



**Asia-Pacific
Economic Cooperation**

**Building Energy Codes Report
For Brunei Darussalam**

APEC Energy Working Group

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Building Energy Codes Report for Singapore



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Prepared by the Building Codes Assistance Project of the Alliance to Save Energy

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Summary

Brunei Darussalam, a small state with barely 390,000 inhabitants, is situated on the north-west coast of the island of Borneo. One of the smallest countries in the world, the kingdom's vast oil reserves also makes it one of the wealthiest. The economy is a mixture of foreign and domestic entrepreneurship, government regulation, welfare measures, and traditional village activities. Plans for the future include upgrading the labor force, reducing unemployment, strengthening the banking and tourist sectors, and, in general, further widening the economic base beyond the oil and gas industry. Additionally, Brunei has a national long term goal of providing its citizens with good accommodations in a pleasant environment.

Considering all of these factors, it would be in Brunei's best interest to adopt and implement a building energy code.



Economy Background

Political and Social Structure

Well-known for the extravagant wealth of its royal family, Brunei is a small Islamic monarchy on the northern shore of Borneo, bordered by Malaysia. The Sultan of Brunei exercises absolute authority over government affairs, including legislative, judicial and cabinet appointments. Multiple councils appointed by the Sultan advise him on various issues, but ultimate power rests in his hands. His family has maintained control of the sultanate for over six hundred years.

The population is roughly 390,000 citizens, mostly of Malay and Chinese ethnicity. The economy maintains a high standard of living, including free healthcare and education, subsidized rice and housing, high literacy rates, low unemployment and crime rates, and a long life expectancy. Islam is the official religion and the foundation of daily life for the majority of Bruneians. As a multiethnic society, though, the economy practices tolerance. Indeed, the economy's official name is State of Brunei, Abode of Peace.

Economic Overview

Brunei is a wealthy nation. Per capita GDP is over US\$50,000—one of the highest in the world—with oil and gas revenues comprising almost half of the economy's output and the vast majority of its exports.



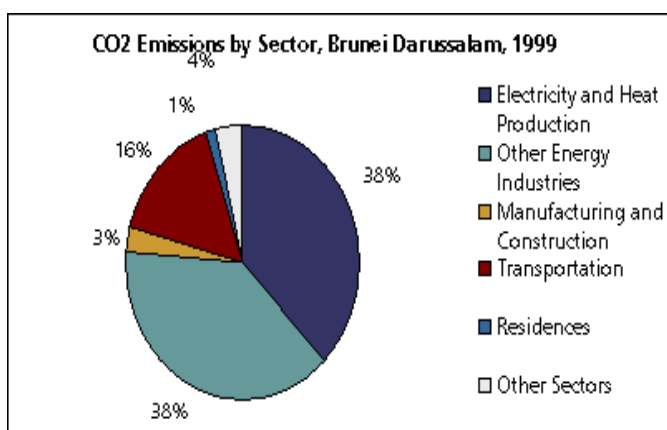
The government encourages foreign investment while attempting to limit foreign influence on traditional social values. The majority of the labor force works in light industry and the service sector.

In preparation for the eventual depletion of its fossil fuel reserves, already in terminal decline, the government has outlined its Vision 2035 to diversify the economy. The Ninth National Development Plan (2007-2012) places greater emphasis on housing, education and other social services, as well as information and communication technology and industrial development.

Energy Assessment

Brunei relies on its considerable oil and gas reserves for nearly all of its energy needs, and is a large net exporter of both. Per capita electricity consumption is comparable to France, Russia and Germany.ⁱ

As a small economy, Brunei does not contribute significantly to global green house gas emissions. As of 2004, Brunei released 8.8 million tonnes of CO₂ emissions, which measures out to 24 tonnes of CO₂ emissions per capita.ⁱⁱ



Climate

Near the equator, Brunei has a tropical climate with high levels of humidity and annual rainfall. Temperatures range from 23°C to 32°C.ⁱⁱⁱ Although a minor contributor to global climate change in absolute terms, Brunei's citizens will likely feel some of its most devastating effects, including rising sea levels, an increase in the number and/or severity of flooding, landslides and other natural disasters, and an increase in vector-borne diseases such as dengue and malaria, among others.^{iv}

Construction Overview

According to the 2002 UN Country Profile, Brunei Darussalam's national long term goal is to provide the people with a *proper accommodation in a pleasant environment* with citizens owning their own houses. To achieve these goals, the government encourages the people to build houses through provision of low interest housing loans for its employees and soft loans through the Development Bank of Brunei for housing estates. In addition, the government provides government housing for its employees at subsidized rents, and certain larger private companies also provide accommodations for their workers.^v

Government construction plays an important role in Brunei's economy, and housing has been included in the National Development Plan since the 1970s.^{vi} Although current data is unavailable, the government reports that it has constructed over 4,000 subsidized homes from 1972 through the



1990s.^{vii} Construction should continue to play a significant role in the coming decades as an integral part of Brunei's plans to expand its economic base.

