

## TAIWAN (Republic of China)



### Country at a glance

- Population: 23.2 million (2010) [1]
- Total area: 35,980 sq. km [2]
- Carbon emissions per capita: 11.60 metric tons (2010) [3]
- Energy consumption per capita: 54.55 MWh (2010) [4]
- Percentage of global carbon emissions: 0.89% (2010) [3]



### Coastal Windfarms in Taiwan

Located in the suburban district of Qingshui in Taichung city, rests one of Taiwan's largest windfarms. Set upon the coastline, the Taichung windfarm produce around 46 MW and account for almost 8% of Taiwan's overall energy production from windfarms. It is one of 24 wind power facilities in Taiwan.

Windfarms in the Qingshui District of Taiwan. Permission Under CC BY-SA 1.2 [http://en.wikipedia.org/wiki/File:Wind\\_power.JPG](http://en.wikipedia.org/wiki/File:Wind_power.JPG)

**Table 1 Breakdown of energy use, electricity and heat generation, 2010**

	Primary energy sourced within country		Energy imports minus exports	Primary energy used within the country <sup>(a)</sup>			Electricity Generation <sup>(b)</sup>		Heat Generation <sup>(c)</sup>		
	unit	ktoe		%	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat		0	0	41,349	41,429	481,822	38	125,271	51	0	0
Oil fuels		12	0	46,136	42,188	490,642	39	10,849	4	0	0
Natural gas		237	2	12,939	12,955	150,672	12	57,341	24	0	0
Nuclear		10,849	84	0	10,849	126,171	10	41,629	17	0	0
Hydroelectric		361	3	0	361	4,195	0	4,194	2	0	0
Biofuels and waste		1,306	10	0	1,306	15,186	1	3,652	1	0	0
Solar photovoltaics		2	0	0	2	23	0	23	0	0	0
Solar thermal		105	1	0	105	1,222	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		84	1	0	84	976	0	976	0	0	0
Geothermal		0	0	0	0	0	0	0	0	0	0
Electricity (imported)		0	0	0	0	0	0	0	0	0	0
Sub total Renewables		1,857	14	0	12,706	21,602	2	8,845	4	0	0
<b>Totals</b>		<b>12,955</b>	<b>100</b>	<b>100,424</b>	<b>109,278</b>	<b>1,270,909</b>	<b>100</b>	<b>243,935</b>	<b>100</b>	<b>0</b>	<b>0</b>

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

Notes:

Standard conversion used is 1 ktoe = 11.63 GWh

- (a) Sum of energy sourced within country, energy imports minus exports, international marine and aviation bunkers and stock change flows.
- (b) Includes all electricity generation, including any exported.
- (c) Does not include electrical heating. Includes waste heat recovery from electricity generation plants.

**Table 2 Breakdown of transport fuel use, 2010**

(in ktoe)	Total transport mix	%	Domestic aviation	Road	%	Rail	Pipeline transport	Domestic navigation	Non-specified (transport)
Oil products	12,057	99	82	11,682	100	28	0	265	0
Natural gas	0	0	0	0	0	0	0	0	0
Biofuels and waste	0	0	0	0	0	0	0	0	0
Electricity	100	1	0	0	0	100	0	0	0
Sub total	0	0	0	0	0	0	0	0	0
Renewables	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>12,157</b>	<b>100</b>	<b>82</b>	<b>11,682</b>	<b>100</b>	<b>128</b>	<b>0</b>	<b>265</b>	<b>0</b>

Source: Based on World Energy Statistics and Balances Database 2012, "World Energy Balances." © OECD/IEA, 2012.

## Stand on climate change

The Republic of China or more commonly known as Taiwan or Chinese Taipei is a nation that is not formally recognized by the United Nations. As Taiwan is not a member of the UN, it therefore is ineligible to participate in Multilateral Environmental Agreements (MEA) like the Kyoto Protocol. Countries like the United States and UN recognize Taiwan as part of China under a 'One China' Policy.

## National climate change programmes

As Taiwan is recognized as part of China, they do not have any emissions reduction obligations. Despite their unusual political status, the Taiwanese government is still actively involved in climate change adaptation and mitigation measures within its boundaries. The National Climate Change Adaptation Policy Framework serves as the main architecture for climate change activities in Taiwan. Under the Council for Economic Planning and Development, an Adaptation Strategy to Climate Change in Taiwan is adopted, which serves as the prime document for adaptation measures [5].

Under the Strategy document, the Government of Taiwan identified the following sectors for adaptation strategies. Each sector is sub-divided into multiple objectives and targets. The sectors are:

- Disaster management
- Infrastructure
- Water Resources
- Land Use
- Coastal Zones
- Energy Supply and Industry
- Agricultural Production and Biodiversity
- Health

## The Copenhagen Accord

In line with the Copenhagen Accord of December 2009, negotiated under the U.N. Framework Convention on Climate Change, the Taiwanese government has undertaken various measures towards reducing greenhouse gas emissions and overall energy consumption. The measures range from the development of renewable energy resources such as solar and wind power along with promotion of greener business practices to encourage green growth based on higher-efficiency and low-carbon-emitting modes of transportation.

