

The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy

Supporting Data - Solar Energy

[World Solar Photovoltaics Installations, 1996-2013, with Projection to 2015](#)

GRAPH: World Cumulative Solar Photovoltaics Installations, 2000-2013, with Projection to 2015

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[Solar Water and Space Heating Area in Selected Countries and the World, Total and Per Person, 2012](#)

GRAPH: Solar Water and Space Heating Area Per Person in Top 25 Countries, 2012

A full listing of data for the entire book is on-line at:

http://www.earth-policy.org/books/tgt/tgt_data

This is part of a supporting dataset for **The Great Transition: Shifting from Fossil Fuels to Solar and Wind Energy**, by Lester R. Brown, with Janet Larsen, J. Matthew Roney, and Emily E. Adams (New York: W.W. Norton & Company, 2015).

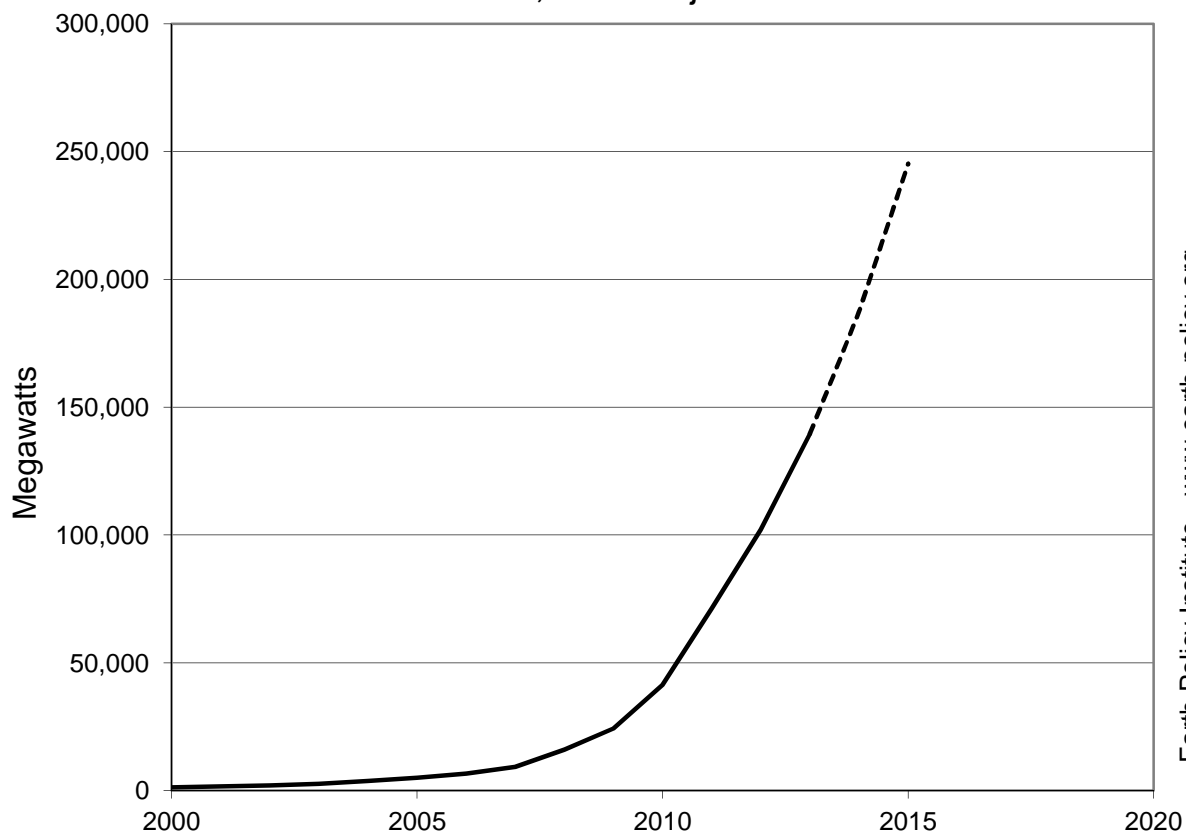
For more information, see Earth Policy Institute on-line at www.earth-policy.org.

World Solar Photovoltaics Installations, 1996-2013, with Projection to 2015

| Year | Cumulative Installations | Annual Addition |
|------|--------------------------|-----------------|
| | Megawatts | |
| 1996 | 309 | |
| 1997 | 422 | 113 |
| 1998 | 566 | 144 |
| 1999 | 807 | 241 |
| 2000 | 1,250 | 443 |
| 2001 | 1,569 | 320 |
| 2002 | 2,012 | 443 |
| 2003 | 2,575 | 563 |
| 2004 | 3,698 | 1,123 |
| 2005 | 5,048 | 1,350 |
| 2006 | 6,619 | 1,570 |
| 2007 | 9,291 | 2,672 |
| 2008 | 16,063 | 6,772 |
| 2009 | 24,265 | 8,202 |
| 2010 | 41,330 | 17,065 |
| 2011 | 71,218 | 29,888 |
| 2012 | 102,076 | 30,858 |
| 2013 | 139,637 | 37,561 |
| 2014 | 187,237 | 47,600 |
| 2015 | 245,337 | 58,100 |

Source: Compiled by Earth Policy Institute with 1996-2013 from BP, *Statistical Review of World Energy June 2014* (London: 2014); and with 2014 and 2015 from Bloomberg New Energy Finance, "Chinese PV Shipments Surge in Q4 2014 According to BNEF Shipment Survey," press release (London: 3 February 2015).

World Cumulative Solar Photovoltaics Installations, 2000-2013, with Projection to 2015



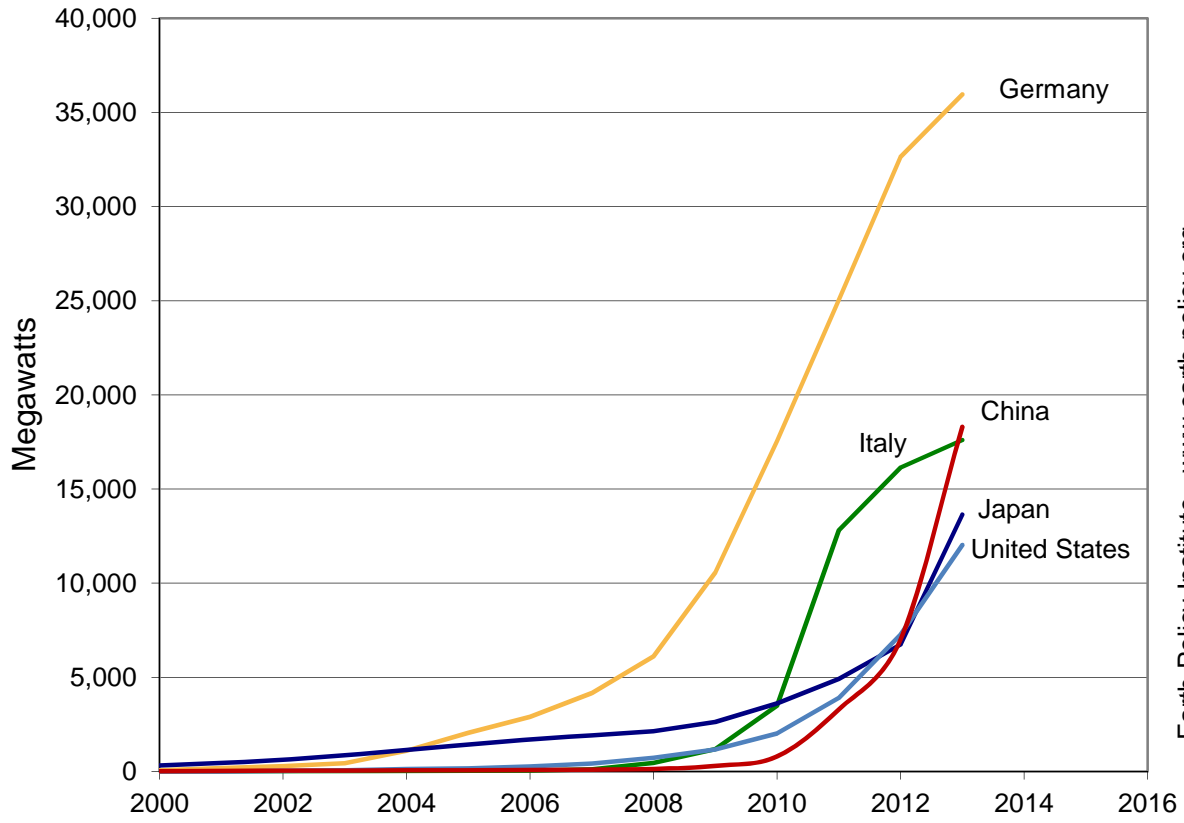
Source: EPI from BP, BNEF

Cumulative Installed Solar Photovoltaics Capacity in Leading Countries and the World, 2000-2013

| Year | Germany | China | Italy | Japan | United States | Spain | France | Australia | Others | World |
|------|-----------------------|--------|--------|--------|---------------|-------|--------|-----------|--------|---------|
| | ----- Megawatts ----- | | | | | | | | | |
| 2000 | 76 | 19 | 19 | 330 | 0 | 0 | 0 | 29 | 776 | 1,250 |
| 2001 | 186 | 30 | 20 | 453 | 0 | 0 | 0 | 34 | 847 | 1,569 |
| 2002 | 296 | 45 | 22 | 637 | 28 | 0 | 0 | 39 | 945 | 2,012 |
| 2003 | 435 | 55 | 26 | 860 | 73 | 12 | 0 | 46 | 1,070 | 2,575 |
| 2004 | 1,105 | 64 | 31 | 1,132 | 131 | 24 | 26 | 52 | 1,133 | 3,698 |
| 2005 | 2,056 | 68 | 38 | 1,422 | 172 | 50 | 33 | 61 | 1,149 | 5,048 |
| 2006 | 2,899 | 80 | 50 | 1,709 | 275 | 154 | 44 | 70 | 1,338 | 6,619 |
| 2007 | 4,170 | 100 | 120 | 1,919 | 427 | 739 | 82 | 83 | 1,652 | 9,291 |
| 2008 | 6,120 | 140 | 458 | 2,144 | 738 | 3,635 | 186 | 105 | 2,537 | 16,063 |
| 2009 | 10,566 | 300 | 1,181 | 2,627 | 1,172 | 3,698 | 377 | 188 | 4,156 | 24,265 |
| 2010 | 17,554 | 800 | 3,502 | 3,618 | 2,022 | 4,110 | 1,194 | 571 | 7,959 | 41,330 |
| 2011 | 25,039 | 3,300 | 12,803 | 4,914 | 3,910 | 4,472 | 2,953 | 1,377 | 12,450 | 71,218 |
| 2012 | 32,643 | 7,000 | 16,139 | 6,743 | 7,271 | 4,685 | 4,019 | 2,407 | 21,169 | 102,076 |
| 2013 | 35,948 | 18,300 | 17,600 | 13,643 | 12,022 | 4,828 | 4,632 | 3,255 | 29,409 | 139,637 |

Source: Figures are as published in BP, *Statistical Review of World Energy June 2014* (London: 2014). Note that previous datasets from other groups have reported higher numbers for the United States and other key countries for the earlier years of the time series.

