

GSR 2014 Regional Webinar Series: North America

Evan Musolino

Worldwatch Institute

8 July, 2014

North America Overview

Total Energy Consumption

- 21% of global electricity generation
- 20% of global primary energy consumption

Renewables Consumption

- Solar: 8%
- Wind: 29%
- Geothermal/Biomass: 18%
- Hydro: 17.5%

TOTAL CAPACITY OR GENERATION^a AS OF END-2013

	1	2	3	4	5
POWER					
Renewable power (incl. hydro)	China	United States	Brazil	Canada	Germany
Renewable power (not incl. hydro)	China	United States	Germany	Spain / Italy	India
Renewable power capacity per capita (not incl. hydro) ³	Denmark	Germany	Portugal	Spain / Sweden	Austria
☑ Biopower generation	United States	Germany	China	Brazil	India
☑ Geothermal power	United States	Philippines	Indonesia	Mexico	Italy
☑ Hydropower ⁴	China	Brazil	United States	Canada	Russia
☑ Hydropower generation ⁴	China	Brazil	Canada	United States	Russia
☑ Concentrating solar thermal power (CSP)	Spain	United States	United Arab Emirates	India	Algeria
☑ Solar PV	Germany	China	Italy	Japan	United States
☑ Solar PV capacity per capita	Germany	Italy	Belgium	Greece	Czech Republic
☑ Wind power	China	United States	Germany	Spain	India
☑ Wind power capacity per capita	Denmark	Sweden	Spain	Portugal	Ireland
HEAT					
☑ Solar water heating ²	China	United States	Germany	Turkey	Brazil
☑ Solar water heating capacity per capita ²	Cyprus	Austria	Israel	Barbados	Greece
☑ Geothermal heat ⁵	China	Turkey	Iceland	Japan	Italy

Renewable Technologies in the U.S.

2nd largest installed renewable capacity



Solar

- Continued strong growth in the solar sector led by PV installations and the completion of the 377 MW Ivanpah solar thermal plant in California

Wind

- Large drop off (>90% reduction) in annual installations from the record seen in 2012

