<b>0.70</b>	0.61	15%	0.241	19.59	0.01%	2.9	35.7	12,299	5,750.5	2,239
<b>Pakistan</b>	<b>4.00</b>	2.30	78%	0.022	23.95	0.02%	184.8	168.3	911	21,071.4	2,135
<b>Palestine</b>	<b>0.00</b>	0.00	0%	0.000	0.00	0.00%	4.4	n/a	n/a	0.0	2,056
<b>Panama</b>	<b>0.78</b>	0.66	27%	0.221	33.57	0.06%	3.5	23.1	6,581	1,378.2	1,728
<b>Papua New Guinea</b>	<b>1.00</b>	0.93	9%	0.147	123.65	0.16%	6.9	8.2	1,186	630.6	1,825
<b>Paraguay</b>	<b>0.06</b>	0.05	50%	0.009	3.76	0.02%	6.5	16.0	2,473	257.6	1,898
<b>Peru</b>	<b>10.20</b>	1.90	424%	0.345	79.84	0.17%	29.5	127.4	4,320	6,141.1	2,006
<b>Philippines</b>	<b>12.30</b>	0.60	1956%	0.132	73.89	0.07%	93.6	166.9	1,783	17,393.9	1,842
<b>Poland</b>	<b>1.80</b>	2.00	0%	0.046	3.32	0.00%	38.0	527.0	13,854	36,481.1	1,235
<b>Portugal</b>	<b>126.00</b>	95.90	32%	11.786	521.23	0.82%	10.7	242.7	22,613	15,437.4	1,891
<b>Puerto Rico</b>	<b>1.90</b>	3.10	0%	0.470	0.00	0.00%	4.0	n/a	n/a	0.0	2,142
<b>Qatar</b>	<b>1.20</b>	0.44	164%	0.769	22.00	0.02%	1.5	52.7	34,954	5,440.2	2,065
<b>Republic of Palau</b>	<b>0.14</b>	0.09	56%	6.819	769.23	0.52%	0.02	0.2	8,865	26.8	2,020
<b>Romania</b>	<b>5.50</b>	1.60	256%	0.260	27.59	0.03%	21.2	200.1	9,442	21,228.9	1,500
<b>Russia</b>	<b>35.70</b>	28.90	23%	0.254	22.17	0.02%	140.4	1607.8	11,454	228,525.8	1,403

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<b>Rwanda</b>	<b>0.75</b>	0.56	34%	0.073	168.45	1.42%	10.3	4.5	434	53.0	1,831
<b>Sao Tome and Principe</b>	<b>0.01</b>	0.01	0%	0.060	57.14	0.09%	0.2	0.2	1,058	11.0	n/a
<b>Saudi Arabia</b>	<b>9.10</b>	4.70	96%	0.348	19.51	0.02%	26.2	467.6	17,816	48,349.1	2,296
<b>Senegal</b>	<b>4.70</b>	4.90	0%	0.366	356.20	0.65%	12.9	13.2	1,027	719.4	2,126
<b>Serbia</b>	<b>0.48</b>	0.41	17%	0.046	8.79	0.00%	10.5	54.6	5,208	10,108.5	1,573
<b>Seychelles</b>	<b>0.05</b>	0.04	25%	0.591	60.02	0.04%	0.1	0.8	9,846	140.7	2,168
<b>Sierra Leone</b>	<b>0.30</b>	0.15	100%	0.051	153.61	0.39%	5.8	2.0	335	76.8	1,861
<b>Singapore</b>	<b>3.00</b>	1.40	114%	0.620	16.49	0.03%	4.8	181.9	37,618	11,053.6	n/a
<b>Slovakia</b>	<b>145.00</b>	7.80	1762%	26.737	1523.73	1.94%	5.4	95.0	17,547	7,461.8	1,286
<b>Slovenia</b>	<b>36.30</b>	4.00	808%	17.944	665.34	1.12%	2.0	54.6	26,971	3,244.3	1,483
<b>Solomon Island</b>	<b>0.32</b>	0.18	78%	0.597	494.59	0.84%	0.5	0.6	1,208	38.1	1,953
<b>Somalia</b>	<b>0.08</b>	0.08	0%	0.009	0.00	0.51%	9.4	n/a	n/a	15.6	2,100
<b>South Africa</b>	<b>39.50</b>	12.00	229%	0.782	142.72	0.09%	50.5	276.8	5,481	44,063.8	2,166
<b>Spain</b>	<b>3,840.00</b>	3,480.00	10%	84.795	2395.38	4.47%	45.3	1604.2	35,399	85,938.6	1,886
<b>Sri Lanka</b>	<b>6.70</b>	5.20	29%	0.328	164.60	0.24%	20.4	40.7	1,995	2,850.0	1,813
<b>St. Helena</b>	<b>0.01</b>	0.01	0%	2.270	0.00	0.34%	0.004	n/a.0	n/a	3.0	2,149
<b>St. Lucia</b>	<b>0.07</b>	0.05	40%	0.402	69.24	0.09%	0.2	1.0	5,812	74.4	n/a
<b>St. Vincent and Grenadines</b>	<b>0.06</b>	0.03	100%	0.549	101.01	0.13%	0.1	0.6	5,435	45.9	2,277
<b>Sudan</b>	<b>2.10</b>	1.60	34%	0.048	35.48	0.13%	43.2	58.4	1,353	1,586.3	2,271
<b>Suriname</b>	<b>0.48</b>	0.42	14%	0.915	166.61	0.09%	0.5	2.9	5,494	516.5	1,872
<b>Swaziland</b>	<b>0.34</b>	0.07	386%	0.283	129.87	0.27%	1.2	2.6	2,178	124.4	1,982
<b>Sweden</b>	<b>11.20</b>	9.40	19%	1.208	23.38	0.03%	9.3	480.0	51,654	33,635.8	1,218
<b>Switzerland</b>	<b>90.70</b>	66.90	36%	11.947	185.75	0.55%	7.6	488.5	64,318	16,572.6	1,467
<b>Syria</b>	<b>0.84</b>	0.54	56%	0.037	15.22	0.01%	22.5	55.2	2,453	7,705.3	2,026
<b>Taiwan</b>	<b>23.00</b>	8.40	174%	0.000	0.00	0.05%	23.0	n/a	n/a	49,160.3	1,632
<b>Tajikistan</b>	<b>0.33</b>	0.16	106%	0.047	64.28	0.01%	7.1	5.1	726	4,909.0	1,996
<b>Tanzania</b>	<b>2.90</b>	1.60	85%	0.065	143.91	0.25%	45.0	20.5	455	1,186.6	2,043
<b>Thailand</b>	<b>46.50</b>	40.00	16%	0.682	178.37	0.13%	68.1	260.7	3,826	34,706.4	1,903
<b>Togo</b>	<b>0.93</b>	0.19	389%	0.137	329.44	0.45%	6.8	2.8	416	208.7	1,931
<b>Trinidad and Tobago</b>	<b>0.14</b>	0.05	180%	0.104	5.86	0.01%	1.3	23.9	17,785	1,672.4	2,136
<b>Tunisia</b>	<b>3.20</b>	1.80	73%	0.304	78.47	0.09%	10.4	40.2	3,873	3,589.8	1,916
<b>Turkey</b>	<b>6.20</b>	4.90	26%	0.082	7.79	0.02%	75.7	794.2	10,491	40,541.9	1,839