Cumulative Installed Solar Photovoltaics Capacity in Leading Countries, 2000-2013



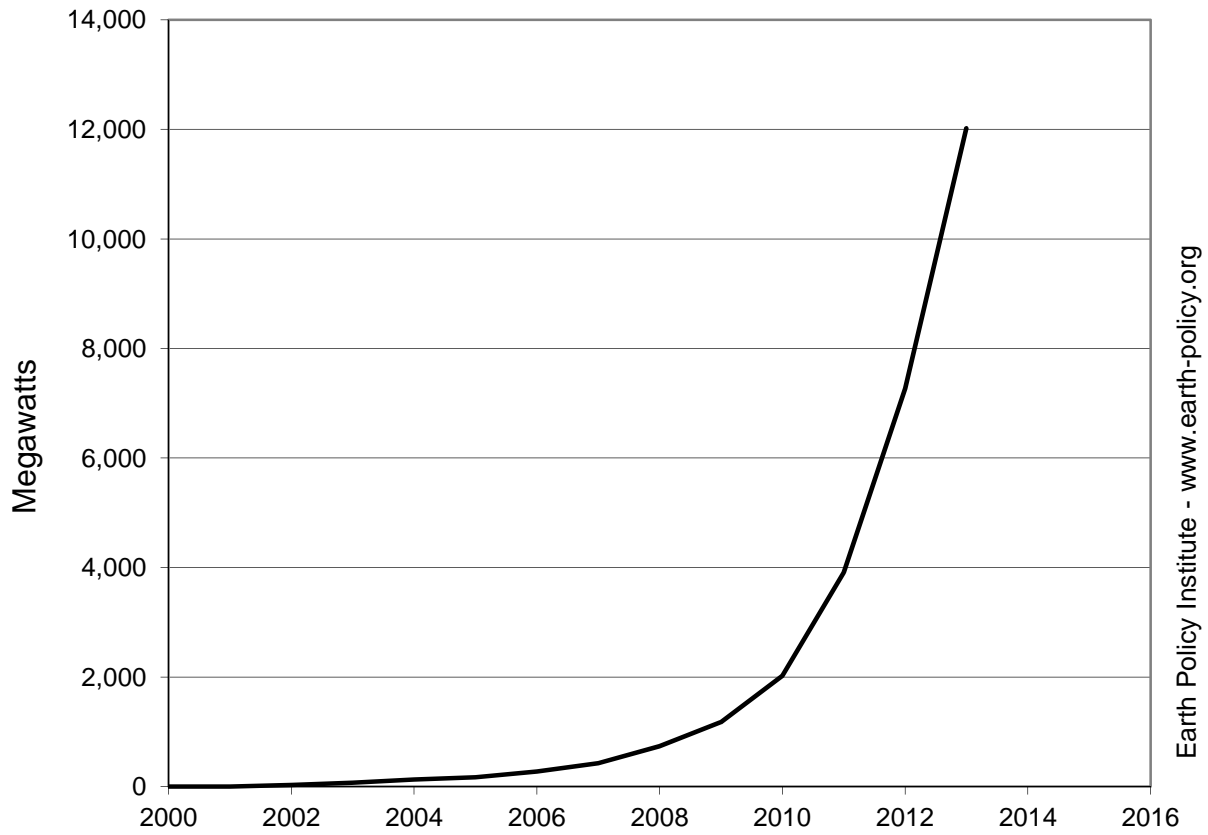
Source: EPI from BP

Cumulative Installed Solar Photovoltaics Capacity in the United States, 2000-2013

| Year | Cumulative Installations Megawatts |
|------|--|
| 2000 | 0 |
| 2001 | 0 |
| 2002 | 28 |
| 2003 | 73 |
| 2004 | 131 |
| 2005 | 172 |
| 2006 | 275 |
| 2007 | 427 |
| 2008 | 738 |
| 2009 | 1,172 |
| 2010 | 2,022 |
| 2011 | 3,910 |
| 2012 | 7,271 |
| 2013 | 12,022 |

Source: Figures are as published in BP, *Statistical Review of World Energy June 2014* (London: 2014). Note that previous datasets from other groups have reported higher numbers for the United States for the earlier years of the time series.

Cumulative Installed Solar Photovoltaics Capacity in the United States, 2000-2013



Source: BP

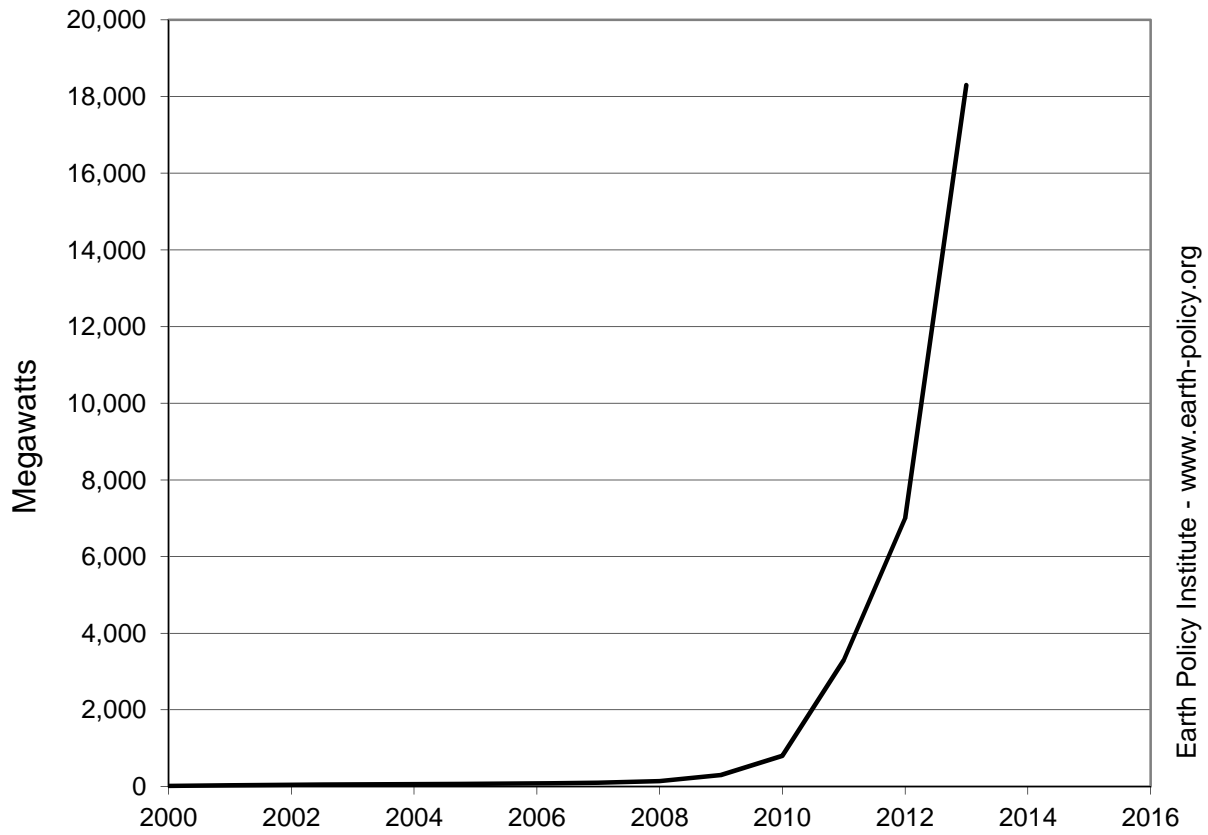
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Cumulative Installed Solar Photovoltaics Capacity in China, 2000-2013

| Year | Cumulative Installations Megawatts |
|------|--|
| 2000 | 19 |
| 2001 | 30 |
| 2002 | 45 |
| 2003 | 55 |
| 2004 | 64 |
| 2005 | 68 |
| 2006 | 80 |
| 2007 | 100 |
| 2008 | 140 |
| 2009 | 300 |
| 2010 | 800 |
| 2011 | 3,300 |
| 2012 | 7,000 |
| 2013 | 18,300 |

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Cumulative Installed Solar Photovoltaics Capacity in China, 2000-2013



Source: BP

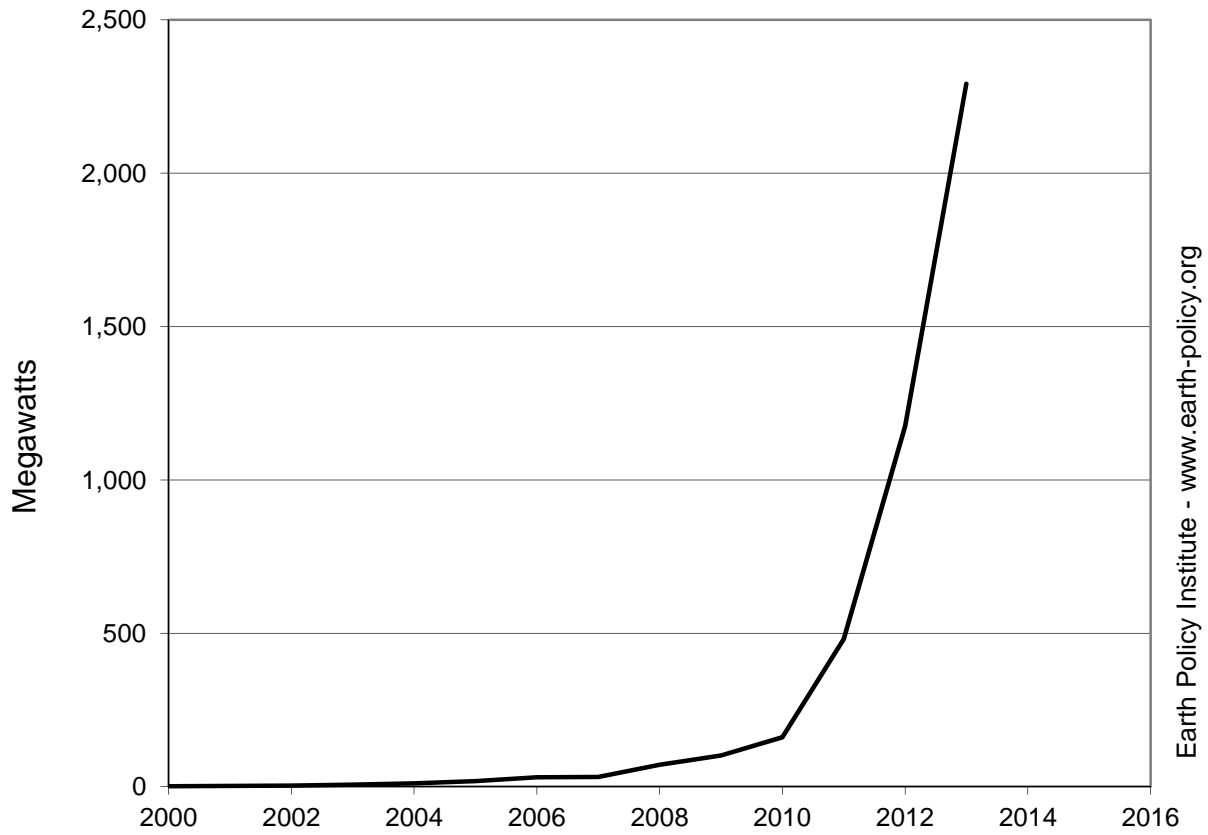
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Cumulative Installed Solar Photovoltaics Capacity in India, 2000-2013

