

CHINA

Country at a glance

- Population: 1.34 billion (2010) [1]
- Total area: 9,580,964 sq. km [2]
- Carbon emissions per capita: 5.38 metric tons (2010) [3]
- Energy consumption per capita: 21.2 MWh (2010) [4]
- Percentage of global carbon emissions: 23.84% (2010) [3]



The Three Gorges Dam in China

Located at the Hubei Province of China, the Three Gorges Dam at the Yangtze river is the world's largest hydroelectric dam with an installed capacity of 22,500 MW. Besides electricity, the dam also increases the river's shipping capacity and reduces downstream floods.

Side view of the Three Gorges Dam. Permission Under CC BY-SA 2.0 ES License
 en.wikipedia.org/wiki/File:ThreeGorgesDam-China2009.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 ^(a)			Electricity Generation ^(b)		Heat Generation ^(c)		
	unit	ktoe		%	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat		1,668,514	74	71,911	1,636,798	19,035,959	67	3,238,240	78	740,304	91
Oil fuels		203,157	9	252,861	430,035	5,001,307	18	13,255	0	39,905	5
Natural gas		79,352	4	9,215	88,568	1,030,040	4	69,027	2	25,435	3
Nuclear		19,254	1	0	19,254	223,919	1	73,880	2	0	0
Hydroelectric		62,107	3	0	62,107	722,302	3	722,172	17	0	0
Biofuels and waste		205,815	9	0	205,815	2,393,630	8	11,406	0	9,420	1
Solar photovoltaics		81	0	0	81	939	0	939	0	0	0
Solar thermal		8,397	0	0	8,397	97,663	0	0	0	0	0
Tide, wave and ocean		0	0	0	0	0	0	0	0	0	0
Wind		3,837	0	0	3,837	44,630	0	44,622	1	0	0
Geothermal		1,939	0	0	1,939	22,546	0	162	0	0	0
Electricity (imported)		0	0	-1,162	0	-13,516	0	0	0	0	0
Sub total Renewables		282,176	13	0	282,176	3,281,710	11	779,301	19	9,420	1
Totals		2,252,453	100	332,825	2,454,506	28,559,419	100	4,173,703	100	815,063	100

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)
Coal and coal	3,153	2	0	0	0	3,153	0	0	0
Oil products	165,967	95	11,294	133,091	99	5,451	1	14,789	1,340
Natural gas	411	0	0	281	0	0	130	0	0
Biofuels and waste	1,211	1	0	1,211	1	0	0	0	0
Electricity	3,422	2	0	0	0	3,422	0	0	0
Sub total Renewables	1,211	1	0	1,211	1	0	0	0	0
Total	174,165	100	11,294	134,584	100	12,027	131	14,789	1,340

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

Stand on climate change

The People's Republic of China signed the Kyoto Protocol on 29 May 1998 and ratified it on 30 August 2002. However, it entered into force only on 16 February 2005.

National climate change programmes

Although China has been actively involved in taking action against climate change for some years, with the publication of the country's first National Action Plan on Climate Change, China became the first developing country to publish a national strategy addressing global warming. The National Plan did not include specific targets for emissions reductions.

The National Action Plan publication called on all local governments to implement the plan and launch public environmental protection awareness campaigns. It included increasing the proportion of electricity generation from renewable energy sources (RES) and nuclear power, increasing the efficiency of coal-fired power stations, use of cogeneration and the development of coal-bed and coal-mine methane. In addition, the one child policy in China prevented 300 million births, the equivalent of 1.3 billion tons of CO₂ emissions based on average world per capita emissions of 4.2 tons at 2005 level.

The target elements of the National Climate Change Programme are to [5]:

- Restructure the economy and improve energy efficiency
- Develop low-carbon and renewable energy to optimize energy mix
- Carry out forest management through afforestation
- Control population growth
- Strengthening of legislation, institutions and mechanisms, capacity building and research and development

However, the 12th Five-year Plan (FYP), released in March 2011, adopts a different approach giving considerable attention to a new set of targets and policies for 2011-2015. While previous policies remain the same, some aspects of the plan represent dramatic moves to reduce fossil energy consumption, promote low-carbon energy sources and restructure the economy. Also, one of the top goals of the plan is to gradually establish a carbon trade market. The prime targets of the 12th FYP are [6]:

- Reduce energy intensity (energy consumption per unit of GDP) by 16%
- Raise non-fossil energy to 11.4% of total energy use
- Reduce carbon intensity (carbon emissions per unit of GDP) by 17%

Policies and actions for decelerating climate change [7]:

<p><u>Policies –</u></p> <p>Adjusting industrial structure and economic restructuring to optimize industry</p>	<p><u>Measures –</u></p> <ul style="list-style-type: none"> • Accelerating development of the service sector through transforming and upgrading traditional industries • Increasing added value in the service sector by 3% from 2005 to 2010 along with focus on tourism and logistics • Guideline Catalogue and Plan for Industrial Transformation by Ministry of Industry and Information Technology • Strict control measures on high energy consuming industries, projects and activities with registration and periodic evaluations • Increasing the share of strategic and emerging industries such high-tech industries by 5% from 2005-2010 – IT, bioengineering, aeronautics • Limiting excessive expansion of high energy consuming industries and speeding up elimination of backward production activity
<p>Conserving energy and improving energy efficiency</p>	<p><u>Measures –</u></p> <ul style="list-style-type: none"> • Comprehensive Work Plan and Guidelines for Energy Conservation and Emissions Reduction at 12th FYP for 2011-2015 • State policy for energy conservation, savings and efficiency in the 11th FYP for National Economic and Social Development • Blueprint Plan for Energy Conservation and Emissions Reduction by the Ministry of Housing and Urban-Rural Development • Energy consumption to be 20% lower in 2010 than 2005 levels • Plan and Method monitoring of energy conservation, periodic review and responsibility mechanism • Fiscal and tax incentives and low registration fees for low energy consuming, hybrid and electric vehicles • Promoting energy conservation and emissions reduction in key fields of building management, state run motor vehicles and state buildings • Raising efficiency of equipment
<p>Optimizing energy structure and mix</p>	<p><u>Measures –</u></p> <ul style="list-style-type: none"> • Accelerating development of non-fossil energy through use of solar power, hydro power, wind power and biomass energy • Increase non-fossil energy to 35% by 2015 • Standardized Management System for biofuel industry to increase biofuels production capacity • Law on renewable energy enacted in 2005 • Guidelines for distributed energy systems
<p>Reducing GHG emissions</p>	<p><u>Measures –</u></p> <ul style="list-style-type: none"> • Clean production promotion law • Law on the prevention of environmental pollution by solid wastes • Law on Recycling Economy • Reduction in emissions from agriculture pesticides • Use of marsh gas and solar in countryside at 1.12 million solar energy stoves, 200,000 wind-driven generators
<p>Increasing carbon sinks</p>	<p><u>Measures –</u></p> <ul style="list-style-type: none"> • Increase from present levels to 55 million hectares of plantations and forests to develop carbon storage capacity • National forest cover increased from 12% to 18% from the 1980s to 2001 • 35% of green cover over urban areas at present levels

Developing climate change R&D	<u>Measures –</u> <ul style="list-style-type: none"> • Institutional capacity building • Scientific expansion and R&D of technologies • National climate monitoring network
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Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Agriculture	www.agri.gov.cn/
Ministry of Environmental Protection	english.mep.gov.cn/
Ministry of Foreign Affairs	www.fmprc.gov.cn
Ministry of Land and Resources	www.mlr.gov.cn
Ministry of Science and Technology	www.most.gov.cn/
Ministry of Transport	www.mot.gov.cn/
Ministry of Water Resources	www.mwr.gov.cn/
Ministry of Commerce	www.mofcom.gov.cn
National Development and Reform Commission	www.ndrc.gov.cn
Ministry of Industry and Information Technology	www.miit.gov.cn

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Center for Energy and Environmental Policy Research	www.ceep.net.cn
Chinese Academy of Sciences	english.cas.cn/
China-EU Institute for Clean and Renewable Energy Research Centre for Eco-Environmental Sciences	icare.hust.edu.cn/ www.rcees.cas.cn/
Chinese Research Academy of Environmental Sciences	www.craes.cn/cn/english/welcome.html

References

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- [2] “CIA - The World Factbook.” Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/th.html>. [Accessed: 12-Mar-2013].
- [3] CO₂ Emissions from Fuel Combustion Statistics database 2012, “Indicators for CO₂ emissions.” © OECD/IEA, 2012.
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- [5] China’s National Climate Change Programmes – Key Elements. Available at: <http://www.un.org/ga/president/61/follow-up/climatechange/China-KeyElements.pdf>
- [6] Energy and Climate Goals of China’s 12th Five-year Plan. Available at: <http://www.c2es.org/docUploads/energy-climate-goals-china-twelfth-five-year-plan.pdf>
- [7] White Paper on Climate Change – Government of China. Available at: <http://www.chinability.com/china-white-paper-climate-change.pdf>
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