

Sustainable Energy Statistics

What is needed for national and international
reporting

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Part I – Statistics in support of SDG Goal 7

What are sustainable energy statistics according to SDG 7?



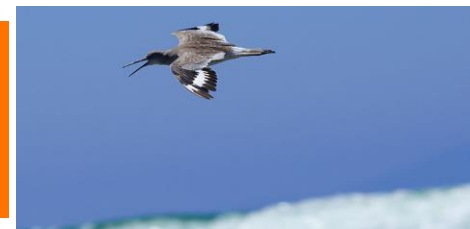
- According to UN Sustainable Development Goal 7, sustainable energy statistics measure
 - access to affordable, reliable and modern energy services
 - the share of renewable energy in the global energy mix
 - the rate of improvement in energy efficiency

SDG 7 Indicators



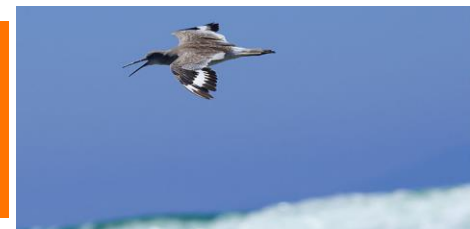
- 7.1.1 - Proportion of population with access to electricity
- 7.1.2 - Proportion of population with primary reliance on clean fuels and technology
- 7.2.1 - Renewable energy share in the total final energy consumption
- 7.3.1 - Energy intensity measured in terms of primary energy and GDP

Indicator 7.1.1: Proportion of population with access to electricity



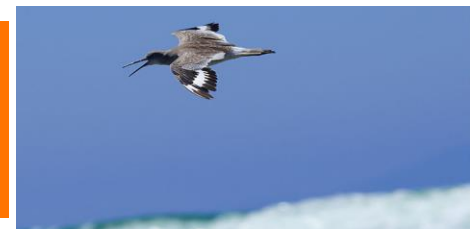
Country status (2014)	Methodology	Possible national data sources
<p>Azerbaijan – 100% Belarus – 100% Georgia – 100% Kazakhstan – 100% Kyrgyzstan – 100%</p> <p>Source: http://gtf.esmap.org/</p>	<p>Definition: Percentage of population with access to electricity</p> <p>Geographic scope: National and sub-national</p> <p>Notes: Given that access to electricity is universal in the target countries, the relevance of this indicator is possibly low.</p>	<p>Population with access to electricity: Possibly available from household surveys conducted by NSO.</p> <p>Administrative data from electric power utilities or energy regulators may also be useful.</p>
<p>Rationale</p>	<p>For more information: https://unstats.un.org/sdgs/metadata/files/Metadata-07-01-01.pdf</p> <p>and</p> <p>http://gtf.esmap.org/data/files/download-documents/gtf-2013-full-report.pdf (page 82-87).</p>	<p>Total population: Available from NSO</p>
<p>Ensuring equitable access to modern energy services for the public, including access to adequate electricity supply and clean energy for cooking, heating and lighting, is essential to meeting basic human needs and enabling sustainable development. All households and public institutions should have fair access to markets for modern energy sources.</p>		

Indicator 7.1.2: Proportion of population with primary reliance on clean fuels



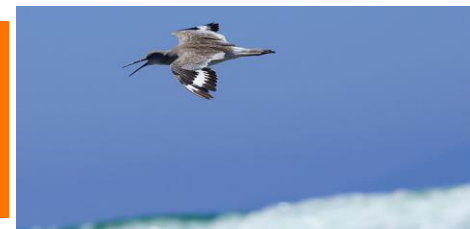
Country status (2014)	Methodology	Possible national data sources
<p>Azerbaijan – 97% Belarus – 100% Georgia – 55% Kazakhstan – 92% Kyrgyzstan – 76%</p> <p>Source: http://gtf.esmap.org/</p>	<p>Definition: The number of people using “clean” fuels and technologies for cooking, heating and lighting divided by total population.</p> <p>Geographic scope: National and sub-national</p>	<p>Number of people relying on solid fuels for cooking, heating and lighting: Data on primary household fuels and technologies, particularly for cooking, may be collected at the national levels through censuses and household surveys conducted by the NSO</p>
<p>Rationale</p>	<p>Notes: “Clean” fuels are non-solid fuels.</p>	<p>Total population: Available from NSO</p>
<p>Ensuring equitable access to modern energy services for the public, including access to adequate electricity supply and clean energy for cooking, heating and lighting, is essential to meeting basic human needs and enabling sustainable development. All households and public institutions should have fair access to markets for modern energy sources.</p>	<p>For more information: https://unstats.un.org/sdgs/metadata/files/Metadata-07-01-02.pdf</p>	