| Year | Cumulative Installations Megawatts |
|------|--|
| 2000 | 1 |
| 2001 | 2 |
| 2002 | 4 |
| 2003 | 6 |
| 2004 | 10 |
| 2005 | 18 |
| 2006 | 30 |
| 2007 | 31 |
| 2008 | 71 |
| 2009 | 101 |
| 2010 | 161 |
| 2011 | 481 |
| 2012 | 1,176 |
| 2013 | 2,291 |

Source: Figure for 2010 from European Photovoltaic Industry Association, *Global Market Outlook for Photovoltaics Until 2016* (Brussels: May 2012), p. 50; all other data from BP, *Statistical Review of World Energy June 2014* (London: 2014).

Cumulative Installed Solar Photovoltaics Capacity in India, 2000-2013



Source: BP

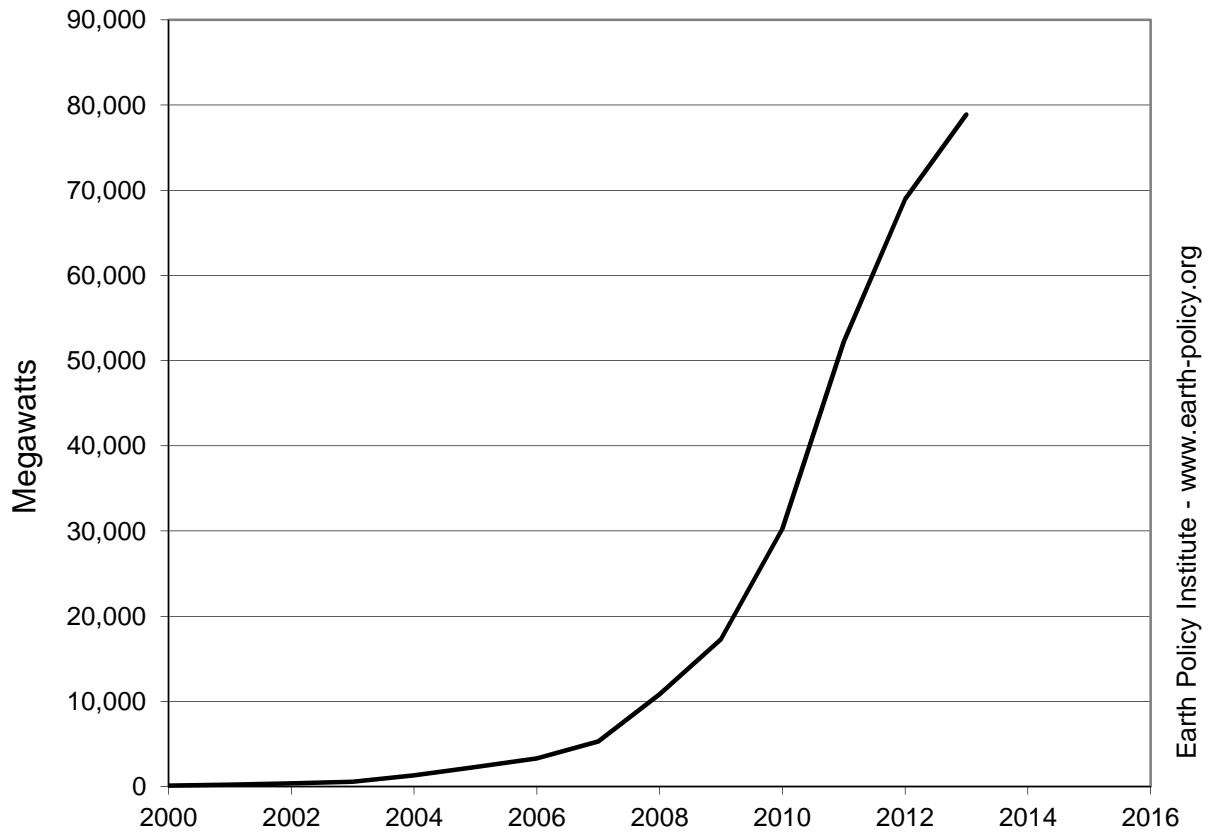
Earth Policy Institute - www.earth-policy.org

Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013

| Year | Cumulative Installations Megawatts |
|------|--|
| 2000 | 122 |
| 2001 | 244 |
| 2002 | 370 |
| 2003 | 567 |
| 2004 | 1,304 |
| 2005 | 2,308 |
| 2006 | 3,291 |
| 2007 | 5,308 |
| 2008 | 10,812 |
| 2009 | 17,298 |
| 2010 | 30,251 |
| 2011 | 52,229 |
| 2012 | 68,962 |
| 2013 | 78,896 |

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Cumulative Installed Solar Photovoltaics Capacity in the European Union, 2000-2013



Source: BP

Cumulative and Newly-Installed Solar Photovoltaics Capacity in Ten Leading Countries and the World, 2013

| <u>Country</u> | <u>Cumulative Installed Capacity</u> Megawatts | <u>Country</u> | <u>Newly-Installed Capacity</u> Megawatts |
|--------------------|---|--------------------|--|
| Germany | 35,948 | China | 11,300 |
| China | 18,300 | Japan | 6,900 |
| Italy | 17,600 | United States | 4,751 |
| Japan | 13,643 | Germany | 3,305 |
| United States | 12,022 | Italy | 1,461 |
| Spain | 4,828 | India | 1,115 |
| France | 4,632 | Romania | 1,100 |
| Australia | 3,255 | Greece | 1,043 |
| Belgium | 2,983 | United Kingdom | 992 |
| United Kingdom | 2,892 | Australia | 848 |
| <u>World Total</u> | <u>139,637</u> | <u>World Total</u> | <u>37,561</u> |

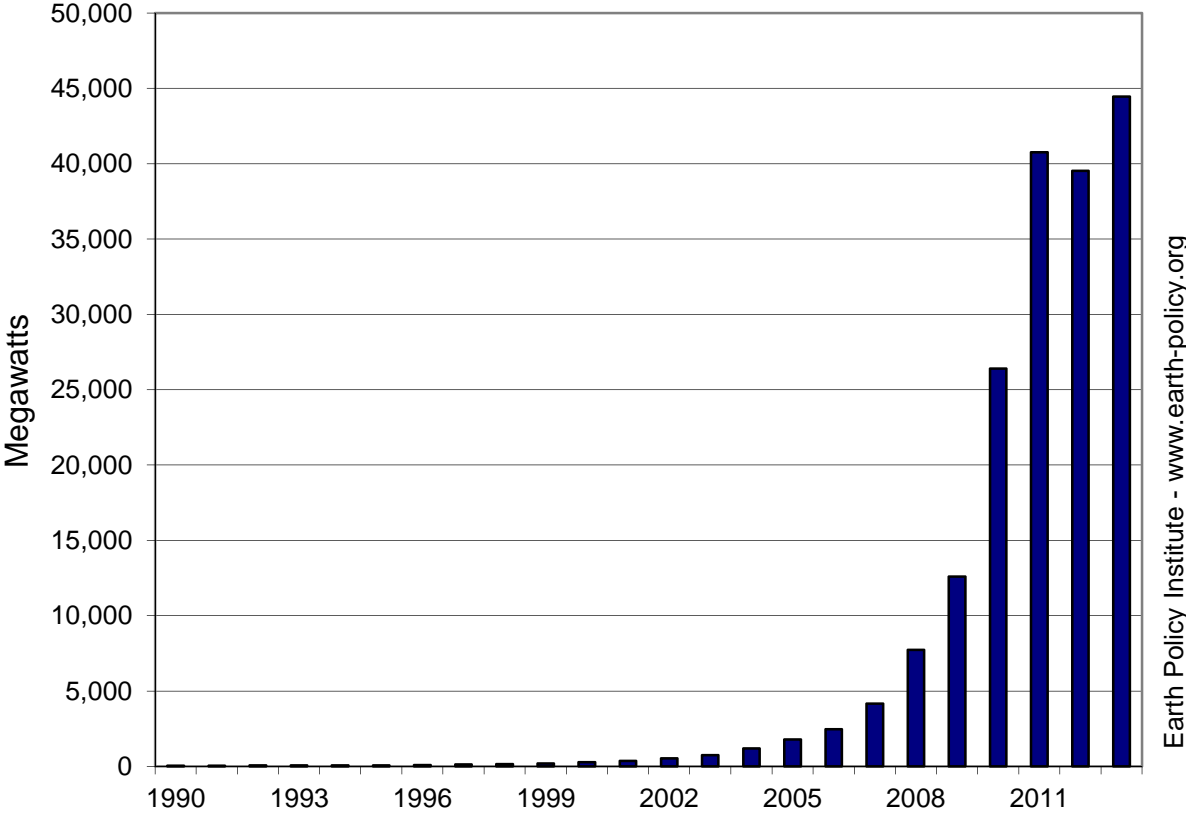
Source: Compiled by Earth Policy Institute from BP, *Statistical Review of World Energy June 2014* (London: 2014).