The current application process for receiving government approval to construct a new building or conduct renovations begins with a series of technical reviews and assessments by the Housing Development Department (HDD) and the Public Works Department (PWD). Various teams review construction plans for lot number and area, structural layout, electrical systems, lighting, ventilation, and sewage systems, as well as safety regulations. National housing plan loan applicants also receive a cost estimate. Officials either require applicants to make amendments to their construction plans or issues certifications of approval, as appropriate. Applicants then submit their approved plans to the director of the HDD for further review and potential modification. When the director signs off on the project, the applicant will receive a letter of approval from the HDD.^{viii}

Scope of Building Energy Codes/Standards

The government of Brunei has a long-term economic development plan that it hopes will transition it from a fossil fuel exporter to an Islamic financial center and tourism hub. Unfortunately, this vision lacks one crucial component being addressed in countries across the globe: energy efficiency of buildings.

According to our research, **Brunei does not have a building energy code**. The absence of energy efficient building practices is particularly detrimental given the fact that the housing sector is the single largest recipient of funds from the Ninth National Development Plan (2007-2012) and that efforts to expand the economy will require a significant investment in construction and renovation projects.^{ix}

This is not to say, however, that the government is not interested in energy efficiency in general or specifically within the building sector. It is clear that the government, through the Prime Minister's Office Energy Division, understands the need to transition to a sustainable energy future and that energy efficiency is half of that equation.

Furthermore, recent developments indicate that the government is exploring the possibility of establishing an energy code. In mid-June 2009, the Energy Division, in collaboration with the University of Brunei Darussalam and the Energy Conservation Center of Japan (ECCJ), held a workshop entitled "Curriculum Development for Energy Management," the outcome of which was a plan to develop a "curriculum for energy management" for buildings.^x A delegation from the Energy Division then headed to Japan to meet with representatives from the Japanese Ministry of Economy, Trade and Industry (METI) to learn more about building energy efficiency practices in Japan.^{xi} Although the government will have to do much more to develop an appropriate energy code for Brunei, we are encouraged that it has taken the appropriate first steps towards reducing building energy consumption.

BCAP Recommendations



Overview

Brunei would significantly benefit from a mandatory building energy code. In the face of decreasing fossil fuel revenues and dwindling energy supplies, sustainable economic growth will hinge on Brunei's ability to replace these resources or mitigate their negative impacts. Energy efficient building practices will do both. First, they will enable the economy to level off or reduce energy demand; second, they will stimulate the economy through energy savings for homeowners, businesses and the government. Building energy codes are the quickest, cheapest and cleanest way to reduce building energy consumption, and inefficient buildings are a luxury that Brunei can no longer afford.

Best Practices

BCAP recognizes the different conditions (climate, culture, tradition, economics, availability of materials, etc.) that apply to the building sector in different countries. Obviously, there is no single universal solution that can be replicated in all places. However, it seems universally true that in order to build a framework for energy efficiency in buildings, active government involvement and leadership is required. BCAP fully supports the Prime Minister's Office Energy Division's plan to establish building energy management standards and we will learn more in the coming months about the extent of their preparations. We believe that energy efficiency requirements could be integrated into the pre-existing HDD and PWD application process relatively quickly and effectively.

In order for codes to be implemented thoroughly, across all sectors, the right stakeholders need to be engaged. As Brunei considers adopting an energy code, it is essential for the government to elicit the input of all parties involved in the construction sector. Input from professionals in this sector can be used to develop sustainable policies and strategies that will accurately reflect the current building practices, while prompting needed advances. Additionally, information and educational campaigns are recommended as a means for communicating to stakeholders the most relevant and up-to-date information regarding the nation's priorities and programs.

BCAP also recommends that the government continue to work with Asian building energy efficiency experts available in the region -- such as those in Japan. Since the energy crises of the 1970s, Japan has been a worldwide leader in energy efficiency, and its Energy Conservation Law is well-respected as a model minimum energy efficiency standard. Moreover, the "above code" standard in Japan—the Comprehensive Assessment System for Building Energy Efficiency (CASBEE)—offers an example of world-class energy efficiency achievable in buildings.



ⁱ [CIA World Factbook](#)

ⁱⁱ Human Development Reports. Papua New Guinea.

http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_PNG.html

ⁱⁱⁱ [Tourism Brunei](#)

^{iv} [IPCC Working Group II Report, ch. 10.](#)

^v <http://www.un.org/esa/agenda21/natlinfo/wssd/brunei.pdf>

^{vi} [World Trade Net Business Briefing February 2008](#)

^{vii} <http://brunei.gov.bn/government/plan.htm>

^{viii} Housing Development Department. Housing Development Procedures.

<http://www.housing.gov.bn/prosedur.htm>

^{ix} [Brunei Economic Development Board](#)

^x http://www.bt.com.bn/en/home_news/2009/06/20/a_curriculum_to_build_pool_of_experts_on_energy

^{xi} <http://www.brunei-online.com/bb/thu/jun25h38.htm>