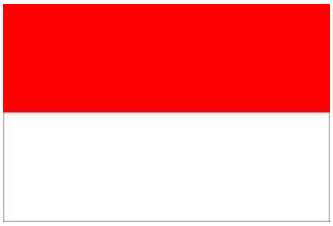
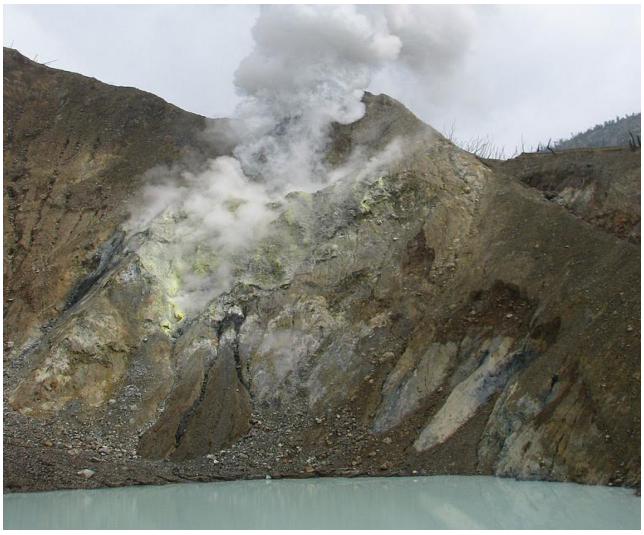
INDONESIA



Country at a glance

- Population: 239.9 million (2010) [1]
- Total area: 1, 904, 569 sq. km [2]
- Carbon emissions per capita: 1.71 metric tons (2010) [3]
- Energy consumption per capita: 10.08 MWh 2010 [4]
- Percentage of global carbon emissions: 1.36% (2010) [3]



Geothermal Energy in Indonesia

Because of volcanic geology, Indonesia has around 40% of the world's total potential geothermal resources, estimated at approximately 28,000 megawatts. Evidence of geothermal activity is common, like shown here at the rim of a volcano crater. Indonesia is presently the world's third largest geothermal electricity producer. Indonesia plans to become the world's leading geothermal energy producer by 2025. This would then account for around 5% of Indonesia's total energy needs.

Geothermal Power in Indonesia. By Dohduhdah [Public domain], via Wikimedia Commons commons.wikimedia.org/wiki/File:Steam-IMG_3758.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	ktoe	GWh	%	GWh	%	GWh	%
Coal, including brown coal & peat	186,328	49	-155,845	30,483	354,517	15	68,114	40	0	0
Oil fuels	48,442	13	19,482	66,930	778,392	32	34,505	20	0	0
Natural gas	74,741	20	-35,952	38,789	451,114	19	40,038	24	0	0
Nuclear	0	0	0	0	0	0	0	0	0	0
Hydroelectric	1,520	0	0	1,520	17,679	1	17,676	10	0	0
Biofuels and waste	54,326	14	-290	54,039	628,474	26	95	0	0	0
Solar photovoltaics	0	0	0	0	0	0	0	0	0	0
Solar thermal	0	0	0	0	0	0	0	0	0	0
Tide, wave and ocean	0	0	0	0	0	0	0	0	0	0
Wind	0	0	0	0	0	0	0	0	0	0
Geothermal	16,088	4	0	16,088	187,104	8	9,357	6	0	0
Electricity (imported)	0	0	0	0	0	0	0	0	0	0
Sub total Renewables	71,934	19	-290	71,647	833,257	34	27,128	16	0	0
Totals	**381,446**	**100**	**-172,605**	**207,849**	**2,417,279**	**100**	**169,785**	**100**	**0**	**0**

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 electicity 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	35,843	100	2,302	31,532	0	0	2,009	0
Natural gas	10	0	0	10	0	0	0	0
Biofuels and waste	34	0	0	34	0	0	0	0
Sub total Renewables	34	0	0	34	0	0	0	0
Total	**35,887**	**100**	**2,302**	**31,576**	**0**	**0**	**2,009**	**0**

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

Stand on climate change

Indonesia ratified the Kyoto Protocol in 2004. In 2009, at the G-20 meeting in Pittsburgh and at the COP15 in Copenhagen, Indonesia committed to a 26% reduction in carbon emissions from Business As Usual (BAU) by 2020 as part of its National Action Plan. Emission reductions could be increased to 41% with international support [5].

National climate change programmes

Indonesia's National Development Planning Agency (Bappenas) developed the National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK) stating that mitigation actions [5]:

(i) Should not hinder economic growth, and should prioritize people's welfare
(ii) Support protection of poor and vulnerable communities
(iii) Consist of core activities to reduce emissions and support activities to strengthen the policy framework

Bappenas developed a Climate Change Sectoral Roadmap (ICCSR) which identifies the forestry sector as having the largest potential in terms of GHG emissions reductions. It also identifies the waste, energy, industry and transport sectors as having considerable potential for reducing GHG emissions, but with varying mitigation costs [6]. In support of Indonesia's low carbon development and other climate change programmes, the Government of Indonesia established the Indonesian Climate Change Trust Fund (ICCTF).