World Solar Photovoltaics Cell Production, 1975-2013, with Projection to 2017

| Year | Annual Production | Cumulative Production |
|------|-------------------|-----------------------|
| | Megawatts | |
| 1975 | 2 | 2 |
| 1976 | 2 | 4 |
| 1977 | 2 | 6 |
| 1978 | 3 | 9 |
| 1979 | 4 | 13 |
| 1980 | 7 | 20 |
| 1981 | 8 | 28 |
| 1982 | 9 | 37 |
| 1983 | 17 | 54 |
| 1984 | 22 | 76 |
| 1985 | 23 | 99 |
| 1986 | 26 | 125 |
| 1987 | 29 | 154 |
| 1988 | 34 | 188 |
| 1989 | 40 | 228 |
| 1990 | 47 | 275 |
| 1991 | 55 | 330 |
| 1992 | 58 | 388 |
| 1993 | 60 | 448 |
| 1994 | 69 | 517 |
| 1995 | 78 | 594 |
| 1996 | 89 | 683 |
| 1997 | 126 | 809 |
| 1998 | 155 | 964 |
| 1999 | 201 | 1,165 |
| 2000 | 277 | 1,442 |
| 2001 | 371 | 1,813 |
| 2002 | 542 | 2,355 |
| 2003 | 749 | 3,104 |
| 2004 | 1,199 | 4,303 |
| 2005 | 1,782 | 6,086 |
| 2006 | 2,459 | 8,544 |
| 2007 | 4,164 | 12,708 |
| 2008 | 7,733 | 20,441 |
| 2009 | 12,596 | 33,037 |
| 2010 | 26,400 | 59,436 |
| 2011 | 40,762 | 100,198 |
| 2012 | 39,524 | 139,722 |
| 2013 | 44,464 | 184,186 |
| 2014 | 54,858 | 239,044 |
| 2015 | 64,892 | 303,936 |
| 2016 | 73,765 | 377,701 |
| 2017 | 75,447 | 453,148 |

Source: Compiled by Earth Policy Institute (EPI) with 1975-1979 data from Worldwatch Institute, *Signposts 2004*, CD-ROM (Washington, DC: 2004); 1980-2000 from Worldwatch Institute, *Vital Signs 2007-2008* (Washington DC: 2008), p. 39; 2001-2006 from Prometheus Institute and Greentech Media, "25th Annual Data Collection Results: PV Production Explodes in 2008," *PVNews*, vol. 28, no. 4 (April 2009), pp. 15-18; 2007-2017 compiled by Earth Policy Institute from GTM Research, *PV Cell Module Production Data*, electronic database, updated June 2014.

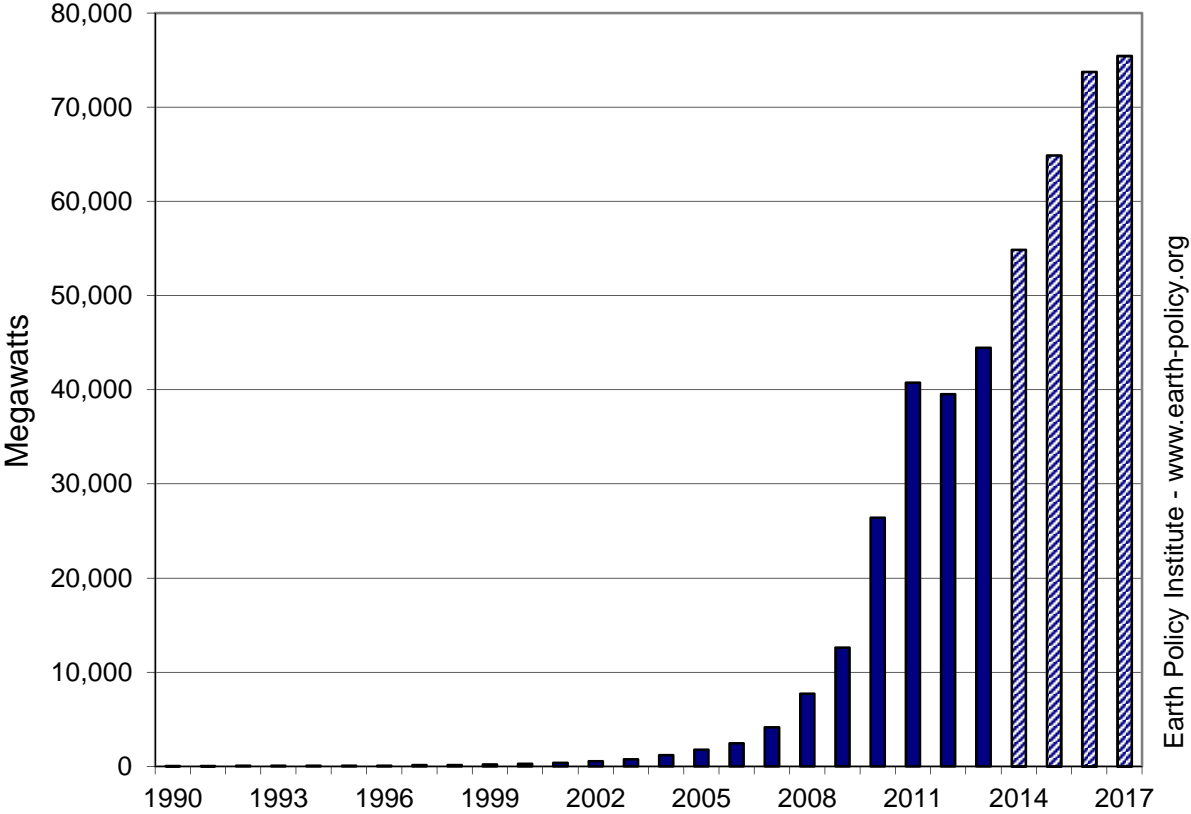
World Annual Solar Photovoltaics Cell Production, 1990-2013



Source: EPI based on Worldwatch; PVNews; GTM Research

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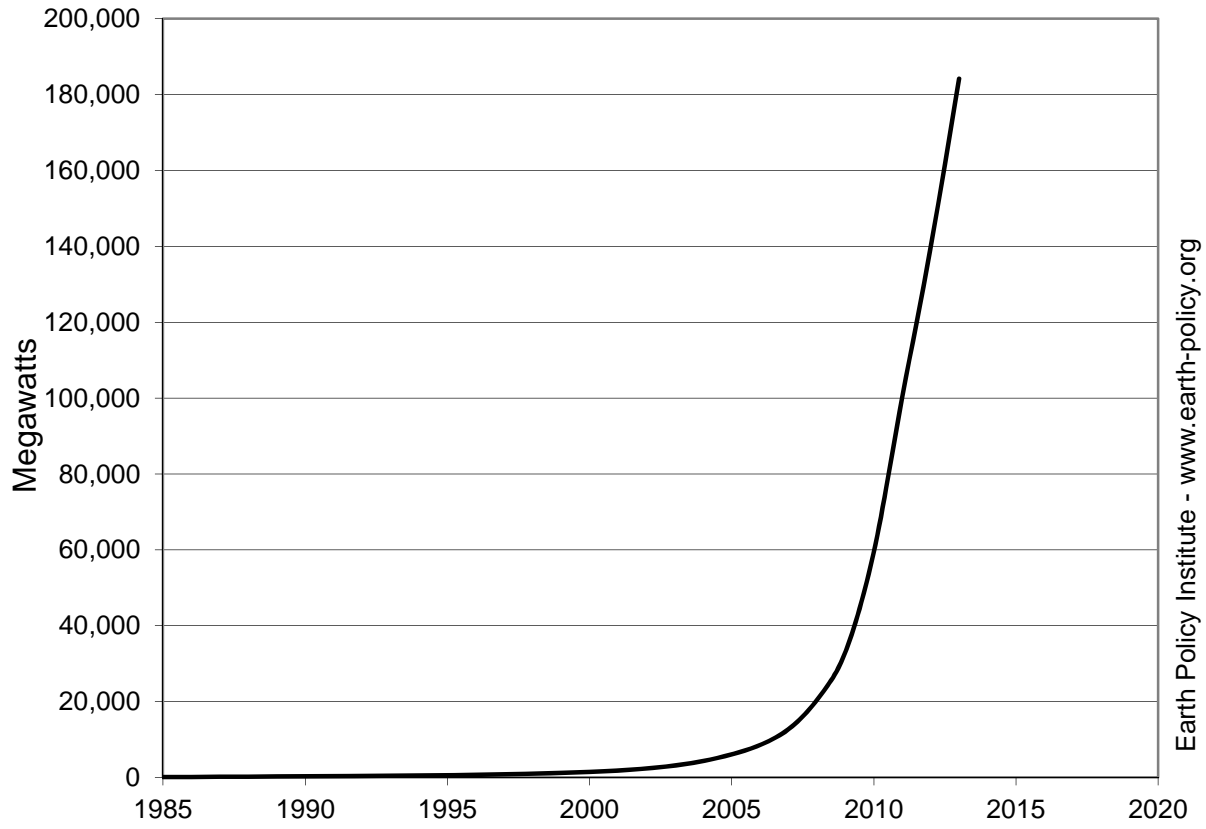
World Annual Solar Photovoltaics Cell Production, 1990-2013, with Projection to 2017



Source: EPI based on Worldwatch; PVNews; GTM Research

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World Cumulative Solar Photovoltaics Cell Production, 1985-2013