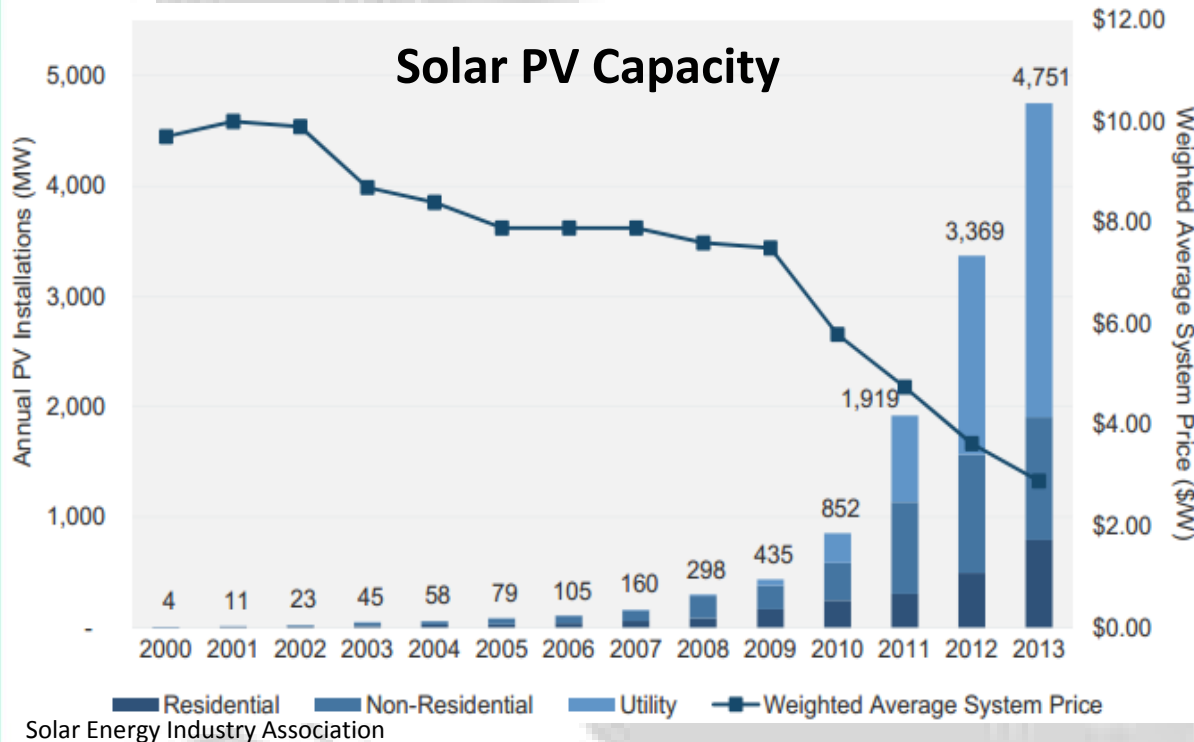
Geothermal

- Added 84 MW of new capacity in 2013 to now account for 29% of the global total

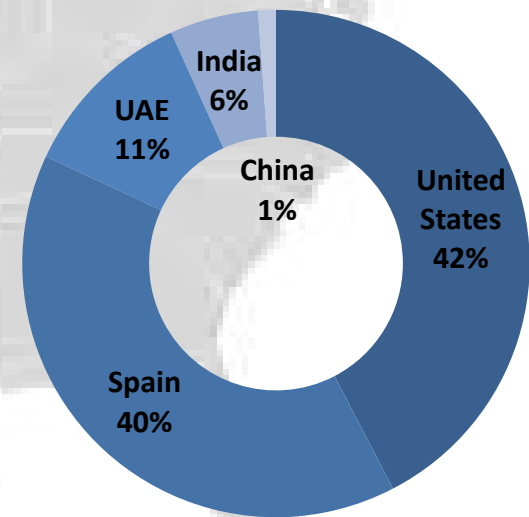
Hydropower

- 3rd largest installed capacity by year-end 2013

Solar Development in the U.S.

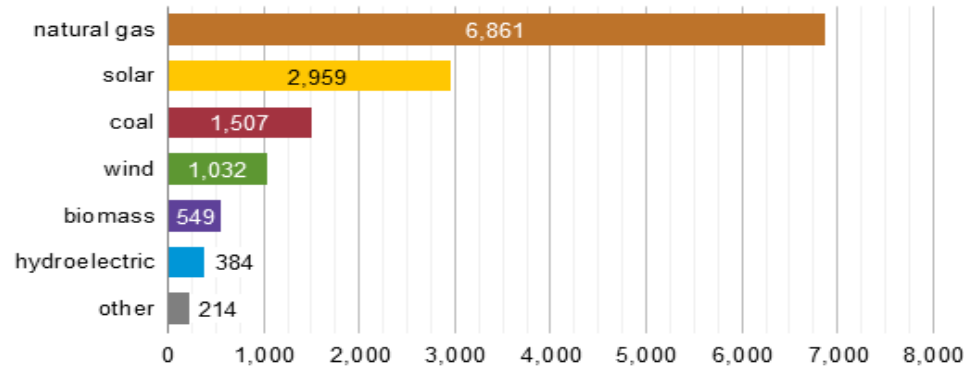


CSP Capacity Added 2013



New Capacity Additions in the U.S.

U.S. power plant capacity additions in 2013
megawatts (MW)



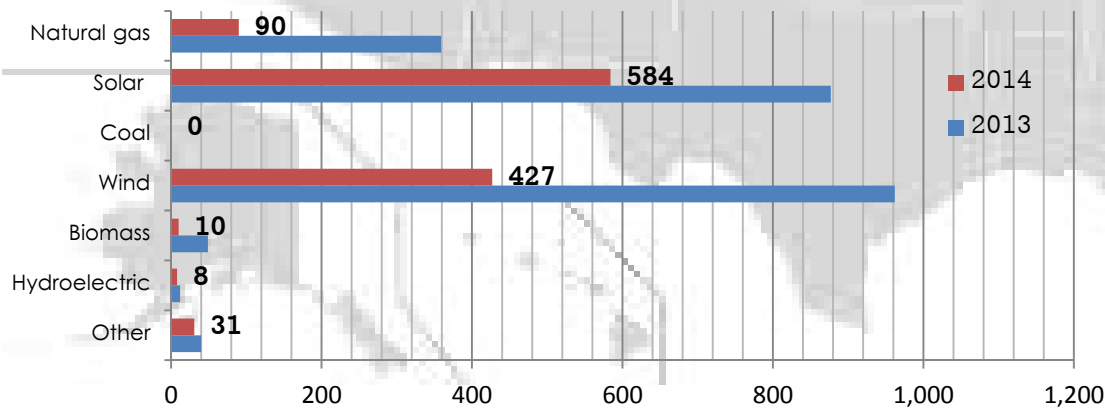
Source: U.S. Energy Information Administration, [Electric Power Monthly](#), December 2013 edition
Note: Data include facilities with a net summer capacity of 1 MW and above only.
Note: See [details by technology type](#).

