

Sustainable Development Goal 7.2: Energy Indicators (2016)

Renewable energy (% of TFEC)	21.6	Access to electricity (% of population)	100.0
Energy efficiency (MJ per \$1 of GDP)	7.5	Access to clean cooking (% of population)	>95

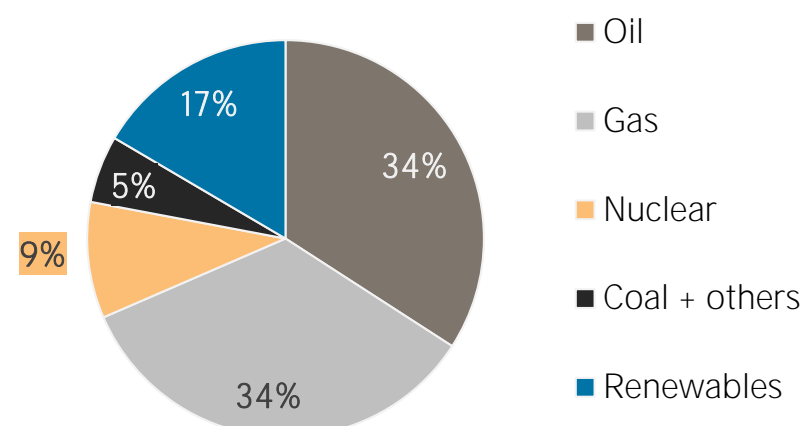
TOTAL PRIMARY ENERGY SUPPLY (TPES)

TPES	2011	2016
Non-renewable (TJ)	9 118 623	9 631 549
Renewable (TJ)	1 923 429	1 909 520
Total (TJ)	11 042 052	11 541 069
Renewable share (%)	17	17

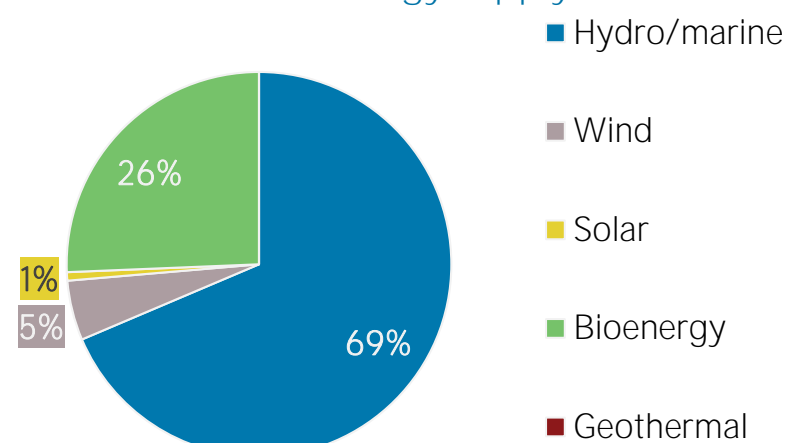
Growth in TPES	2011-16	2015-16
Non-renewable (%)	+5.6	-0.4
Renewable (%)	-0.7	-2.0
Total (%)	+4.5	-0.7

Primary energy trade	2011	2016
Imports (TJ)	3 724 871	3 681 231
Exports (TJ)	9 810 821	11 724 173
Net trade (TJ)	6 085 950	8 042 942
Imports (% of supply)	34	32
Exports (% of production)	57	60
Energy self-sufficiency (%)	155	169
Net trade (USD million)	+ 62 803	+ 36 992
Net trade (% of GDP)	+3.5	+2.4