Forestry Sector:

- The Ministry of Forestry proposed long term development plans in the forestry sector that are categorized under three areas [6]:
    - Information and knowledge management: One key activity would be to increase the number of forest management units to 244 by the year 2020
    - Planning and Policy, Regulation and Institutional Development: A key activity would be to increase the carbon absorption capacity by reducing the development of industrial plantations
    - Implementation and Control with Monitoring and Evaluation: A key activity would be to increase the protection and conservation of forested land.

- The United Nations Reducing Emissions from Deforestation and Forest Degradation (UN-REDD) operational phase 1 in Indonesia was completed in October 2012. A total of 5.6 million USD was budgeted from October 2009 to June 2012 [7]. Some of the significant outputs of this programme are:
    - A methodology for Reference Emission Level
    - National Forest Inventory database has been set up
    - A REDD+ implementation plan for Central Sulawesi. The Central Sulawesi REDD+ Working Group has 77 members with representation from provincial government, universities, local communities, indigenous peoples, non-governmental organisations and the private sector [8].

- Mr Mas Achmad Santosa, head of the working group for Legal Review and Law Enforcement in the Indonesian REDD+ Task Force and Deputy of the President's Delivery Unit (UKP4) mentioned that the Ministry of Forestry and UKP4 are ready to use Participatory Governance Assessment (PGA) data in mitigating deforestation and forest degradation [9]. Through extensive stakeholder contributions and input from stakeholders at the national level as well as eight provincial working groups, the PGA process has resulted in stakeholders tackling priority governance issues such as mitigating corruption risks.

Energy Sector:
The National Energy Policy set targets to reduce the share of oil from 54.8% to less than 20% by 2025. The largest increase comes from coal which is set to increase from 16.8% to 33% [5]. The use of clean coal technology is also actively being explored in Indonesia.

- Short term plans to produce ministerial decree on gas flaring are underway till 2014 [6].

- The Energy Efficiency and Conservation Clearing House Indonesia (EECCHI) is a service under the Ministry of Energy and Mineral Resources of Indonesia, which aims to promote and enhance energy conservation and energy efficiency in Indonesia [10].

- Feasibility studies are being done for geothermal power plants in Indonesia. The Geothermal Funding Facility (FDG) is being set up to spearhead the development of geothermal power in Indonesia. An important player for geothermal power in Indonesia is PT Teknosatria Energi Geothermal (TEG). The United States Trade and Development Agency (USTDA) awarded grants to TEG to partially fund a feasibility study for a 30 megawatt geothermal power project in West Java [11].

Industrial Sector [5]:
- Efforts to increase the efficiency in production processes, introduce new technologies, or change raw materials for industrial processes have been identified to reduce emissions from the industrial sector.
- Emissions reduction can also be achieved through clean development mechanism (CDM) schemes and private sector participations.

Transport sector:
- One landmark policy is the Biofuel Price Subsidy which obligates Pertamina (national oil company) to buy domestic biofuel production. Biofuels are targeted to account for 15% of the total transport mix by 2025 [5].

Waste Sector:
- In 2008, to reduce the emissions from solid waste, the Government of Indonesia enacted Municipal Solid Management Law No. 18/2008. According to the Law, open dumping practices will be prohibited in the year 2013. It is expected that the Law will encourage the development of more managed waste handling systems (i.e., sanitary landfills equipped with gas flaring or utilization systems). It is expected that after 2020, around 80% of the domestic liquid waste will be handled by sewerage systems.[5]

Ministries involved in climate change/energy policy making:

Ministries involved	Web links
Ministry of Energy and Mineral Resources	www.esdm.go.id/index-en.html
Ministry of Forestry	www.dephut.go.id/index.php?q=en
National Development Planning Agency	www.bappenas.go.id/
Ministry of Agriculture	www.deptan.go.id/index1.php
Ministry of Environment	www.menlh.go.id/?lang=eng

Education institutes involved in climate change/energy policy making:

Education Institutes involved	Web links
Agency for Meteorology, Climatology and Geophysics	www.bmkg.go.id/BMKG_Pusat/Depan.bmkg
Energy Efficiency and Conservation Clearing House Indonesia (EECCHI)	www.energyefficiencyindonesia.info/eecchi
Indonesian Agency for Agricultural Research and Development	en.litbang.deptan.go.id/
Indonesia Energy Institute	indeni.org/
The foundation of Indonesian Institute for Energy Economics	b2te.bppt.go.id/

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[Accessed: 13-Mar-2013].

[3] CO_2 Emissions from Fuel Combustion Statistics database 2012, "Indicators for CO_2 emissions." © OECD/IEA, 2012.

[4] World Energy Statistics and Balances database 2012, "World Energy Balances." © OECD/IEA, 2012.

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Available at: http://www.un-redd.org/UNREDDProgramme/CountryActions/Indonesia/tabid/987/language/en-US/Default.aspx. [Accessed: 14-Mar-2013].

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