Renewable Share of New Additions

- 2013-38%
- 2014 (Q1)-92%

100% of new capacity additions in January 2014 were from renewable sources

U.S. power plant capacity additions in Q1 2014
Megawatts (MW)



Renewable Technologies in Canada



4th largest installed renewable capacity (including hydropower)

Solar

- While solar installations remain limited Canadian Solar was the 3rd leading PV manufacturer in 2013

Wind

- 70% increase in installed capacity over 2012 with the addition of 1.6 GW in 2013

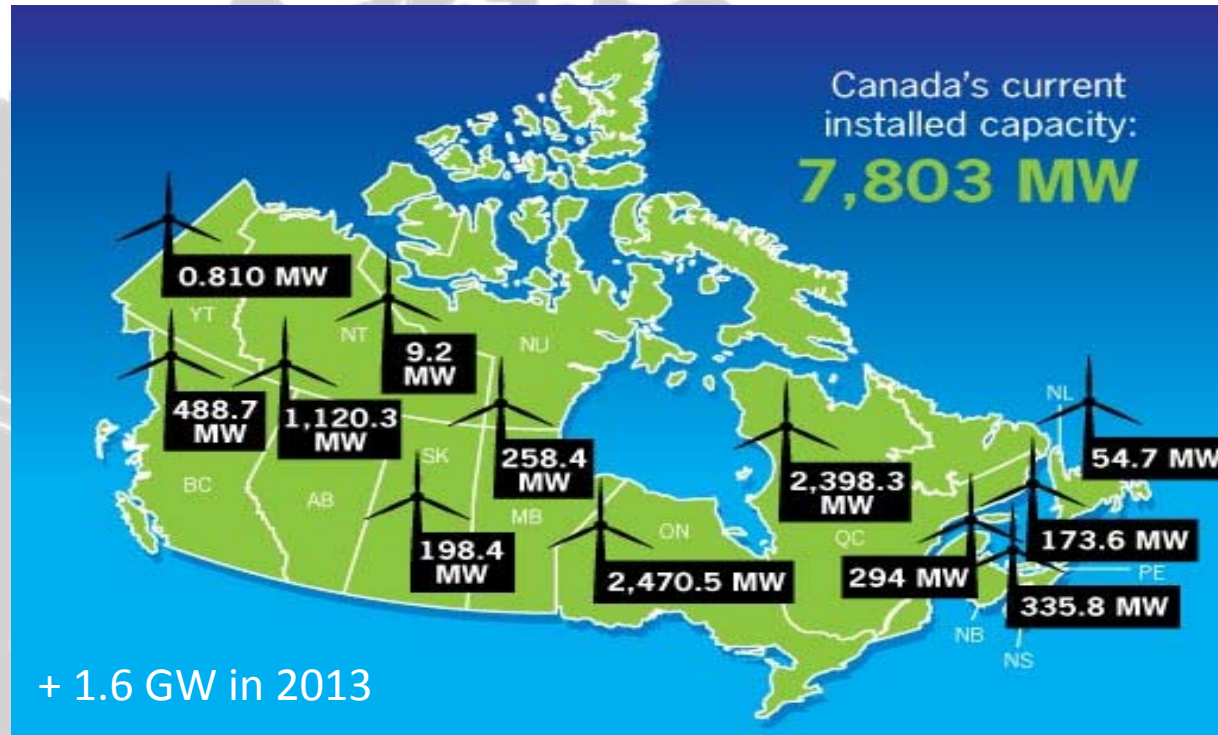
Hydropower

- 500 MW of new hydropower added in 2013 bringing the Canadian total to 76 GW installed (4th globally)

