

Muslim Projects to Halt Climate Change in Indonesia¹

He Who created the seven heavens one above another: No want of proportion wilt thou see in the Creation of (Allah) Most Gracious. So turn thy vision again: seest thou any flaw? (Q. Sura Al Mulk [30]: 3)

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Abstract

This paper reviews some Muslim activities in Indonesia in response to environmental and climate change. As a nation, Indonesia gives religion a strategic role in order to respect ethical and moral values. This gives Islam, as the major religion, a correspondingly greater opportunity to take part in this democratic nation. The clerics (ulama) play an important role due to the numbers of their followers and thus have a major voice. Therefore, environmental agencies including NGOs and governmental agencies (Ministry of Environment and Ministry of Forestry) work in close co-operation with Islamic

institutions such as Nahdlatul Ulama (NU) and Muhammadiyah in order to popularize the environmental movement. With the existence of the religious-based organizations, secular organizations like Conservation International (CI) can synergize conservation action programs through the network in order to reach the “grass roots” more effectively. Cooperation is also being developed with Islamic-based educational institutions such as Islamic universities, Pesantren (Islamic Boarding Schools) and, at the local level, activities are carried out together with the Imams and Khatibs who are based in remote villages. As climate change, challenges the country, several actions have been taken to address the climate challenge such as declaring Islamic legal opinions (fatwa), and reforestation by planting trees.

Keywords

Climate change, Environmental movement, Nahdlatul ulama (NU), Muhammadiyah, Pesantren (Islamic boarding school), NGOs, Government of Indonesia

1. Background: Indonesia and environmental problems

On December 26, 2004, the world was shocked by the huge catastrophe caused by the tsunami in Aceh, Nangroe Aceh Darussalam. More than 200 thousand people were swept away by the huge waves that not only impacted Aceh, but also reached Southern Thailand, India and Sri Lanka. The most devastation occurred in Indonesia, due to its location as an archipelago. The disaster now seemed to awaken Indonesia, to the possibility of other disasters, including global climate change that is forecast to submerge some islands. Indonesia is located in South East Asia, and is known as an archipelago consisting of around seventeen thousand islands with major islands such as Sumatra, Java & Bali, Kalimantan, Sulawesi, the Moluccas, Lesser Sunda Islands and West Papua. In total it has 80,000 km of coastline, the longest of any country in the world.

As an archipelago with a population of more than 238 million in 2007, this country constitutes the largest Muslim population in the world. . On the other hand this country has rich biological diversity –particularly tropical species-- and is included as one of the Megadiversity countries.²

Structurally the environmental issues in Indonesia are administratively held by two ministries: Ministry of Environment (MoE) and Ministry of Forestry (MoF). Besides collaborating with other ministries, they also have partnerships in other activities conducted by the civil society (Non Governmental Organizations-NGOs) and activists, which are sometimes supported by foreign grants or global environmental funding. Currently in Indonesia, some corporations have begun to give intensive support to NGO activities through the scheme of Corporate Social Responsibility (CSR).

In the context of global climate change, there are two challenging issues in Indonesia. The first is deforestation and land degradation, including forest fires, legal and illegal logging and land clearing for agricultural purposes. The second is the geographical condition of the states which are vulnerably threatened by the impact of global warming such as el Niño and la Niña.³

In terms of forest degradation, this forest is the wealthiest hub of biological diversity in the tropics, but ironically, it has gradually diminished due to the policy of the government and economic needs of the nation. According to the Ministry of Forestry in their latest report (2007), from satellite data gathered in 2003, the protected forest area was specified as 22.10 million ha (25.7%) conservation forest as 14.37 million ha

(16.7%) and production forest as 49.50 million ha (57.6 %) from a total of 85.96 million ha forest cover areas in Indonesia. This set of figures was calculated by consensus or forest function, and did not include Central Kalimantan or Riau, though it did include rivers.

In another set of figures, not including rivers, Indonesia's total land area was given as 187.9 million ha. The total forested land was 93.92 million hectares of which 44.77 million ha (47.7 %) was primary forest, 45.15 million ha (48.1 %) secondary forest and the rest (4.6%) was plantation forest. Even this larger total is far less than forest cover in the 1950s which totaled 152 million ha and then went down to 119 million ha in 1985, within the last 35 years alone, an area equal to 2.4 times that of Java and Bali Island combined has been lost. The rate of forest loss 2000-2005 was given in the MOF report as 1.08 million ha per year.