As a result of the initiatives, from 2008 to 2011, overall energy intensity was reduced by an average of 3.22% per year, while overall carbon intensity fell by 3.44%, reducing CO<sub>2</sub> emissions by 9.8 million tonnes. As Taiwan imports almost all of its energy supplies from abroad, the multiple efforts to develop renewable energy and to adopt energy-efficient lifestyles have the dual virtues of preserving the environment resources while enhancing the nation's energy security [6].

## Energy Efficiency Programmes

The Bureau of Energy under the Ministry of Economic Affairs is responsible for formulating and implementing energy policy and laws, including programs instituted under the Energy Management Law. The principal responsibilities of the Energy Commission include:

- Supervising general affairs related to energy management to assure the stability of energy supply;
- Accelerating the rationalization of energy pricing;
- Promoting the effectiveness of energy utilization;
- Preventing energy-related environmental pollution; and
- Enhancing energy research and development.

### Masterplan on Energy Conservation and GHG Emissions Reduction

The Taiwanese government has also been active in promoting various energy efficiency and conservation programmes and initiatives. It also set a target of energy efficiency of 33% by 2025. The government is currently assisting around 200 major energy users in implementing energy-saving measures across both public and private installations [7].

Taiwan is preparing for the age of high oil prices and is proactively developing clean energy like solar, wind power and biofuels. The efforts would help reduce Taiwan's reliance on imported oil, while contributing to the reduction of greenhouse gases. The government aims for renewable energy to account for 15% of the nation's energy by 2025. It would amount to 8.45 million kilowatts, capable of producing 28.7 billion kilowatt hours of electricity. Wind-generated power could create as much as 8.9 billion kilowatt hours of electricity by 2025.

Many domestic companies are now beginning to work on the development of solar energy and conservative estimates are projecting that 1.2 billion kilowatt hours of electricity will be produced through solar power by 2025. Under the Energy Management Law and the underlying Implementing Regulations and related measures, companies are encouraged to improve the energy efficiency of their operations and products. Mandatory programs have been established for the purpose of energy conservation including energy audits and efficiency standards for electrical and electronic equipments.

### Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Foreign Affairs	<a href="http://www.mofa.gov.tw/EnOfficial">www.mofa.gov.tw/EnOfficial</a>
Ministry of Economic Affairs	<a href="http://www.moea.gov.tw/Mns/english/home/English.aspx">www.moea.gov.tw/Mns/english/home/English.aspx</a>
Environmental Protection Administration	<a href="http://www.epa.gov.tw/en/">www.epa.gov.tw/en/</a>
Council for Economic Planning and Development	<a href="http://www.cepd.gov.tw/encontent/">www.cepd.gov.tw/encontent/</a>
Bureau of Energy	<a href="http://web3.moeaboe.gov.tw/ECW/english/home/English.aspx?menu_id=952">web3.moeaboe.gov.tw/ECW/english/home/English.aspx?menu_id=952</a>

### Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Center for Energy Research, National Central University	<a href="http://www.ncu.edu.tw/~w3energy/EnergyCenter/English/intro_en.htm">www.ncu.edu.tw/~w3energy/EnergyCenter/English/intro_en.htm</a>
Energy Research Center of National Taiwan University	<a href="http://erc.ntu.edu.tw/index_e.htm">erc.ntu.edu.tw/index_e.htm</a>
Taiwan Research Institute	<a href="http://www.tri.org.tw/english/">www.tri.org.tw/english/</a>

## References

- [1] "World Population Prospects: The 2010 Revision." Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat.
- [2] "CIA - The World Factbook." Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/th.html>. [Accessed: 12-Mar-2013].
- [3] CO<sub>2</sub> Emissions from Fuel Combustion Statistics database 2012, "Indicators for CO<sub>2</sub> emissions." © OECD/IEA, 2012.
- [4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.
- [5] Adaptation Strategy on Climate Change – Council for Economic Planning and Development. Government of Taiwan. Available at: <http://www.cepd.gov.tw/encontent/m1.aspx?sNo=0018108>
- [6] The Republic of China Yearbook on Environmental Protection. Government of Taiwan. Available at: <http://www.ey.gov.tw/en/cp.aspx?n=11B0AE029DA6B97B>
- [7] Taiwan's Masterplan on Energy Conservation and GHG Emissions Reduction. Government of Taiwan. Available at: [http://web3.moeaboe.gov.tw/ECW/english/content/Content.aspx?menu\\_id=1527](http://web3.moeaboe.gov.tw/ECW/english/content/Content.aspx?menu_id=1527)



Contact us at [contact@aeepn.com](mailto:contact@aeepn.com)  
Compiled by:  
Tayef Quader