<b>Turkmenistan</b>	<b>0.13</b>	0.09	44%	0.025	7.12	0.00%	5.2	18.3	3,529	3,661.3	1,894
<b>Uganda</b>	<b>4.90</b>	1.10	346%	0.145	337.49	0.77%	33.8	14.5	430	640.5	1,980
<b>Ukraine</b>	<b>8.70</b>	3.20	172%	0.191	48.21	0.02%	45.4	180.4	3,970	54,084.4	1,398
<b>United Arab Emirates</b>	<b>15.50</b>	36.10	0%	3.293	94.92	0.06%	4.7	163.3	34,690	25,191.4	2,261
<b>United Kingdom</b>	<b>72.00</b>	30.40	137%	1.156	27.06	0.08%	62.3	2660.5	42,736	88,434.3	1,128
<b>United States</b>	<b>2,520.00</b>	1,650.00	53%	7.942	177.66	0.24%	317.8	14204.7	44,701	1058,995.2	1,796
<b>Uruguay</b>	<b>2.00</b>	0.24	750%	0.605	63.38	0.18%	3.4	32.2	9,544	1,139.9	1,853
<b>Uzbekistan</b>	<b>0.23</b>	0.20	15%	0.008	8.24	0.00%	27.8	27.9	1,004	13,121.2	1,976
<b>Venezuela</b>	<b>2.60</b>	2.60	2%	0.091	8.41	0.01%	29.0	313.8	10,804	26,904.1	1,934
<b>Vietnam</b>	<b>7.20</b>	2.40	197%	0.081	79.29	0.04%	89.0	90.7	1,019	15,984.4	1,665
<b>Western Sahara</b>	<b>0.25</b>	0.00	n/a	0.471	0.00	0.11%	0.5	n/a	n/a	235.7	2,209
<b>Yemen</b>	<b>0.29</b>	0.21	38%	0.012	10.91	0.02%	24.3	26.6	1,096	1,203.1	2,295
<b>Zambia</b>	<b>1.30</b>	0.85	54%	0.099	91.52	0.07%	13.3	14.3	1,080	1,881.4	2,201
<b>Zimbabwe</b>	<b>3.00</b>	0.22	1264%	0.237	877.71	0.15%	12.6	3.4	270	2,005.8	2,221

**Appendix Table:** List of 193 countries and respective data for cumulative installed PV capacity as end of 2010 and 2009, the growth rate of cumulative installed capacity, PV per capita, PV per GDP, PV share in ratio to total power plant capacity, population, GDP for 2009, GDP per capita, total power plant capacity and population weighted irradiation on optimally fixed tilted modules. Data are compiled as documented in the paper and based on EPIA [1,15], IEA-PVPS [16], GIZ [17], Photon [3] and further publications [18-20,29-31], some PV experts [5-14] and ITC data [2]. The statistical data are taken from Breyer and Schmid [21], United Nations [22], World Bank [24] and UDI World Electric Power Plants database [26].