Indonesia's forest degradation problem becomes one of global concern. The forest loss seems to run counter to efforts to address climate change and global mitigation and adaptation to climate issues. About 30-35% green house gases are caused by forest degradation and forest fires. Indonesia's emission of green house gases, through fires and deforestation, is the third largest after the United States and China.⁴

Furthermore, Indonesia as a developing country vitally needs economic development which is fundamentally based on the natural resources including the forest (e.g. frequently from natural forest) and mining resources such as: gold, oils, nickel, gas and coal, which are commonly found in the forested areas. Land and forest use frequently causes a dilemma: forest cutting automatically influences the balance of the existing local environment in each region, and often has a negative impact, being followed by heavy floods, landslides, loss of fertile land and clean water crises.

On the other hand, the development problem also has significant impacts to the environment due to lack of monitoring and management of the industries as a consequence of development. In Jakarta alone, the MoE frequently found industries that do not meet the environmental standards on waste management etc.⁵ Hard work must be implemented by the industries in order to meet the standards imposed by the Ministry of Environment together with civil society. Furthermore, the civil society is expected to continue to be involved in the conservation and environmental movement. Nowadays there are around 600 environmental and conservation NGOs with several focuses starting from conservation, coastal area: protection of coral reefs, climate change, to waste management in urban societies such as Jakarta and Surabaya.⁶

2. The Impact of the Climate Crisis in Indonesia

Climate change is a threat faced not only by the western states but also the Muslim world. In Indonesia, awareness has increased due to the degradation of local and regional environments. The Indonesia as an archipelago is in a vulnerable position with regard to environmental and natural disasters. Geologically, it's on the area of the 'Pacific ring of fire' which stretches from the north of Sumatra to the Pacific Islands. They are shifting 12 cm annually. The country is frequently shaken by tectonic or volcanic earthquakes due to the dynamic shift of the tectonic plate, which also influences volcanic activity.⁷ These phenomena are pushing the policy makers to raise the community's awareness of the disasters that could occur.

Indonesian people have already suffered from climate crisis, and totally understand the extreme climate phenomena such as La Niña (that cause heavy rain fall) and its opposite of El Niño (that causes long periods of dry season) which has caused drought

and failed harvests. El-Niño occurred in 1982/1983 and 1997/98 which caused the failed harvest—because rice production was delayed and so failed—also forest fires mostly in Kalimantan and Sumatra. The policy makers have been made aware that these two climate phenomena have a large capacity to shake the nation's economic stability, food harvest liability and in the end cause uncertain conditions. As noted by Irawan (2002) the trend of these two observable facts of environment seems to be increasing. Based on the Southern Oscillation Index (SOI) values during the 1876-2000 period, the frequency of El Niño tended to increase from once in every 8 years during the 1876-1976 period to once in every 4 years during 1977-2000. The El Niño events with the highest intensity were recorded in 1982 and 1997 with the annual average SOI values were 21.4 and -18.1 respectively⁸. Therefore the frequency of floods and drought in Indonesia is increasing, and the adaptation to and mitigation of global climate change is vital.

The other crucial climate impact that might be a bigger challenge to this country is the rise of global sea level rise caused by melting glaciers and ice caps into the ocean and thermal expansion of ocean water. As the temperature of the water rises, the difference in density will allow the water to spread. Current evidence of global warming includes the widespread retreat of glaciers on the five continents. Rise in temperature will accelerate the rate of sea-level rise. This could make flooding more severe especially during heavy rainfall.

IPCC published its assessment in February 2007 and noted that the sea level had risen by an average of 0.18 cm annually and was predicted to rise by up to 0.31 cm over the next decade.⁹ An archipelagic country such as Indonesia with over seventeen thousands of islands and islets, is threatened by this impact. Susandi (2007) projected the increase of the average sea level in Jakarta Bay as high as 0.57 cm/ year. Using baseline data from 1925, the trend of the average sea level is projected to have a linear increase until 2050. The same study predicted the average depth of inundated area to vary between 0.28 to 4.17 meters in the year of 2053. The effect of sea level rise coupled with that of land surface decline will have tremendous effects on Jakarta. The study concluded that the decline of land surface contributed more to the alluvium in Jakarta Bay than the average trend of land surface decline in Jakarta and was as high as 0.8 cm/ year.¹⁰

A study conducted by Susandi *et al* (2008), indicated that in 2010 the sea level would increase by 0.40 m then consequently 7,408 km coastal areas in Indonesia would be inundated, if the level rose to 0.56m (2050) then 30,120 km area would be inundated in 2100, if the sea level rose to 1.10 m, around 90,260km²¹¹ would be inundated. This means that all coastlines in Indonesia will be submerged, and an area as large as five times of Kuwait state would be inundated.