Earth Policy Institute - www.earth-policy.org

Source: EPI based on Worldwatch; PVNews; GTM Research

Annual Solar Photovoltaics Cell Production by Country, 1995-2013

| Year | China | Taiwan | Japan | Malaysia | Germany | South Korea | United States | Others | World |
|-----------|--------|--------|-------|----------|---------|-------------|---------------|--------|--------|
| Megawatts | | | | | | | | | |
| 1995 | n.a. | n.a. | 16 | n.a. | n.a. | n.a. | 35 | n.a. | 78 |
| 1996 | n.a. | n.a. | 21 | n.a. | n.a. | n.a. | 39 | n.a. | 89 |
| 1997 | n.a. | n.a. | 35 | n.a. | n.a. | n.a. | 51 | n.a. | 126 |
| 1998 | n.a. | n.a. | 49 | n.a. | n.a. | n.a. | 54 | n.a. | 155 |
| 1999 | n.a. | n.a. | 80 | n.a. | n.a. | n.a. | 61 | n.a. | 201 |
| 2000 | 3 | n.a. | 129 | n.a. | 23 | n.a. | 75 | 48 | 277 |
| 2001 | 3 | 4 | 171 | 0 | 24 | 0 | 100 | 70 | 371 |
| 2002 | 10 | 8 | 251 | 0 | 55 | 0 | 121 | 97 | 542 |
| 2003 | 13 | 17 | 364 | 0 | 122 | 0 | 103 | 131 | 749 |
| 2004 | 40 | 39 | 602 | 0 | 193 | 0 | 139 | 186 | 1,199 |
| 2005 | 128 | 88 | 833 | 0 | 339 | 5 | 153 | 236 | 1,782 |
| 2006 | 342 | 170 | 926 | 0 | 469 | 13 | 178 | 361 | 2,459 |
| 2007 | 1,193 | 413 | 938 | 100 | 815 | 32 | 262 | 411 | 4,164 |
| 2008 | 2,536 | 871 | 1,268 | 398 | 1,477 | 71 | 403 | 709 | 7,733 |
| 2009 | 5,193 | 1,573 | 1,503 | 1,228 | 1,606 | 234 | 595 | 664 | 12,596 |
| 2010 | 12,882 | 3,756 | 2,169 | 1,919 | 2,181 | 886 | 1,163 | 1,443 | 26,400 |
| 2011 | 24,339 | 4,773 | 2,707 | 2,685 | 2,153 | 1,227 | 1,044 | 1,834 | 40,762 |
| 2012 | 24,139 | 5,270 | 2,642 | 2,597 | 1,407 | 1,107 | 886 | 1,475 | 39,524 |
| 2013 | 26,871 | 6,339 | 3,679 | 3,073 | 1,055 | 1,127 | 868 | 1,453 | 44,464 |

Note: n.a. = data not available.

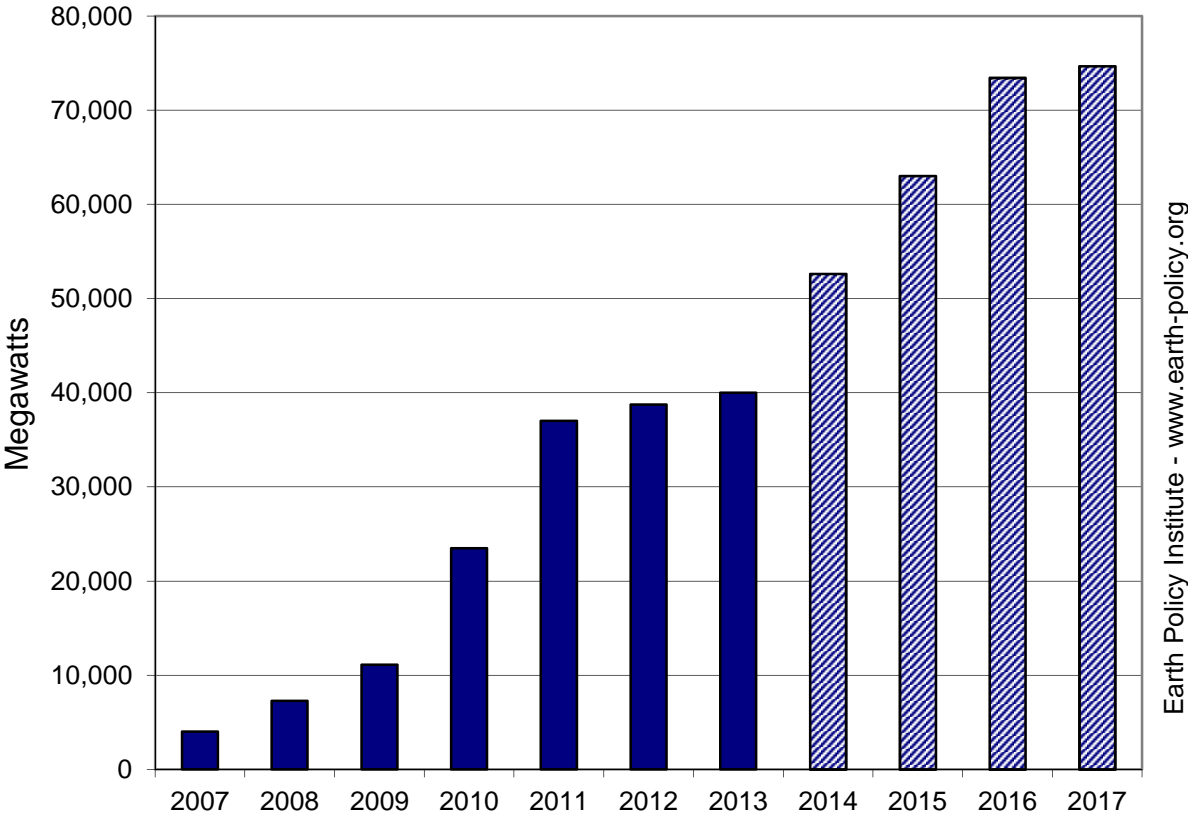
Source: Compiled by Earth Policy Institute (EPI) with 1995-1999 data from Worldwatch Institute, *Signposts 2004*, CD-ROM (Washington, DC: 2005); 2000 data from Prometheus Institute, "23rd Annual Data Collection - Final," *PVNews*, vol. 26, no. 4 (April 2007), pp. 8-9; 2001-2006 from Prometheus Institute and Greentech Media, "25th Annual Data Collection Results: PV Production Explodes in 2008," *PVNews*, vol. 28, no. 4 (April 2009), pp. 15-18; 2007-2013 compiled by Earth Policy Institute from GTM Research, *PV Cell Module Production Data*, electronic database, updated June 2014.

World Annual Solar Photovoltaics Module Production, 2007-2013, with Projection to 2017

| <u>Year</u> | <u>Annual Production</u> Megawatts |
|-------------|---------------------------------------|
| 2007 | 4,028 |
| 2008 | 7,267 |
| 2009 | 11,103 |
| 2010 | 23,481 |
| 2011 | 36,996 |
| 2012 | 38,750 |
| 2013 | 39,987 |
| 2014 | 52,633 |
| 2015 | 63,026 |
| 2016 | 73,433 |
| <u>2017</u> | <u>74,674</u> |

Source: Compiled by Earth Policy Institute from GTM Research, *PV Cell Module Production Data*, electronic database, updated June 2014.

World Annual Solar Photovoltaics Module Production, 2007-2013, with Projection to 2017



Source: EPI from GTM Research

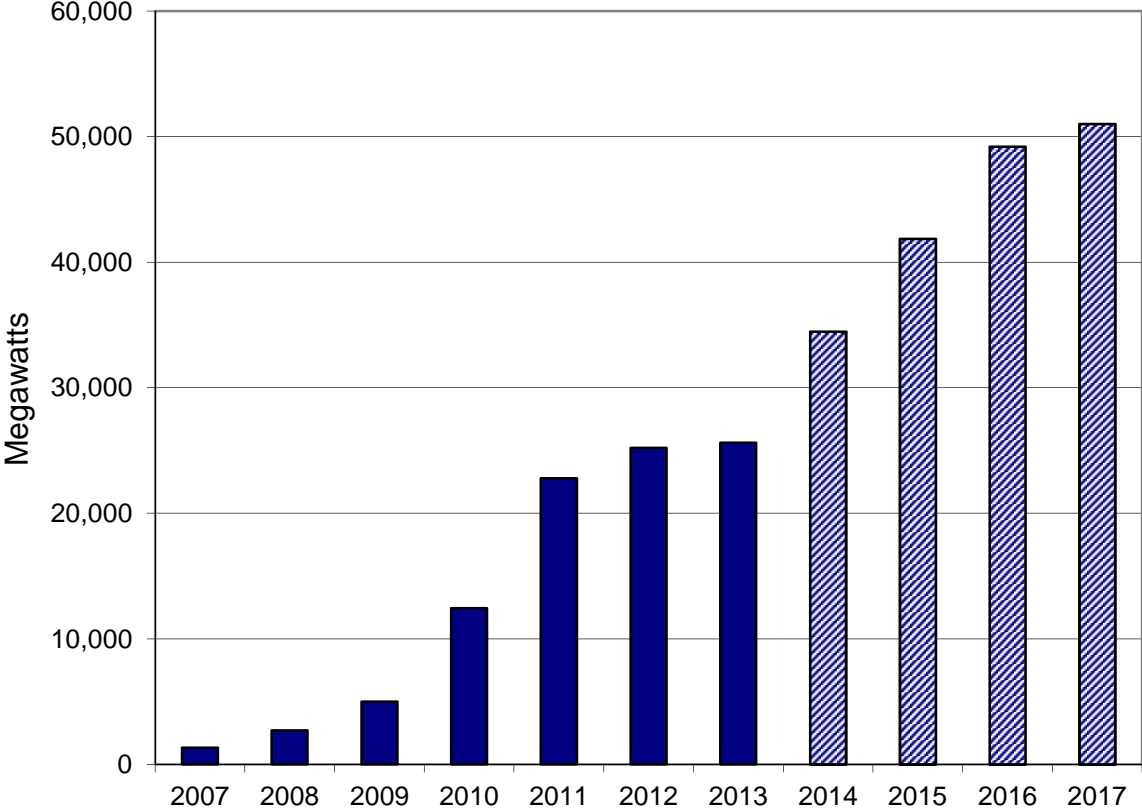
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Annual Solar Photovoltaics Module Production by Country, 2007-2013, with Projection to 2017

| Year | China | Malaysia | Japan | Germany | South Korea | United States | Taiwan | Others | World |
|-----------|--------|----------|-------|---------|----------------|------------------|--------|--------|--------|
| Megawatts | | | | | | | | | |
| 2007 | 1,340 | 100 | 713 | 747 | 58 | 353 | 48 | 670 | 4,028 |
| 2008 | 2,714 | 361 | 989 | 1,193 | 147 | 554 | 131 | 1,179 | 7,267 |
| 2009 | 4,990 | 955 | 979 | 1,348 | 350 | 766 | 249 | 1,465 | 11,103 |
| 2010 | 12,437 | 1,299 | 1,463 | 2,515 | 836 | 1,371 | 601 | 2,958 | 23,481 |
| 2011 | 22,798 | 1,943 | 1,691 | 3,221 | 1,333 | 1,361 | 778 | 3,870 | 36,996 |
| 2012 | 25,214 | 2,222 | 1,964 | 2,517 | 1,236 | 1,003 | 849 | 3,745 | 38,750 |
| 2013 | 25,610 | 2,509 | 2,426 | 1,678 | 1,360 | 943 | 889 | 4,572 | 39,987 |
| 2014 | 34,478 | 3,250 | 2,783 | 2,016 | 1,813 | 1,115 | 1,782 | 5,397 | 52,633 |
| 2015 | 41,865 | 4,054 | 3,209 | 1,921 | 2,082 | 1,099 | 2,992 | 5,804 | 63,026 |
| 2016 | 49,212 | 5,161 | 3,814 | 1,723 | 2,037 | 1,064 | 3,945 | 6,478 | 73,433 |
| 2017 | 51,011 | 5,810 | 3,804 | 1,329 | 1,719 | 927 | 3,975 | 6,098 | 74,674 |