Total primary energy supply in 2016



Renewable energy supply in 2016

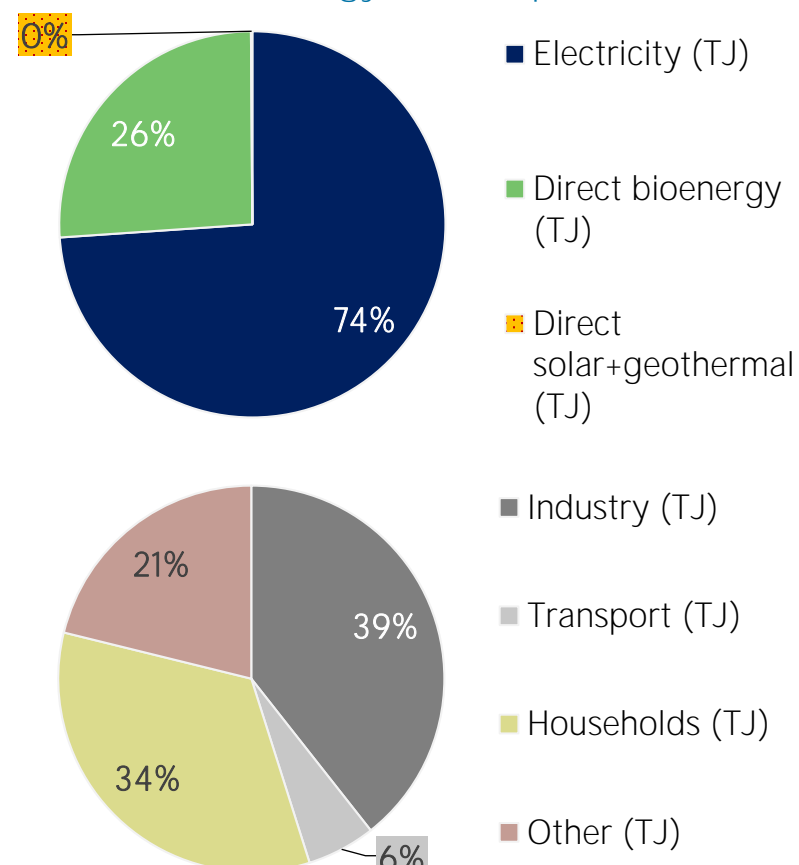

RENEWABLE ENERGY CONSUMPTION

Consumption by source	2011	2016
Electricity (TJ)	1 139 952	1 137 877
Direct bioenergy (TJ)	527 352	399 744
Direct solar+geothermal (TJ)	1 770	1 760
Total (TJ)	1 669 074	1 539 381
Electricity share (%)	68	74

Consumption growth	2011-16	2015-16
Renewable electricity (%)	-0.2	-1.9
Other renewables (%)	-24.1	-9.1
Total (%)	-7.8	-3.9

Consumption by sector	2011	2016
Industry (TJ)	686 723	606 261
Transport (TJ)	76 303	88 257
Households (TJ)	506 012	519 212
Other (TJ)	400 036	325 649
Renewable share of TFEC	22.7	21.6

Renewable energy consumption in 2016

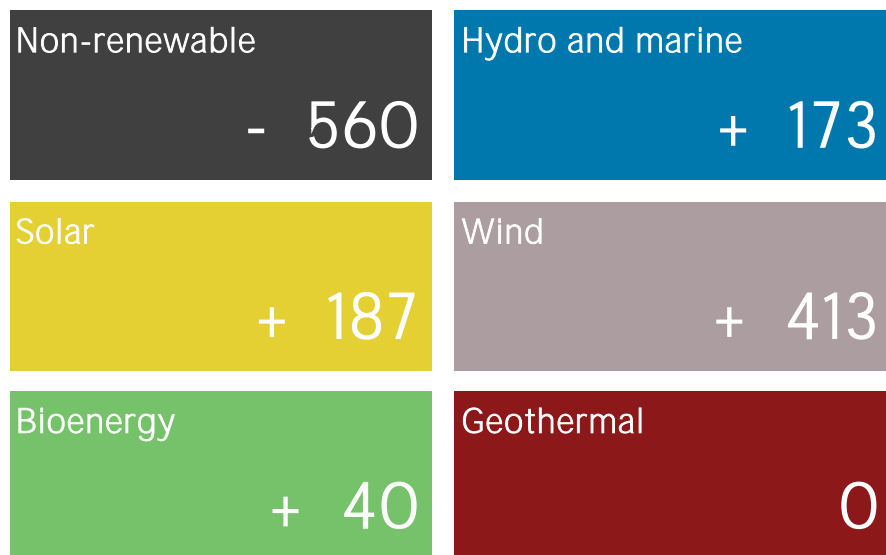


ELECTRICITY CAPACITY AND GENERATION

Capacity in 2018	MW	%
Non-renewable	47 756	32
Renewable	100 140	68
Hydro/marine	80 850	55
Solar	3 100	2
Wind	12 816	9
Bioenergy	3 375	2
Geothermal	0	0
Total	147 896	100