The evidence for these situations is quickly mounting up, starting last May, 2007, in some areas in Jakarta, with the impact of the extreme phenomena of tidal waves that were unexpected in Jakarta and caused sea level to reach some coastal villages.

The Meteorology and Geophysics Institute (BMG) states that the phenomenon was an abnormal situation and a first time occurrence in some affected areas. Around the same month, similar tidal waves also occurred in a number of spots in Indonesian seas – the Southern Beach of Nusa Tenggara, Bali, Java, the cape western coast of Sumatra from Nanggroe Aceh Darussalam the West Sumatra.¹² The Meteorologists predicted that this is a wave phenomenon was caused by eastern *monsoon* oscillation that interacted and collided with the seas and spread along the beach. Another explanation said that the tidal waves happened because of atmospheric tides, e.g. the wave movement that was influenced by the gravitation power of the moon and the sun.

A study was also conducted by Susandi *et al* (2008) for the Banjarmasin City (Southern Kalimantan). This is a province that relies on river streams and also the

floating market. The sea level projected of Banjarmasin was assessed for the years 2010, 2050 and 2100. According to the projection, the water will reach to 0.37 m for 2010, 0.48 m in 2050, and 0.934 fro the year 2100. Some sub-districts (*kecamatan*) will be affected by the sea level increase, among others *Kecamatan* Banjarmasin Tengah, Banjarmasin Utara, Banjarmasin Barat, and Banjarmasin Selatan.¹³

3. Response to Climate Change

In December 2007, Indonesia hosted COP -13, the United Nation Framework for Climate Change (UNFCCC) in Bali. The hosting of the conference has attracted national and international concern about the impact of global warming and climate change. The forum has assembled over 10 thousand people for the conference: government officials, local communities, NGOs and stakeholders including the religious leaders showed their concern in the parallel events to create statements in addressing climate problems. In response to the climate problem in Indonesia, one of the Islamic leaders from Indonesia Dr Din Syamsuddin stated in the forum:

Indonesian religious and traditional leaders are aware that at no other time has the science of climate change been more robust than today. At no other time, too, have the impacts of climate change become more apparent and deadly, particularly for developing countries including Indonesia. Climate change is already damaging the ecosystem and endangering the lives and livelihood of millions of people. It affects the whole planet and threatens human beings living in all countries on all continents.¹⁴

Actions in response to global warming in Indonesia have been going on since the 1990s; ever since Indonesia's government formally ratified the United Nation Framework Convention on Climate Change (UNFCCC) as UU No 6 /1994 and further all stakeholders –including many NGOs--have started campaigns to address global climate change. The climate challenge has become a substantial issue due to the environmental disasters that were triggered by climate distress. Subsequently the government has also become an active administration by participating with other states and ratifying the Kyoto Protocol as a national law in 2004 (UU No 17/2004).

Actually, the concerns of religious leaders in Indonesia are the starting point for the people's concern. As a nation, Indonesia puts religion in a strategic role in order to respect ethical and moral values. Islam, as the major religion, possesses a correspondingly greater opportunity to take part in the democratic world. Religious figures play an important role due to the numbers of their followers and thus have a major voice. Therefore, environmental agencies including NGOs and governmental agencies (Ministry of Environment and Ministry of Forestry) work in close co-operation with Islamic institutions such as NU and Muhammadiyah in order to popularize the environmental movement.

Such religious community organizations play an important role in providing guidelines for their communities in order to perform economic, civic, and public related activities relating to, for instance, global warming issues along with other environmental and conservation activities.

Mass organizations such as Muhammadiyah and NU in Indonesia also serve as a positive base for environmental organizations – for instance CI, WWF and Walhi – to form partnerships. With the existence of the religious-based organizations, secular organizations like Conservation International can synergize their awareness and

conservation action programs through their network in order to further reach the “grass roots”. Besides that, cooperation is also developed with religious-based educational institutions and universities like Universitas Islam Negeri (UIN) Syarif Hidayatullah, Jakarta, UIN Walisongo, Semarang, the Islamic College for Advance Studies (ICAS) and several *Pesantren* (Islamic Boarding Schools) all over Indonesia. At the local level, activities are carried out together with the *Imams* and *Khatibs* who are based in remote villages. They are briefed on environmental conservation, current issues on global warming, and the obligation to maintain the ecosystem in balance for our future generations.