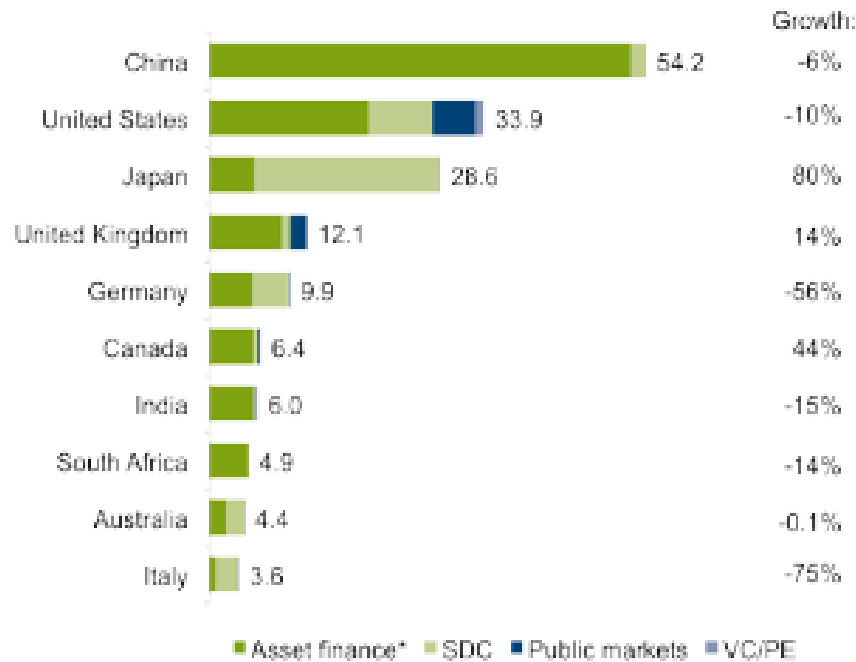
Ocean

- 20 MW tidal array in Nova Scotia remains one of the world's largest ocean power installations

Wind Development in Canada



Renewable Energy Investments



Top 10 countries. *Asset finance volume adjusts for re-invested equity. Excludes corporate and government R&D

Source: UNEP, Bloomberg, New Energy Finance

Canada

- 5th largest investor in wind power

United States

- 2nd largest investor in small-scale distributed renewables and wind power

Renewable Energy Policy:

States/Provinces taking the lead

United States

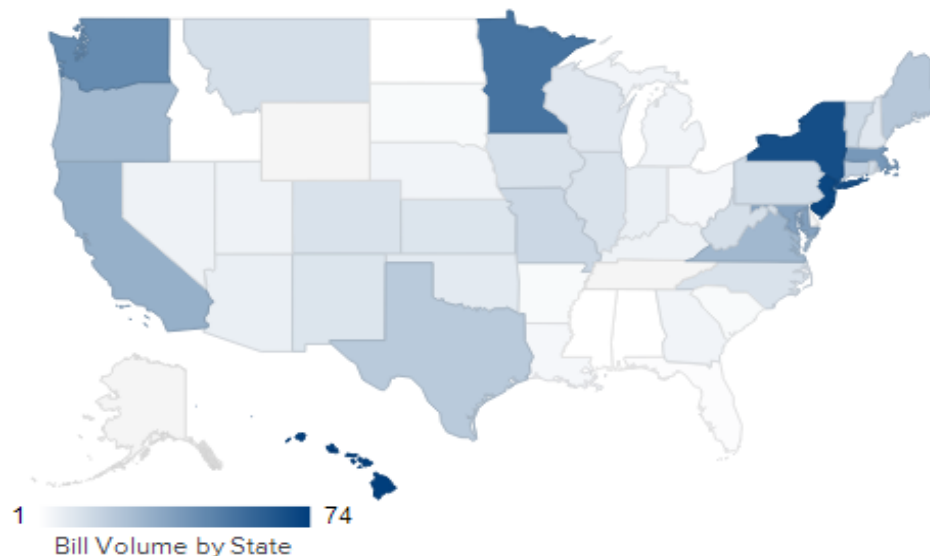
- Renewable Portfolio Standard (RPS)
 - 29 States + DC
- Feed-in Tariff (FIT)
 - 5 States
- Net Metering
 - 43 States + DC
- Tax Incentives
 - 44 States + DC

Canada

- Renewable Portfolio Standard (RPS)
 - 4 Provinces
- Feed-in Tariff (FIT)
 - 3 Provinces
- Biofuel Blend Mandate
 - 5 Provinces



Electricity Generation Bills by State



Upcoming...

- Tar sands and shale gas/oil developments in Canada and the U.S. can further shape North American energy markets
- Potential interconnections for 1,200 MW of baseload hydropower from HydroQuebec to New England and 250 MW of balancing hydropower for wind development in North Dakota from Manitoba Hydro
- Integration of renewable energy and energy efficiency in state plans under EPA guidelines for reducing emissions rates from existing power plants
- Potential extension of Production Tax Credit (PTC) [PTC expired at the end of 2013]
- Investment Tax Credit (ITC) available to solar projects completed by year-end 2016
- New financial incentives for renewable energy technologies
- Energy efficiency legislation in both the House and the Senate



Thank you!

emusolino@worldwatch.org