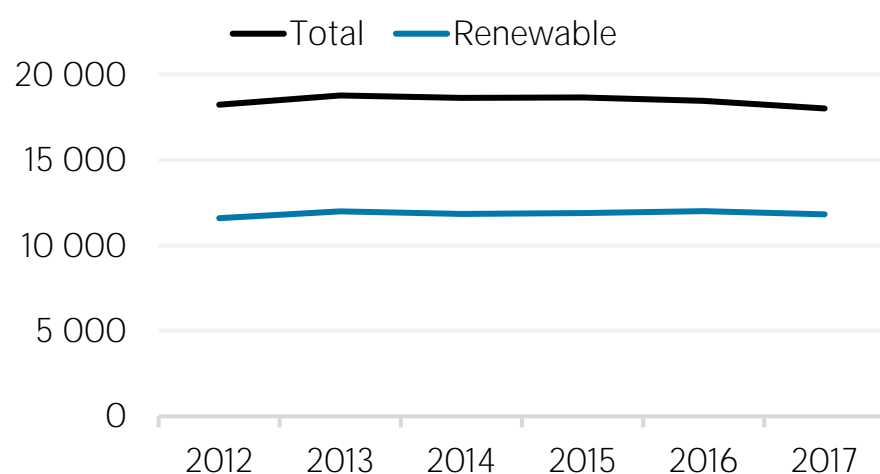
Capacity change (%)	2013-18	2017-18
Non-renewable	- 0	- 1.2
Renewable	+ 17	+ 0.8
Hydro/marine	+ 7	+ 0.2
Solar	+ 156	+ 6.4
Wind	+ 64	+ 3.3
Bioenergy	+ 123	+ 1.2
Geothermal	0	0.0
Total	+ 11	+ 0.2

Net capacity change in 2018 (MW)

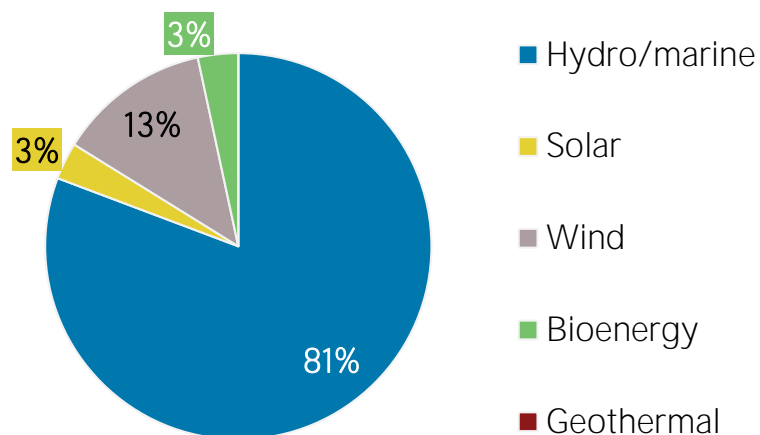


Generation in 2017	GWh	%
Non-renewable	226 240	34
Renewable	432 159	66
Hydro and marine	392 554	60
Solar	3 573	1
Wind	28 775	4
Bioenergy	7 257	1
Geothermal	0	0
Total	658 399	100

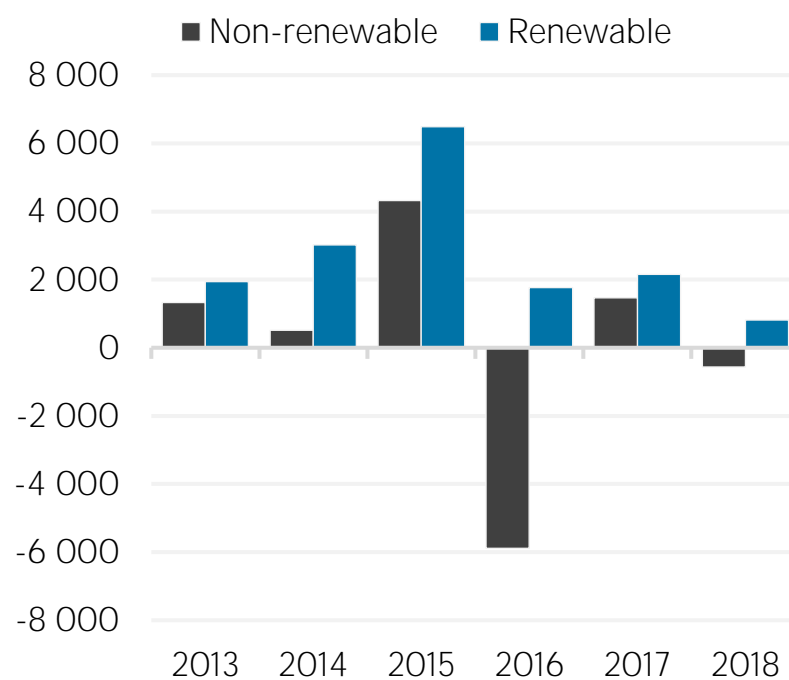
Per capita electricity generation (kWh)