As for climate change, religious leaders – especially Muslim – have given positive responses and support the work programs of these environmental institutions; for instance Conservation International conducted *Fiqh Lingkungan*, May 2004; and International Colloquium *Fiqh Lingkungan*, June 2007 attended by Muslim environmental experts and religious figures in Indonesia¹⁵⁻¹⁶. In the implementation, religious figures’ *fatwas* (advice/instructions) on the environment have also been issued as a form of guideline in response to environmental changes including climate change. A detailed description of this kind of activity is explained under the following sub-section: **Muslim Projects for Climate Change** below.

4. Muslim Projects for Climate Change

In order to get an overview of Muslim efforts in Indonesia in response to climate change and global warming, I have divided this section into two categories. First, national efforts in Indonesia – the government’s policies to provide clear guidelines for the nation to address climate change. Second, efforts by the community – either collectively or individually – both religious-based and non-religious, but working together or in partnership to address climate change. These two items cannot be separated since they rely on each other, thus national efforts overall can be seen as a gathered effort of Indonesian people with a Muslim majority.

4.1. National Efforts in Indonesia

Nationally, Indonesia has participated in several global projects and is involved in the best practice project to implement the Kyoto Protocol in accordance with the global commitment. For example the Clean Development Mechanism (CDM) a scheme in the Kyoto Protocol of international targets to reduce global emission has been implemented through several efforts. According to the World Bank (2007) Indonesia has at least 235 MtCO₂e (metric tonnes of CO₂ equivalent) of emission reduction potential that can be developed as CDM projects, ranging from reduction of gas flaring in large oil and gas facilities, to development of geothermal and other clean and renewable energy sources, to production of biogas from agriculture and animal waste.¹⁷

However, at present only 11 projects have received approval from the Designated National Authority (DNA) of CDM. Of these, eight have been registered by the Executive Board of CDM with a potential to produce 13 MtCO₂e. From the registered projects, most are renewable and waste management projects. Compared with the potential, this is not significant.¹⁸ The latest according to MoE, Indonesia has received 16 CDM projects registered in the executive board¹⁹. In this case, Indonesia’s CDM progress is rather slow compared to other countries, such as China, India, or even Malaysia. Up to

now, all 154 Indian registered projects generate 145,565,410 tCO₂e of emissions reduction which are more than 10 times Indonesia's number.²⁰

A further effort has been designated at the level of policy makers. Growing concern about global warming has brought the local policy to be more proactive in protecting their natural forest. The Government of Aceh for example has declared a 'logging moratorium', as a commitment to stop all the logging activities since June, 6 2007. Land use and deforestation control is a potential factor in reducing the greenhouse gases, as it is currently estimated that 20% of CO₂ released is caused by the land use and land use change and forestry (LULUCF). Hence the natural forest area is a key factor in stabilizing emissions with their function as a carbon sink. The magnitude of deforestation in Indonesia would be, in accordance to the latest forest degradation figure in 2000-2005, 1.8 2 M/ ha per year. Thus the greenhouse gases potentially being released would equal 93.6-280.7 million tons of carbon per year.²¹

Even though the climate response in addressing the climate issue is still at the preliminary phase, at least the importance of adaptation to climate change has already been acknowledged in the country's Mid-Term National Development Plan. Prior to the Conference of Parties (COP) 13 last year, a draft of the National Strategy on Adaptation was completed. The draft contains a compilation of research activities, identification of adaptation issues that need to be revised and expanded with implementation experience of UNFCCC methodology.

At the national level actions in response to global warming are on the national agenda. According to the Ministry of Environment (*Kementerian Lingkungan Hidup*), the terms of actions were mentioned in the Mid Term National Development Plan (*Rencana Pembangunan Jangka Menengah Nasional - PRJM*) 2004-2009. In November 2007, the MoE published the National Action Plan, endorsed by the President of Republic of Indonesia, which included the Long Term National Action Plan for Climate Change (2005-2025). The outlined action for climate change is as follows:

4.1.1.Mitigation

Mitigation: efforts to decrease the flow of global green house gas emissions so that the concentration in the atmosphere is at a tolerable level. Even though Indonesia is not obliged to reduce its green house gas emissions, the condition of this country as very vulnerable to climate change makes it crucial to be involved, especially in the energy sector and in land use and land use change and forest (LULUCF).

4.1.1.1 Energy Sector

Indonesia currently is a net importing country and in 2008 resigned as an OPEC member. This was done since Indonesia's oil production was not sufficient and the oil wells – especially crude oil – are no longer productive enough to supply domestic energy demands, let alone export.