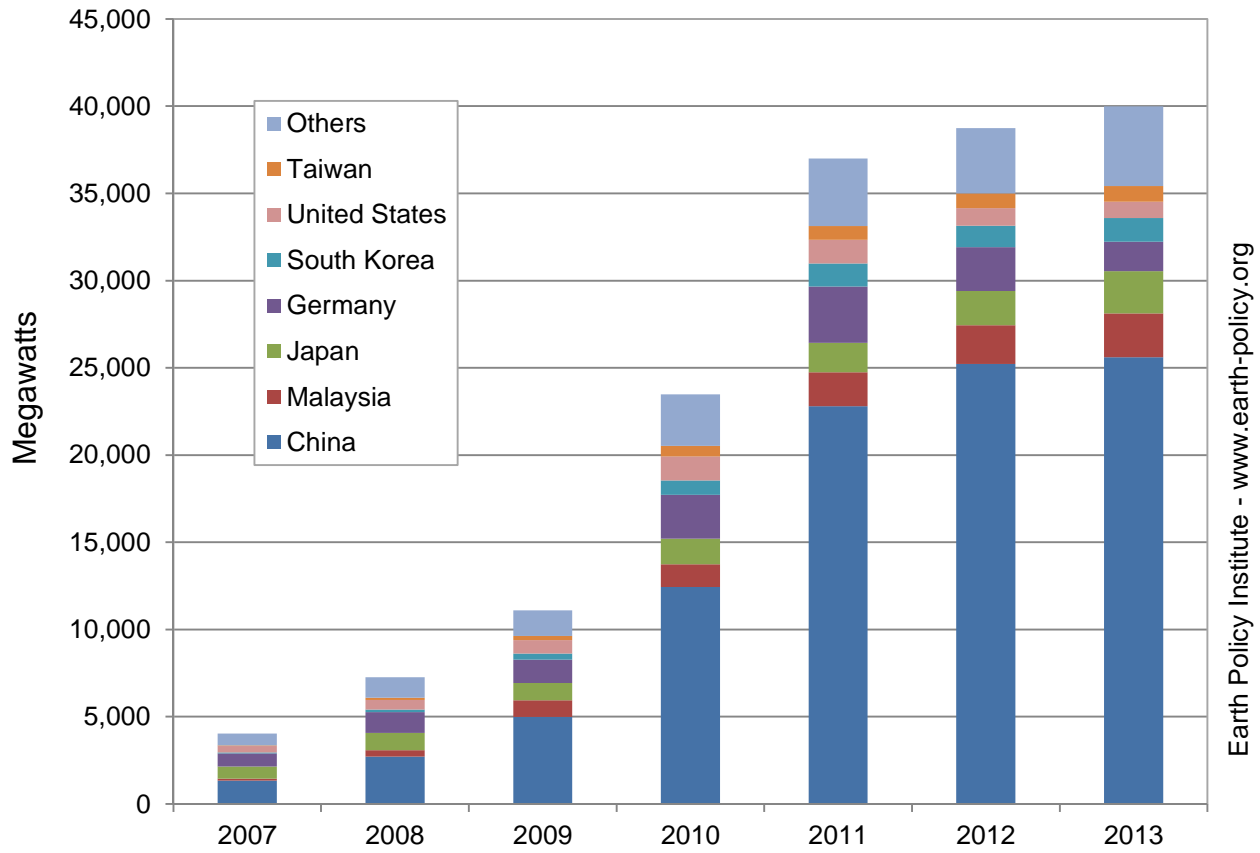
Source: Compiled by Earth Policy Institute from GTM Research, *PV Cell Module Production Data*, electronic database, updated June 2014.

Annual Solar Photovoltaics Module Production in China, 2007-2013, with Projection to 2017



Source: EPI from GTM Research

Annual Solar Photovoltaics Module Production in Leading Countries, 2007-2013



Source: EPI from GTM Research

Solar Photovoltaics Module Production by Top 10 Companies in 2013

| Rank | Company | Production Megawatts |
|-------------|---------------------|-------------------------|
| 1 | Yingli Green Energy | 2,622 |
| 2 | Trina Solar | 2,560 |
| 3 | Canadian Solar | 2,020 |
| 4 | First Solar | 1,628 |
| 5 | JA Solar | 1,252 |
| 6 | Jinko Solar | 1,215 |
| 7 | Kyocera | 1,200 |
| 8 | Flextronics | 1,058 |
| 9 | Hanwha-SolarOne | 1,050 |
| 10 | Solar Frontier | 995 |
| World Total | | 39,987 |

Source: Compiled by Earth Policy Institute from GTM Research, *PV Cell Module Production Data*, electronic database, updated June 2014.

Cumulative Number and Generating Capacity of Operational Concentrating Solar Power Plants Worldwide as of May 2014

| Country | Number of Projects | Capacity Megawatts |
|----------------------|-----------------------|-----------------------|
| Spain | 50 | 2,305 |
| United States | 22 | 1,493 |
| India | 5 | 59 |
| Australia | 4 | 16 |
| China | 3 | 4 |
| France | 2 | 2 |
| Italy | 2 | 7 |
| Algeria | 1 | 25 |
| Chile | 1 | 10 |
| Egypt | 1 | 20 |
| Germany | 1 | 2 |
| Israel | 1 | 6 |
| Morocco | 1 | 20 |
| Oman | 1 | 7 |
| Thailand | 1 | 5 |
| Turkey | 1 | 5 |
| United Arab Emirates | 1 | 100 |
| World | 98 | 4,086 |

Source: CSP Today, *CSP Today Global Tracker*, electronic database, at <http://social.csptoday.com/tracker/projects>, viewed 19 May 2014.

Operational Concentrating Solar Power Plants Around the World as of May 201

| Name | Country | Capacity Megawatts | Technology |
|---|----------------------|-----------------------|------------------|
| Hassi-R'mel | Algeria | 25 | Parabolic Trough |
| Lake Cargelligo | Australia | 3 | Tower |
| Liddell | Australia | 1 | Fresnel |
| Liddell Phase 2 | Australia | 3 | Fresnel |
| NovatecSolar Liddell Solar Expansion | Australia | 9 | Fresnel |
| Minera el Tesoro | Chile | 10 | Parabolic Trough |
| Dahan Power Plant | China | 1 | Tower |
| Hainan Nanshan Sanya Pilot | China | 1 | Dish |
| Hainan Sanya Pilot | China | 2 | Fresnel |
| Kuraymat ISCC | Egypt | 20 | Parabolic Trough |
| PÉGASE | France | 1 | Tower |
| Augustin Fresnel 1 | France | 1 | Fresnel |
| Jülich | Germany | 2 | Tower |
| Godawari | India | 50 | Parabolic Trough |
| Indian Institute of Technology CSP Project | India | 3 | Parabolic Trough |
| Acme Rajasthan Solar Power 1 | India | 3 | Tower |
| LFR Solar Thermal Desalination plant | India | 1 | Fresnel |
| IIT /SEC plant | India | 2 | Fresnel |
| BrightSource SEDC | Israel | 6 | Tower |
| Archimede | Italy | 5 | Parabolic Trough |
| ASE Demo Plant | Italy | 2 | Parabolic Trough |
| Ain-Beni-Mathar ISCC | Morocco | 20 | Parabolic Trough |
| Petroleum Development Oman CSP EOR Project | Oman | 7 | Parabolic Trough |
| Andasol 1 | Spain | 50 | Parabolic Trough |
| Andasol 2 | Spain | 50 | Parabolic Trough |
| Andasol 3 | Spain | 50 | Parabolic Trough |
| Arenales PS | Spain | 50 | Parabolic Trough |
| La Africana | Spain | 50 | Parabolic Trough |
| ASTE - 1A | Spain | 50 | Parabolic Trough |
| ASTE - 1B | Spain | 50 | Parabolic Trough |
| Astexol-2 | Spain | 50 | Parabolic Trough |
| Enerstar Villena | Spain | 50 | Parabolic Trough |
| Casablanca | Spain | 50 | Parabolic Trough |
| La Dehesa | Spain | 50 | Parabolic Trough |
| La Florida | Spain | 50 | Parabolic Trough |
| Extresol 1 | Spain | 50 | Parabolic Trough |
| Extresol 2 | Spain | 50 | Parabolic Trough |
| Extresol 3 | Spain | 50 | Parabolic Trough |
| Gemasolar | Spain | 20 | Tower |
| HelioEnergy 1 | Spain | 50 | Parabolic Trough |
| HelioEnergy 2 | Spain | 50 | Parabolic Trough |
| Helios 1 | Spain | 50 | Parabolic Trough |
| Helios 2 | Spain | 50 | Parabolic Trough |
| La Risca | Spain | 50 | Parabolic Trough |
| Lebrija 1 | Spain | 50 | Parabolic Trough |
| Manchasol 1 | Spain | 50 | Parabolic Trough |
| Manchasol 2 | Spain | 50 | Parabolic Trough |
| Consol Orellana | Spain | 50 | Parabolic Trough |
| Palma del Rio I | Spain | 50 | Parabolic Trough |
| Palma del Rio II | Spain | 50 | Parabolic Trough |
| Morón | Spain | 50 | Parabolic Trough |
| Olivenza I | Spain | 50 | Parabolic Trough |
| PS10 | Spain | 11 | Tower |
| PS20 | Spain | 20 | Tower |
| Puerto Errado 2 | Spain | 30 | Fresnel |
| Puerto Errado 1 | Spain | 1 | Fresnel |
| Puertollano Ibersol | Spain | 50 | Parabolic Trough |
| Solaben 6 | Spain | 50 | Parabolic Trough |
| Solaben I | Spain | 50 | Parabolic Trough |
| Solaben II | Spain | 50 | Parabolic Trough |
| Solaben III | Spain | 50 | Parabolic Trough |
| Solacor 1 | Spain | 50 | Parabolic Trough |
| Solacor 2 | Spain | 50 | Parabolic Trough |
| Solnova 1 | Spain | 50 | Parabolic Trough |
| Solnova 3 | Spain | 50 | Parabolic Trough |
| Solnova 4 | Spain | 50 | Parabolic Trough |
| Soluz Guzman | Spain | 50 | Parabolic Trough |
| Majadas | Spain | 50 | Parabolic Trough |
| Termosol 1 | Spain | 50 | Parabolic Trough |
| Termosol 2 | Spain | 50 | Parabolic Trough |
| Borges | Spain | 23 | Parabolic Trough |
| Valle 1 | Spain | 50 | Parabolic Trough |
| Valle 2 | Spain | 50 | Parabolic Trough |
| Kanchanaburi | Thailand | 5 | Parabolic Trough |
| Greenway CSP Tower | Turkey | 5 | Tower |
| Shams 1 | United Arab Emirates | 100 | Parabolic Trough |
| Genesis Solar 1 | United States | 125 | Parabolic Trough |
| Genesis Solar 2 | United States | 125 | Parabolic Trough |
| Holaniku at Keyhole Point | United States | 2 | Parabolic Trough |
| Ivanpah Solar Electric Generating Station I | United States | 126 | Tower |
| Ivanpah Solar Electric Generating Station II | United States | 133 | Tower |
| Ivanpah Solar Electric Generating Station III | United States | 133 | Tower |
| Kimberlina | United States | 5 | Fresnel |
| Martin Next Generation Solar Energy Center | United States | 75 | Parabolic Trough |
| Nevada Solar One | United States | 64 | Parabolic Trough |
| Saguaro Power Plant | United States | 1 | Parabolic Trough |
| SEGS I | United States | 14 | Parabolic Trough |
| SEGS II | United States | 33 | Parabolic Trough |
| SEGS III | United States | 33 | Parabolic Trough |
| SEGS IV | United States | 33 | Parabolic Trough |
| SEGS V | United States | 33 | Parabolic Trough |
| SEGS VI | United States | 33 | Parabolic Trough |
| SEGS VII | United States | 33 | Parabolic Trough |
| SEGS VIII | United States | 89 | Parabolic Trough |
| SEGS IX | United States | 89 | Parabolic Trough |
| SierraSunTower | United States | 5 | Tower |
| Solana | United States | 280 | Parabolic Trough |
| Chevron/ BrightSource Coalinga | United States | 29 | Tower |