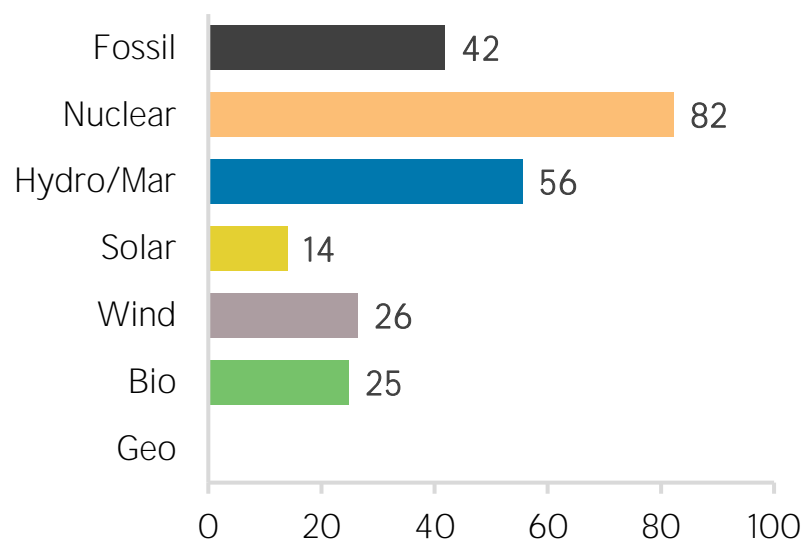
Renewable capacity in 2018



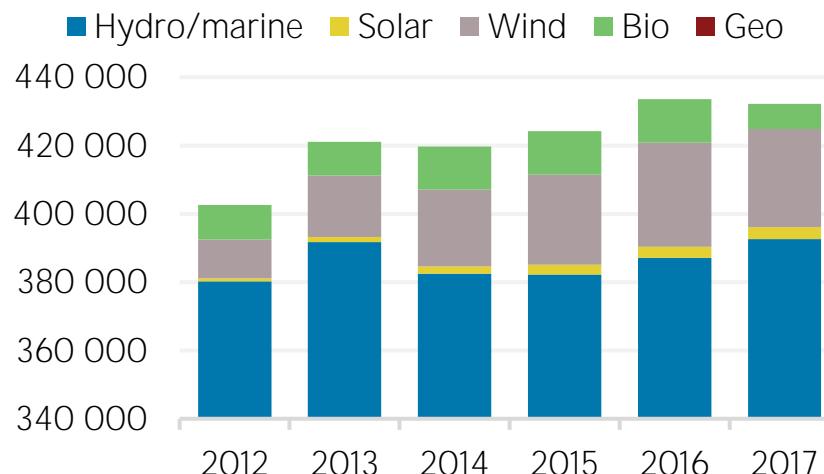
Net capacity change (MW)



Capacity utilisation in 2017 (%)



Renewable generation (GWh)



TARGETS, POLICIES AND MEASURES

Most immediate clean energy targets & NDCs

	year	target	unit
Renewable energy:			
Renewable electricity:	2020	40	%
Renewable capacity:			
Renewable transport:			
Liquid Biofuel blending mandate:			
Other transport targets:			
Renewable heating/cooling:			
Renewable Hydropower	2020	14	%
Off-grid renewable technologies:			
Energy efficiency (Energy):			
Energy efficiency (Electricity):			