Indicator 7.2.1: Renewable energy share in total final energy consumption



Country status (2014)	Methodology	Possible national data sources
<p>Azerbaijan – 2% Belarus – 7% Georgia – 32% Kazakhstan – 1% Kyrgyzstan – 28%</p> <p>Source: http://gtf.esmap.org/</p>	<p>Definition: Percentage of final consumption of energy that is derived from renewable resources (hydro, fuelwood/charcoal, animal waste, vegetable waste, black liquor, bagasse, wind, solar PV and thermal, liquid biofuels, biogas, geothermal, marine and municipal waste).</p> <p>Geographic scope: National</p>	<p>Final energy consumption: Available from national energy balances as total final energy consumption minus non-energy use of energy products.</p>
<p>Rationale</p>	<p>Notes: Methodology requires allocation of final electricity and heat consumption by production technology. In practice, this is done by assuming that final use shares are identical to production shares, which is not necessarily the case. This assumption is particularly problematic when a country imports a large amount of energy of a type different from what it produces. (Example: if total final consumption of biogas, electricity and heat are 150 TJ, 400 TJ and 100 TJ and biogas is used to produce 10% of electricity and 5% of heat, total biogas consumption will be 195 TJ: $150\text{ TJ} + 400\text{ TJ} * 10\% + 100\text{ TJ} * 5\%$).</p>	
<p>Renewable energy is one way to reduce the carbon intensity of the energy sector. Renewable energy: reduce the use of fossil fuels and their environmental consequences; improves energy security, and encourages economic development, innovation, and high-tech manufacturing.</p>	<p>For more information: https://unstats.un.org/sdgs/metadata/files/Metadata-07-02-01.pdf and http://gtf.esmap.org/data/files/download-documents/gtf-2013-full-report.pdf (page 195-200 and Annex I).</p>	<p>Final consumption of renewable energy: Equal to final consumption of renewable energy products plus the renewable share of final electricity and heat consumption. Data are available from national energy balances.</p>

Indicator 7.3.1: Energy intensity measured in terms of primary energy and GDP

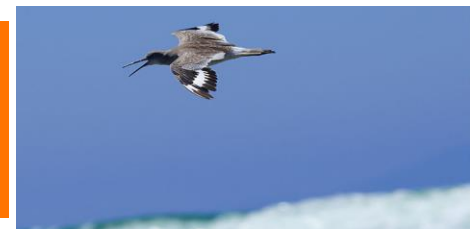


Country status (2014)	Methodology	Possible data sources
<p>Azerbaijan – 4 MJ/\$ Belarus – 7 MJ/\$ Georgia – 6 MJ/\$ Kazakhstan – 8 MJ/\$ Kyrgyzstan – 9 MJ/\$ Source: http://gtf.esmap.org/</p>	<p>Definition: Total primary energy supply (TPES) per unit of real (inflation-adjusted) GDP</p> <p>Geographic scope: National and provinces/states</p>	<p>TPES: NSO, Ministry of Energy or other national government source. Alternatively, should be available from the IEA</p> <p>Real GDP in national currency units: NSO or other national government source. Alternatively, can be calculated by dividing GDP in nominal values by the implicit price index for GDP published by the NSO.</p> <p>Real GDP in \$US at purchasing power parity: Available from the World Bank, World Development Indicators</p>
<p>Rationale</p>	<p>Notes:</p>	
<p>Reducing energy intensity is the best way to make more out of existing energy resources, support economic growth and reduce the energy costs for all citizens. Attempts to improve energy efficiency often fall short because of: national policies that artificially lower energy prices and encourage wasteful consumption; subsidies that distort markets; inadequate norms and standards; and incomplete statistics</p>	<p>TPES equals production plus imports minus exports minus international marine and aviation bunkers plus or minus stock changes</p> <p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p> <p>For more information: https://unstats.un.org/sdgs/metadata/files/Metadata-07-03-01.pdf</p>	



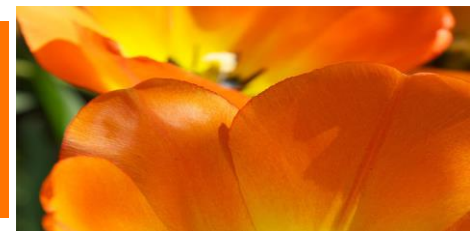
Part II – Other sustainable energy statistics