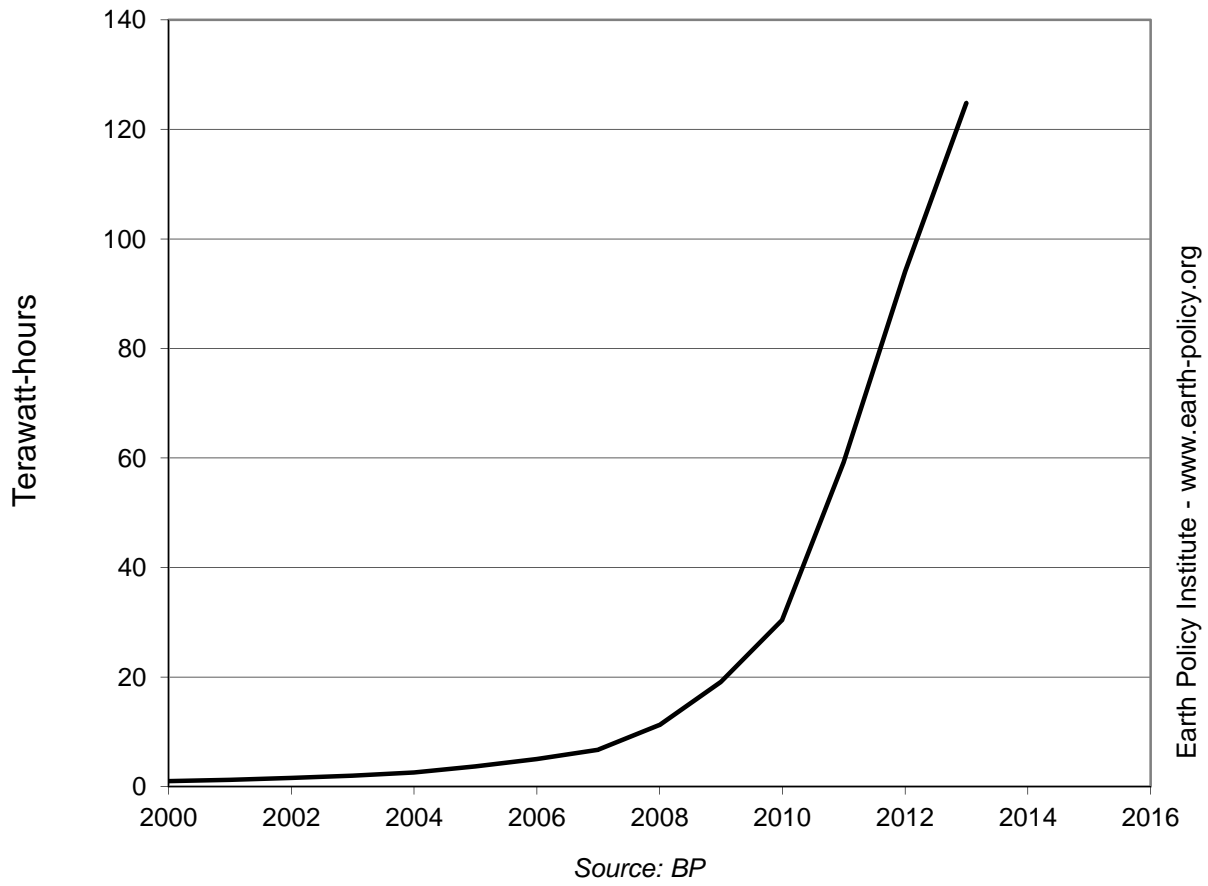
Source: CSP Today, *CSP Today Global Tracker*, electronic database, at <http://social.csptoday.com/tracker/projects>, viewed 19 May 2014.

World Solar-generated Electricity, 1990-2013

| <u>Year</u> | <u>Solar-Generated Electricity</u> Terawatt-hours |
|-------------|--|
| 1990 | 0.4 |
| 1991 | 0.5 |
| 1992 | 0.5 |
| 1993 | 0.6 |
| 1994 | 0.6 |
| 1995 | 0.6 |
| 1996 | 0.7 |
| 1997 | 0.7 |
| 1998 | 0.8 |
| 1999 | 0.9 |
| 2000 | 1.0 |
| 2001 | 1.3 |
| 2002 | 1.6 |
| 2003 | 2.0 |
| 2004 | 2.6 |
| 2005 | 3.7 |
| 2006 | 5.0 |
| 2007 | 6.7 |
| 2008 | 11.2 |
| 2009 | 19.1 |
| 2010 | 30.5 |
| 2011 | 59.2 |
| 2012 | 94.1 |
| <u>2013</u> | <u>124.8</u> |