Latest policies, programmes and legislation

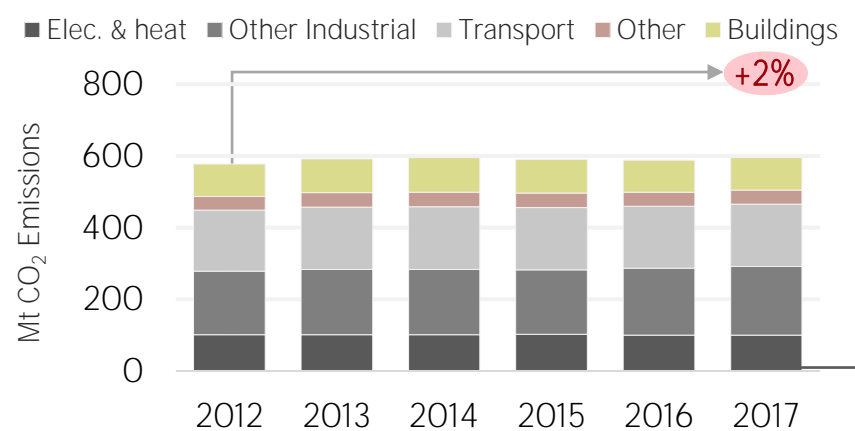
1 Manitoba Geothermal Program	2016
2 Prince Edward Island Renewable Energy Act	2016
3 Quebec Energy Policy 2030	2016
4 SaskPower Electricity Initiatives	2016
5 Transitioning to a Low-Carbon Economy: New Brunswick's Climate Change Action Plan	2016

References to sustainable energy in Nationally Determined Contribution (NDC)

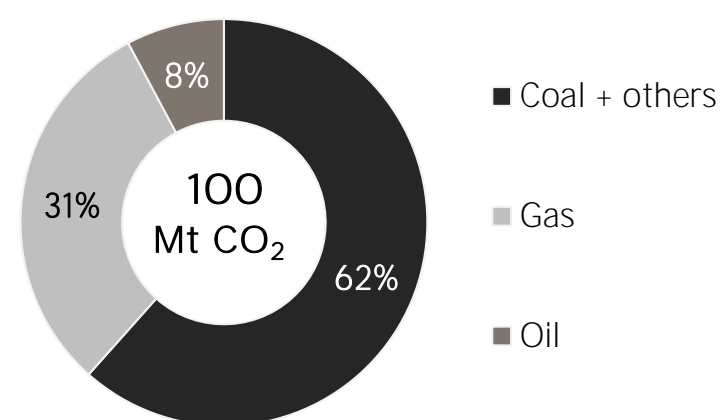
	Conditional	Unconditional	unit
- Renewable energy			
- electricity		40	%
- transport			
- heating/cooling			
- Energy efficiency			

ENERGY AND EMISSIONS

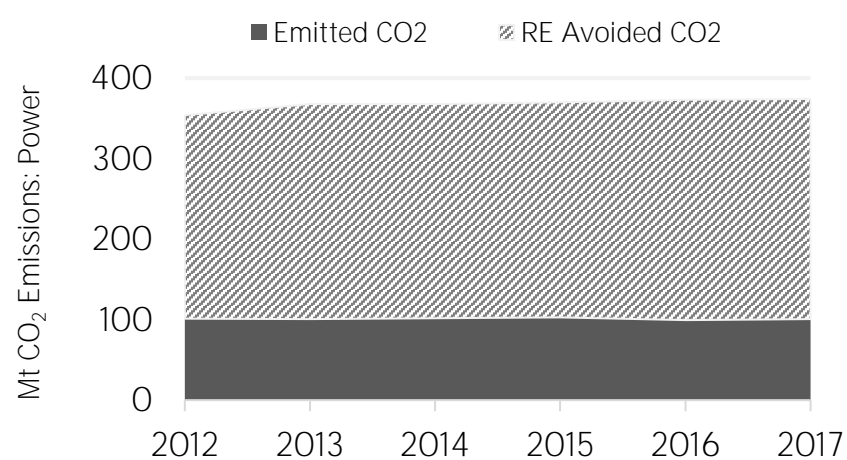
Energy-related CO₂ emissions by sector



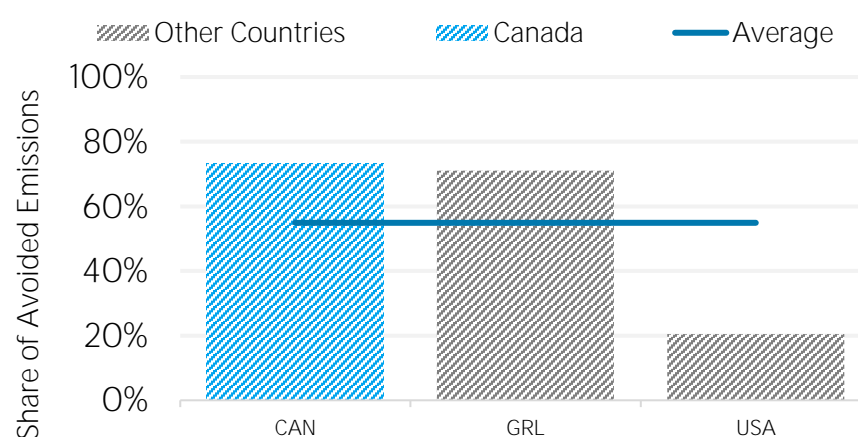
Elec. & heat generation CO₂ emissions in 2017



