



Site Visit D: Overview

Site Visit Theme	Carbon Off-Setting Using Indonesia's Geothermal Resources
Location	Darajat Mountain, Garut, West Java, Indonesia
Main site visit	Chevron Geothermal Plant, Darajat Mountain, Garut
Additional site visits	Meeting with representatives from BAPPEDA (Local Authority for Income and Planning), DPRD (Member of Parliament from Commission for Natural Resources and Energy), BKSDA (Forestry Ministry) and local NGOs and community members in Garut.



Main Issues

The Indonesian Government is moving towards increased energy self sufficiency by reducing its dependence on imported fossil fuels. It says it will do this by increasing domestic production of energy whereby 15% will come from renewable sources and 85% from other non-renewable sources ie natural gas, oil and coal. The negative side is that gas, oil and coal burning will significantly increase Indonesia's GHG emissions to the earth's atmosphere and further exacerbate global warming.

Indonesia is well endowed with clean and abundant sources of energy such as micro-hydro, solar, biomass and geothermal. Only 3% of Indonesia's total geothermal resources are currently being utilised. The existence of economic and technical barriers is preventing its further development and application.

CDM ('clean development mechanism'), developed under the Kyoto Protocol, is a mechanism for promoting technology transfer and investment from developed countries to developing countries for projects that reduce green house gas (GHG) emissions. CDM provides the host country with the opportunity to earn income from selling 'certified emission reductions' to countries and companies needing to off-set their own emissions. To date, Indonesia has been slow to support CDM adoption with only eight CDM projects existing across the country (compared to hundreds existing in other developing countries).

Chevron's geothermal project in Darajat, West Java, represents one such CDM project.

Chevron establishment in Darajat is not without its own challenges. It does not have full support of the community and local NGOs. Many blame the company for water shortages and the drought that has plagued the region for several years. Some believe recent earthquakes are connected to Chevron's activities. Local government officials also have diverging views on the perceived benefits Chevron are providing to the Garut region.

Cross Cutting Issues

- Drought and the management of scarce water resources
- Deforestation / reforestation
- Negotiation and conflict resolution
- Participatory decision-making
- Corporate social responsibility
- Centralised versus de-centralised models of natural resource management
- Social and economic justice

Background

The burning of fossil fuels, agricultural activity, industrial activity and deforestation has led to a significant increase in GHG emissions over the years. Although the sensitivity of climate systems to GHG emissions is not yet well known, the evidence suggests that there is a discernible human influence leading towards global warming. According to findings of the International Panel on Climate Change (IPCC), the doubling of the concentration of carbon dioxide in the atmosphere or an equivalent increase of a mixture of GHGs will cause a rise in global temperatures of between 1.5 to 4.5 degrees celsius with associated impacts of widespread sea level rise, floods and droughts to name a few.

Geothermal is one of the most promising sustainable energy sources that can have a large impact on decreasing air pollution caused by GHGs. Geothermal power plants produce almost no GHG emissions and require little land area compared to fossil fuel power plants. However only 3% of Indonesia's geothermal potential has been tapped so far. Almost half of existing geothermal energy generation occurs in Garut, the region of our site visit.

Challenges and Potential Solutions

Promoting the development and economic viability of renewable energy generation remains a challenge for Indonesia. The energy sector is heavily favoured in the direction of continued fossil fuel exploitation. Fossil fuel subsidies and distorted market prices make renewable energy difficult to compete alongside non renewable energy sources. The government's purchasing monopoly on electricity, international arbitration and the lack of competition provides a strong deterrent to foreign or national investment in the renewable energy sector. Further, technical constraints such as transporting steam to distant consumers are costly and inefficient.

One of Chevron's challenges is to manage and improve the lack of trust and negative perception it has within the local community related to water scarcity, drought and other issues experienced in region over the last few years. There does not appear to be any scientific evidence proving or disproving the community's claims that Chevron's activities are linked to the environmental problems faced.

So far, adoption of CDM in Indonesia has been slow, with only eight projects existing so far. Indonesia has great potential to adopt CDM projects enabling the transfer of clean energy generation technology to lower the country's GHG emissions and income generation from certified emission reduction credits.

<p>About the Project</p>	<p>Chevron is one of the world's biggest players in energy, especially in the oil and gas industry. In 1999, Chevron invested approximately US \$60 million in renewable energy projects, specifically in wind, solar and geothermal energy generation. In 2004, Chevron expanded its strategy to integrate renewable energy applications into the Chevron portfolio by focusing on investing in and advancing wind and geothermal energy projects. From their perspective, wind and geothermal possess the highest potential to generate significant energy resources and create economic value.</p> <p>Currently, Chevron has two geothermal power plants in operation at Darajat: Unit I (built, owned and operated since 1994 by Indonesia Power, a wholly owned company of PLN, the state electricity company; the steam supplied by Chevron) and; Unit II (built and operated since 2000 by Chevron).</p>
<p>Key Stakeholders</p>	<ul style="list-style-type: none"> • BAPPEDA (Local Authority for Income and Planning) • DPRD (Members of Parliament from the Commission for Natural Resources and Energy) • Members of Parliament • BKSDA (Forestry Ministry) • Local NGOs and community members
<p>Innovative Aspects of the Project</p>	<p>The project demonstrates an example of a CDM model whereby clean energy is generated, contributing to an overall decline in GHG emissions that would have otherwise occurred if fossil fuels had been used to generate the same energy.</p> <p>Chevron's project supports the Indonesian government's energy diversification goal of minimising oil consumption by maintaining the use of renewable energy resources.</p> <p>While contributing US \$128 million in direct foreign investment to the economy, it is claimed that the project has little negative impact on the environment. More than 90% of the employees at Chevron are Indonesian. Apparently this investment will increase the number of local jobs during both the construction and operation phases of the project.</p> <p>Chevron provides educational scholarships, apprenticeship programs for local high school students and post job training to support workers find future job opportunities. They also claim to contribute to improvements in the water and road infrastructure in surrounding communities. Chevron say, electricity generation from the geothermal project will contribute to sustainable development in the west Java region.</p>



Potentially the impact of CDM projects on sustainable development is very high. CDM projects have been conceived to assist developing countries in achieving sustainable development by way of foreign direct investment from developed countries (governments as well as private companies). Thus, CDM projects are expected to help developing countries in activities that will lead to economic, social and environmental benefits. Clean water and air, employment, poverty alleviation and energy efficiency are among the multiple gains that could be derived through this mechanism.

For developing countries in need of additional funding and technology transfer to support sustainable paths of development, CDM promises a new opportunity and incentive not only for meeting their basic human needs but also for their active participation in global GHG reduction initiatives.