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

World Solar-generated Electricity, 2000-2013

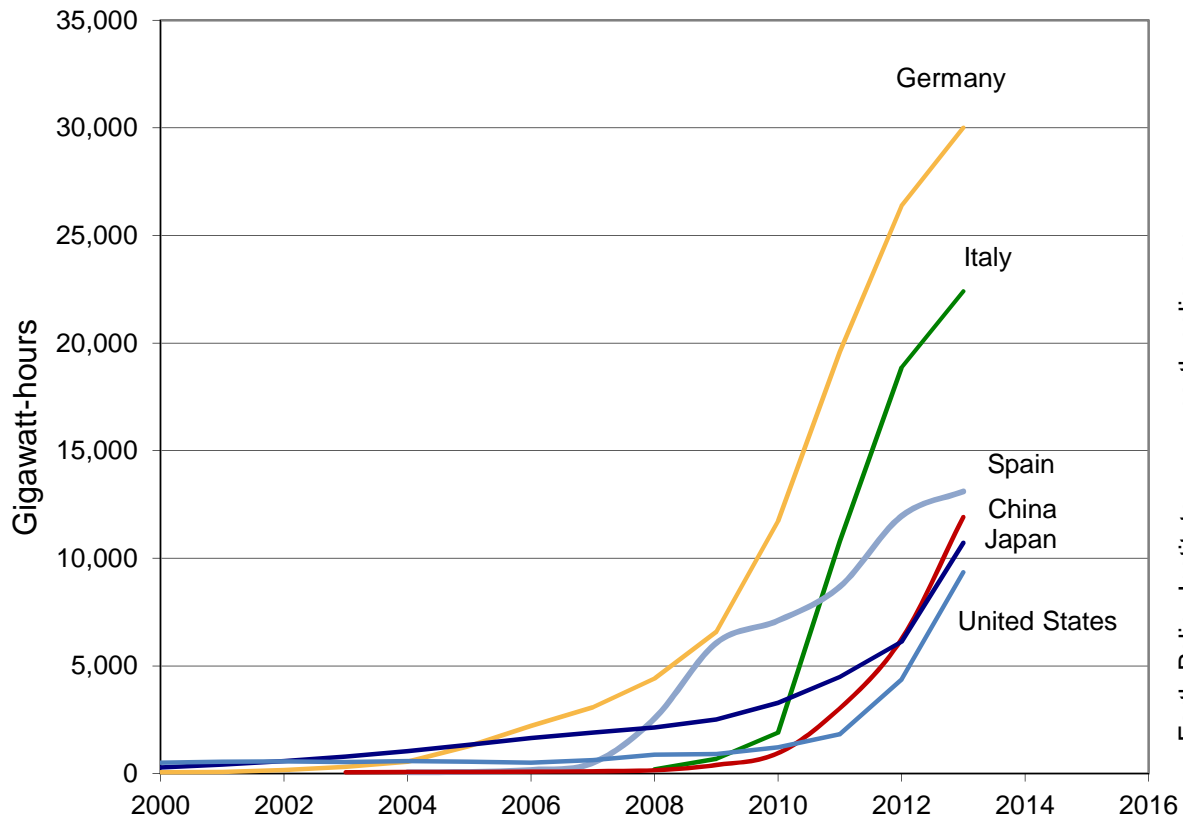


Solar-generated Electricity in Leading Countries and the World, 2000-2013

| Year | Germany | Italy | Spain | China | Japan | United States | France | Australia | Others | World |
|----------------------------|---------|--------|--------|--------|--------|---------------|--------|-----------|--------|---------|
| ----- Gigawatt-hours ----- | | | | | | | | | | |
| 2000 | 64 | -- | -- | -- | 283 | 498 | -- | -- | 175 | 1,021 |
| 2001 | 76 | -- | -- | -- | 412 | 548 | -- | 54 | 161 | 1,251 |
| 2002 | 162 | -- | -- | -- | 573 | 560 | -- | 58 | 229 | 1,582 |
| 2003 | 313 | -- | -- | 64 | 787 | 539 | -- | 63 | 233 | 1,999 |
| 2004 | 556 | -- | 56 | 69 | 1,047 | 581 | -- | 73 | 217 | 2,599 |
| 2005 | 1,282 | -- | 78 | 75 | 1,342 | 556 | -- | 84 | 256 | 3,673 |
| 2006 | 2,220 | -- | 169 | 85 | 1,645 | 513 | -- | 98 | 282 | 5,012 |
| 2007 | 3,075 | -- | 497 | 106 | 1,907 | 618 | -- | 114 | 416 | 6,732 |
| 2008 | 4,420 | 193 | 2,557 | 154 | 2,136 | 873 | -- | 139 | 724 | 11,195 |
| 2009 | 6,583 | 677 | 6,067 | 396 | 2,508 | 900 | 164 | 218 | 1,580 | 19,092 |
| 2010 | 11,729 | 1,906 | 7,104 | 948 | 3,283 | 1,224 | 500 | 565 | 3,206 | 30,465 |
| 2011 | 19,599 | 10,796 | 8,680 | 3,030 | 4,484 | 1,836 | 1,900 | 1,170 | 7,716 | 59,211 |
| 2012 | 26,380 | 18,862 | 11,966 | 6,246 | 6,127 | 4,370 | 4,000 | 2,412 | 13,740 | 94,102 |
| 2013 | 30,000 | 22,408 | 13,111 | 11,915 | 10,715 | 9,346 | 4,648 | 3,610 | 19,058 | 124,810 |

Source: BP, *Statistical Review of World Energy June 2014* (London: 2014).

Solar-generated Electricity in Leading Countries, 2000-2013



Source: BP

Cumulative Solar Water and Space Heating Installations in Leading Countries and the World, 2012

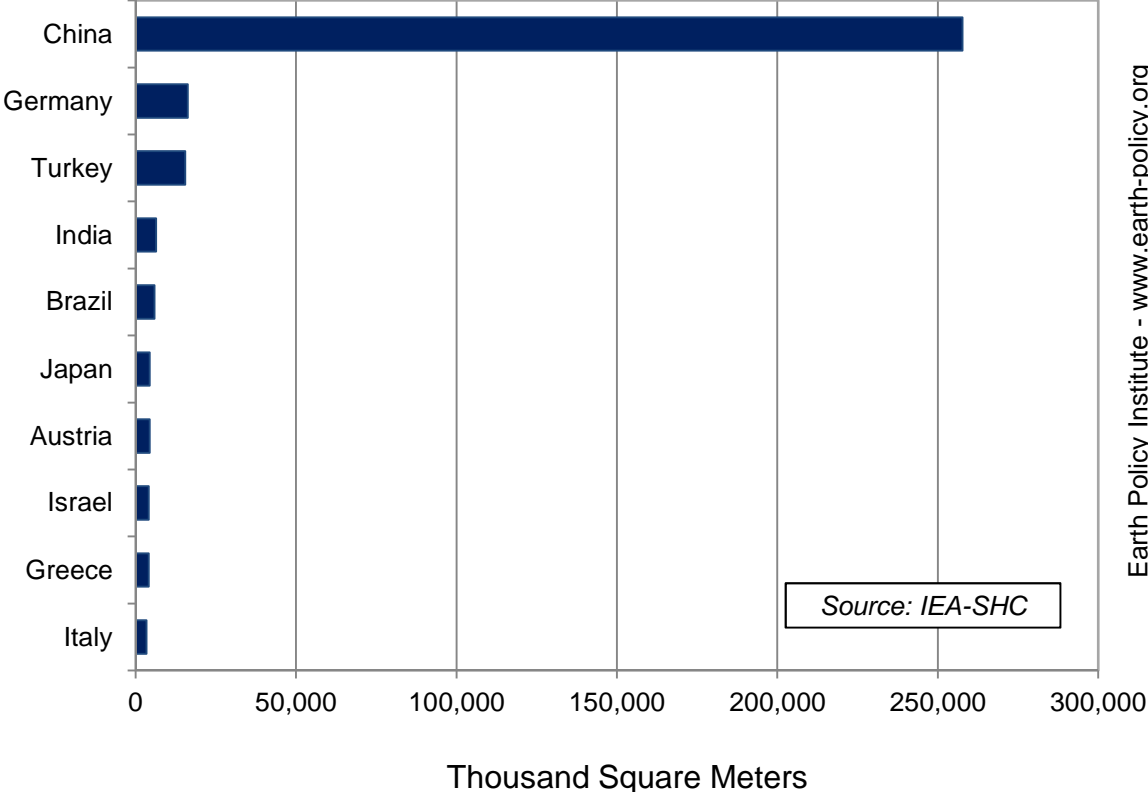
| Country | Cumulative Installed Capacity* Thousand Square Meters** |
|--------------------|---|
| China | 257,700 |
| Germany | 16,254 |
| Turkey | 15,498 |
| India | 6,451 |
| Brazil | 5,947 |
| Japan | 4,462 |
| Austria | 4,369 |
| Israel | 4,145 |
| Greece | 4,122 |
| Italy | 3,403 |
| Australia | 2,976 |
| Spain | 2,829 |
| United States | 2,765 |
| France | 2,361 |
| World Total | 350,063 |

* Data include glazed flat-plate and evacuated-tube solar collectors used for residential water and space heating. Unglazed flat-plate collectors, typically used for heating swimming pools, are not included. For more information on these technologies, see the U.S. Department of Energy's "Solar Water Heaters" Web page, at <http://energy.gov/energysaver/articles/solar-water-heaters>.

** The solar heating industry assumes an installed capacity of 0.7 thermal kilowatts per square meter of installed solar collectors.

Source: Compiled by Earth Policy Institute from Werner Weiss and Franz Mauthner, *Solar Heat Worldwide: Markets and Contribution to the Energy Supply 2012* (Gleisdorf, Austria: International Energy Agency, Solar Heating & Cooling Programme, June 2014), p. 10.

Cumulative Solar Water and Space Heating Installations in Top Ten Countries, 2012



Solar Water and Space Heating Area in Selected Countries and the World, Total and Per Person, 2012

| Country | Total Area* Thousand Square Meters** | Population Thousands | Area Per Person Square Meters |
|----------------|---|-------------------------|----------------------------------|
| Cyprus | 888 | 1,129 | 0.79 |
| Israel | 4,145 | 7,644 | 0.54 |
| Austria | 4,369 | 8,464 | 0.52 |
| Barbados | 132 | 283 | 0.46 |
| Greece | 4,122 | 11,125 | 0.37 |
| Turkey | 15,498 | 73,997 | 0.21 |
| Germany | 16,254 | 82,800 | 0.20 |
| China | 257,700 | 1,377,065 | 0.19 |
| Jordan | 1,118 | 7,009 | 0.16 |
| Switzerland | 1,054 | 7,997 | 0.13 |
| Australia | 2,976 | 23,050 | 0.13 |
| Denmark | 643 | 5,598 | 0.11 |
| Lebanon | 526 | 4,647 | 0.11 |
| Malta | 48 | 428 | 0.11 |
| Portugal | 968 | 10,604 | 0.09 |
| Slovenia | 187 | 2,068 | 0.09 |
| Luxembourg | 40 | 524 | 0.08 |
| Taiwan | 1,432 | 23,300 | 0.06 |
| Spain | 2,829 | 46,755 | 0.06 |
| Ireland | 272 | 4,576 | 0.06 |
| Tunisia | 639 | 10,875 | 0.06 |
| Italy | 3,403 | 60,885 | 0.06 |
| Czech Republic | 424 | 10,660 | 0.04 |
| France | 2,361 | 63,937 | 0.04 |
| Albania | 112 | 3,162 | 0.04 |
| Japan | 4,462 | 127,250 | 0.04 |
| Belgium | 385 | 11,060 | 0.03 |
| South Korea | 1,685 | 49,003 | 0.03 |
| New Zealand | 153 | 4,460 | 0.03 |
| Sweden | 320 | 9,511 | 0.03 |
| Poland | 1,212 | 38,211 | 0.03 |
| Brazil | 5,947 | 198,656 | 0.03 |
| Croatia | 120 | 4,307 | 0.03 |
| Slovakia | 147 | 5,446 | 0.03 |
| Netherlands | 446 | 16,714 | 0.03 |
| Hungary | 220 | 9,976 | 0.02 |
| Bulgaria | 122 | 7,278 | 0.02 |
| Morocco | 491 | 32,521 | 0.02 |
| Macedonia | 26 | 2,106 | 0.01 |
| United Kingdom | 710 | 62,783 | 0.01 |
| Mexico | 1,198 | 120,847 | 0.01 |
| Namibia | 22 | 2,259 | 0.01 |
| South Africa | 497 | 52,386 | 0.01 |
| United States | 2,765 | 317,505 | 0.01 |
| Norway | 34 | 4,994 | 0.01 |
| Finland | 37 | 5,408 | 0.01 |
| India | 6,451 | 1,236,687 | 0.01 |
| Romania | 111 | 21,755 | 0.01 |
| Estonia | 7 | 1,291 | 0.01 |
| Chile | 80 | 17,465 | 0.00 |
| Uruguay | 13 | 3,395 | 0.00 |
| Canada | 97 | 34,838 | 0.00 |
| Lithuania | 6 | 3,028 | 0.00 |
| Latvia | 4 | 2,060 | 0.00 |
| Thailand | 120 | 66,785 | 0.00 |
| Zimbabwe | 20 | 13,724 | 0.00 |
| Russia | 19 | 143,170 | 0.00 |
| Mozambique | 0 | 25,203 | 0.00 |
| World | 350,063 | 7,080,072 | 0.05 |

* Data include glazed flat-plate and evacuated-tube solar collectors used for residential water and space heating. Unglazed flat-plate collectors, typically used for heating swimming pools, are not included. For more information on these technologies, see the U.S. Department of Energy's "Solar Water Heaters" Web page, at <http://energy.gov/energysaver/articles/solar-water-heaters>.

** The solar heating industry assumes an installed capacity of 0.7 thermal kilowatts per square meter of installed solar collectors.

Source: Compiled by Earth Policy Institute with country data from Werner Weiss and Franz Mauthner, *Solar Heat*

Solar Water and Space Heating Area Per Person in Top 25 Countries, 2012