Avoided emissions from renewable power



Reduction in power emissions due to RE in 2017

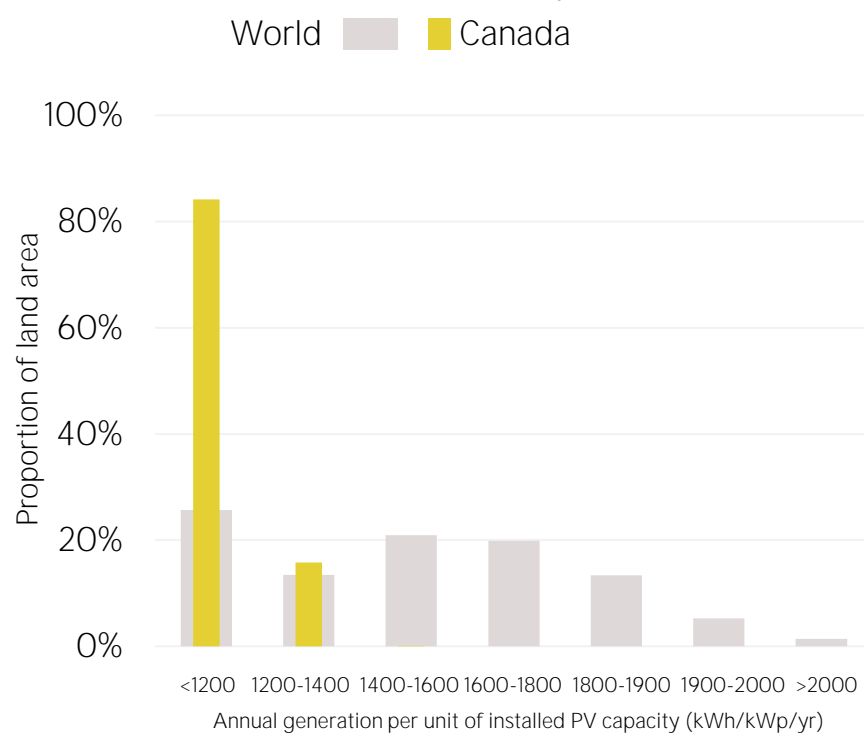


Avoided emissions based on fossil fuel mix used for power

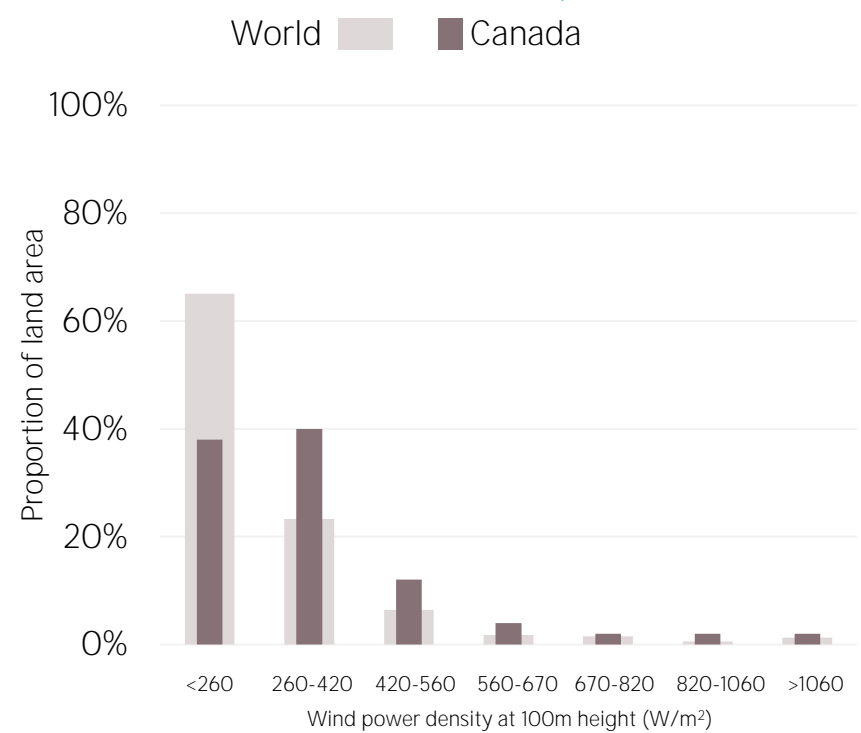
Reduction is RE Avoided divided by sum of avoided and emitted