Proportion of population with access to natural gas



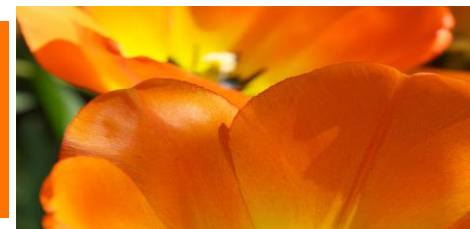
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Percentage of population with access to natural gas</p> <p>Geographic scope: National and sub-national</p> <p>Notes: Ideally, the indicator would be broken down by rural/urban households</p>	<p>Population with access to natural gas: Possibly available from household surveys conducted by NSO.</p> <p>Administrative data from gas utilities or energy regulators may also be useful.</p> <p>Total population: Available from NSO</p>

Prices for main energy products



Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Average retail prices paid for electricity, coal, natural gas, heating fuel, petrol and diesel fuel</p> <p>Geographic scope: National and sub-national</p> <p>Notes: Ideally, the indicator would be broken down by rural/urban households</p>	<p>Prices: Possibly available from price surveys conducted by NSO.</p> <p>Administrative data from gas utilities or energy regulators may also be useful.</p>
Rationale		
Energy prices play a major role in determining the equity of energy accessibility.		

Spending on energy as a share of household disposable income



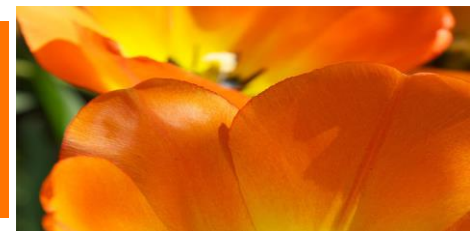
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Share of household disposable income devoted to spending on energy products</p> <p>Geographic scope: National and sub-national</p> <p>Notes: Ideally, the indicator would be broken down by household income quintile</p>	<p>Household spending on energy products: Possibly available from household expenditure surveys conducted by NSO</p> <p>Household disposable income: Available from NSO</p>
Rationale		
<p>The share of disposable income represented by spending on energy prices play a major role in determining the equity of energy accessibility.</p>		

Average number of days with electrical outages



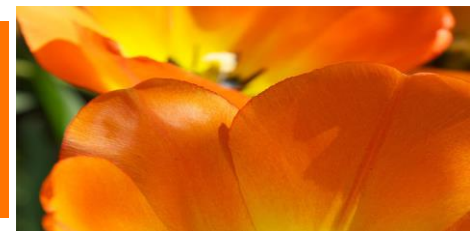
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Average number of days per year with electric power outages of any duration</p> <p>Geographic scope: National and sub-national</p> <p>Notes: Ideally, the indicator would be broken down by rural/urban areas</p>	<p>Power outages: Possible available from electricity utilities or regulators</p>
Rationale		
Electrical outages are an indicator of the reliability of energy supply and a key determinant of the equity of energy access		

Investment in energy production and distribution infrastructure



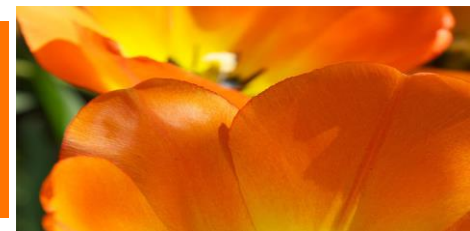
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Annual gross fixed capital formation in energy production and distribution systems by energy type (electricity/fossil fuel) as a share of total national gross fixed capital formation</p> <p>Geographic scope: National and sub-national</p>	<p>Investment in energy production and distribution infrastructure: Possibly available capital stock investment surveys compiled the NSO.</p> <p>Administrative data from energy regulators may also be useful.</p>
Rationale	<p>Notes: Ideally, the indicator would be broken down by rural/urban areas</p>	<p>National gross fixed capital formation: Available from the NSO</p>
<p>Investment in energy production and distribution systems is an indicator of the reliability of energy supply and a key determinant of the equity of energy access</p>		

Energy intensity measured in terms of final energy use and industrial value added