RENEWABLE RESOURCE POTENTIAL

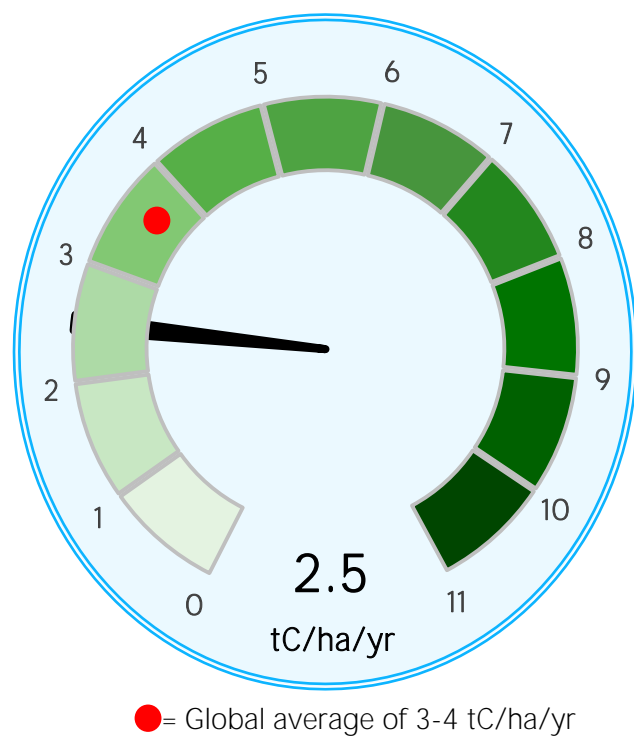
Distribution of solar potential



Distribution of wind potential



Biomass potential: net primary production



Indicators of renewable resource potential

Solar PV: Solar resource potential has been divided into seven classes, each representing a range of annual PV output per unit of capacity (kWh/kWp/yr). The bar chart shows the proportion of a country's land area in each of these classes and the global distribution of land area across the classes (for comparison).

Onshore wind: Potential wind power density (W/m^2) is shown in the seven classes used by NREL, measured at a height of 100m. The bar chart shows the distribution of the country's land area in each of these classes compared to the global distribution of wind resources. Areas in the third class or above are considered to be a good wind resource.

Biomass: Net primary production (NPP) is the amount of carbon fixed by plants and accumulated as biomass each year. It is a basic measure of biomass productivity. The chart shows the average NPP in the country (tC/ha/yr), compared to the global average NPP of 3-4 tonnes of carbon per year.

Sources: IRENA statistics, plus data from the following sources: UN SDG Indicators Database (original sources: WHO; World Bank; IEA; IRENA; and UNSD); UNSD Energy Balances; UN COMTRADE; World Bank World Development Indicators; EDGAR; REN21 Global Status Report; IEA-IRENA Joint Policies and Measures Database; IRENA Global Atlas; and World Bank Global Solar Atlas and Global Wind Atlas.

Additional notes: Energy self-sufficiency has been defined as total primary energy production divided by total primary energy supply. The value of energy trade has been defined as including all commodities in Chapter 27 of the Harmonised System (HS). Capacity utilisation has been calculated as annual generation divided by capacity $\times 8,760$. Avoided emissions from renewable power have been calculated as renewable generation divided by fossil fuel generation multiplied by reported emissions from the power sector. This assumes that, if renewable power did not exist, fossil fuels would be used in its place to generate the same amount of power and using the same mix of fossil fuels. In countries and years where no fossil fuel generation occurs, an average fossil fuel emission factor has been used to calculate the avoided emissions.

This note has been produced to provide policy makers with a brief overview of developments in renewable energy in a country. The IRENA statistics team would welcome comments and feedback on its structure and content, which can be sent to statistics@irena.org.

Last updated on: 26th May, 2020