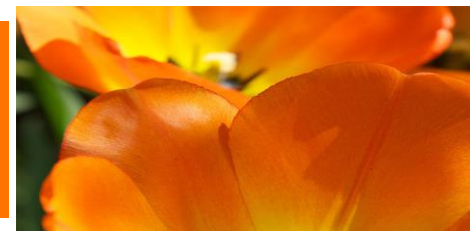
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Final energy use by per unit of real (inflation-adjusted) value added by sector</p>	<p>Real GDP in national currency units: NSO or other national government source. Alternatively, can be calculated by dividing GDP in nominal values by the implicit price index for GDP published by the NSO.</p>
Rationale	<p>Geographic scope: National and provinces/states</p>	
<p>Reducing energy intensity is the best way to make more out of existing energy resources, support economic growth and reduce the energy costs for all citizens. Attempts to improve energy efficiency often fall short because of: national policies that artificially lower energy prices and encourage wasteful consumption; subsidies that distort markets; inadequate norms and standards; and incomplete statistics</p>	<p>Notes:</p> <p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p>	<p>Real GDP in \$US at purchasing power parity: Available from the World Bank, World Development Indicators</p> <p>Final energy use by sector: NSO, Ministry of Energy or other national government source. Alternatively, should be available from the IEA</p>

Investment in energy efficient technologies



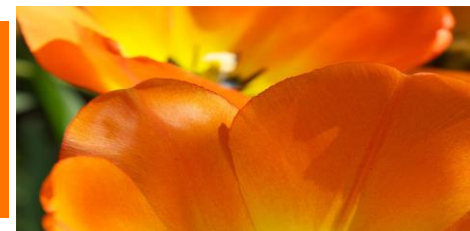
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Investment in technologies to improve energy efficiency (e.g. improved coal combustion equipment for electric power plants)</p>	<p>Investment in energy efficient technologies: Data may be available from specialized business surveys conducted by the NSO (such as environmental protection surveys)</p>
<p>Rationale</p>	<p>Geographic scope: National and provinces/states</p>	
<p>Investment in new technologies that reduce energy consumption is key to improving energy efficiency, reducing carbon emissions and ensuring energy sustainability</p>	<p>Notes:</p> <p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p> <p>Ideally, separate Indicators should be compiled for the public and private sectors</p>	

Investment in renewable energy technologies



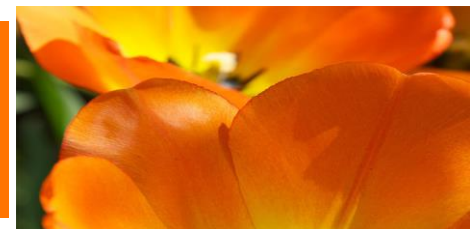
Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Investment in renewable energy production infrastructure</p>	<p>Investment in renewable energy production infrastructure: Data may be available from specialized business surveys conducted by the NSO (such as environmental protection surveys)</p>
<p>Rationale</p>	<p>Geographic scope: National</p>	
<p>Investment in renewable energy technologies is key to reducing carbon emissions and ensuring energy sustainability</p>	<p>Notes:</p> <p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p> <p>Ideally, separate Indicators should be compiled for the public and private sectors</p>	

Energy-related subsidies



Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Government spending on subsidies to businesses and households related to energy production or consumption</p>	<p>Energy-related subsidies: Data may be available from the public accounts of the national government or from the accounts of the energy ministry</p>
<p>Rationale</p>		
<p>Subsidies are a means of encouraging/discouraging investment in particular areas of the economy. Typically, energy subsidies have been directed at supporting development of the fossil fuel industry, which is no longer environmentally sustainable. Increasingly, they are being used to encourage investment in renewable energy to reduce carbon emissions.</p>	<p>Notes:</p> <p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p> <p>Ideally, separate Indicators should be compiled for the public and private sectors</p>	<p>International organizations like the International Institute for Sustainable Development might also be sources</p>

Energy-related taxes



Country status (2014)	Methodology	Possible data sources
Unknown	<p>Definition: Government tax revenues from energy-related taxes</p>	<p>Energy-related taxes: Data may be available from the public accounts of the national government or from the accounts of the energy ministry</p>
<p>Rationale</p>	<p>Notes:</p>	
<p>Taxes on energy products are a means of encouraging/discouraging consumption in particular areas of the economy. Typically, energy taxes have been directed at collection of funds to support development of transportation infrastructure such as roads. Increasingly, they are being used to discourage consumption of carbon-intensive energy products.</p>	<p>Ideally, two versions of this indicator should be compiled, one using real GDP measured in national currency units and the other measured in \$US (converted at purchasing power parity)</p> <p>Ideally, revenue should be broken down by type of tax (taxes on carbon content versus other types of energy taxes)</p>	<p>International organizations like the International Institute for Sustainable Development might also be sources</p>



Thank you