Based on the year 2003 data, Indonesia's energy composition consists of 54.4% natural oil, 26.5% natural gas, 14.1% coal, 3.4% HEPP, 1.4% earth heat and 0.2% renewable energy. During that year, CO₂ emissions reached 258.67 million tonnes.²² In its action plan, the Indonesian government has determined a mixed energy target of 20% oil, 33% coal, 30% natural gas, 5% biofuel, 5% earth heat, 5% renewable energy and 2% liquefied coal. If emission reduction is not carried out, CO₂ emission from the energy sector in Indonesia could reach 1,200 million tonnes in 2025.

The President has issued a decree (PEMPRES 5 - 2006) that determined the above targets through energy diversification programs, energy conservation and clean technology implementation (such as Carbon Capture and Storage-CCS).²³

4.1.1.2 LULUCF Sector

The forest area potential as carbon sinks in Indonesia continues to decrease due to land use and forest function changes. According to the Ministry of Environment, the forest area that has been converted to other uses and land use change and forest (LULUCF) amounts to 53.9 million hectares. This potential resulted in the loss of 2,1GtCO₂e carbon absorption per year in 2005. The stock forest in conservation areas, protected forest and production forest, both primary and logged areas, or areas that have been degraded amounts to 115 Gton CO₂e.²⁴

The rapid land conversion in Indonesia is caused by various complex factors that are not easy to resolve. Land and forest usage change in a very large country – such as Indonesia – is a massive challenge. Forest fires, illegal land sabotage, illegal logging are several of the many causes.

Thus priorities are written into the action plan for the medium term: resolving illegal logging, forest and land rehabilitation, forestry sector restructuring including HTI/Industrial plants forest and Community Forest development acceleration, empowering communities around the forest, forest area determination with clear status etc.²⁵

The Ministry of Forestry targeted 36.31 million hectares for land rehabilitation in three periods up to 2025. This amount was calculated based on the 53.9 million hectares of degraded forests.²⁶

A new initiative to maintain existing natural forest is also being carried out; through the REDD (Reduction Emission for Deforestation and Degradation) incentive scheme: the Ministry of Forestry, along with the stakeholders in Indonesia, is currently preparing a REDD scheme and implementation guidelines for the near future.

4.1.1.3 Marine and Fishery Sectors

The marine sector is an important factor in Indonesia since 2/3 of the country is water. Thus, marine activities and fisheries can be analogized as a body with its internal organs i.e. Indonesia's land. Coastal ecosystem, plants and sea biota (including coral reefs, *padang lamun* mangrove and open sea). All these have the ability to act as a carbon sink. Therefore maintaining Indonesia's marine sustainability and coastal ecosystems is an important part of global mitigation efforts to address climate change.

The total amount of carbon absorbed by the marine and coastal ecosystem in Indonesia each year is estimated around 245.6 million tonnes of CO₂.²⁷ Because of this, the Indonesian government has put efforts into conserving marine and coastal ecosystems in order to protect them from forest clearing and unfriendly harvesting. The Minister of Marine and Fisheries in 2003 gave his commitment to protect Indonesia's Marine Protected Area (MPA) to 10 million hectares marine conservation areas in 2010. Currently Indonesia's marine conservation area is around 8.3 million hectares. This area will be increased to 20 million hectares in 2020²⁸. Mangrove ecosystem plantation has been conducted in various areas by involving the community both collectively (e.g. through NGOs) and individually. In addition to this, reef rehabilitation efforts are

currently being carried out by the community in cooperation with NGOs specializing in the coastal areas.

4.1.2 Adaptation

Adaptation is the effort to provide responses in order to reduce climate change impact on life. When climate change becomes a phenomenon that cannot be prevented, adaptation becomes the most effective means. Guidelines on adaptation are not as clear as mitigation which has clear actions and efforts, e.g. reducing emission through CDM and the Kyoto Protocol schemes. Adaptation is a phase that has not been carried out by many parties. Despite this, the government has tried to mainstream each program both at the national and local level to run in parallel with adaptation efforts addressing climate change.²⁹ Thus development efforts in several sectors must refer to global warming issues and include adaptation efforts. Based on the Action Plan for Climate Change developed by the MoE, several adaptation measures that have been carried out are: Water Resources Sector, Agriculture, Marine, Seashores and Fisheries, Infrastructure, Health, Forestry and Biodiversity.

4.1.2.1. Water Resources Sector

Indonesia has declared the *Gerakan Nasional Kemitraan Penyelamatan Air (GN-KPA)* / National Action for Partnerships to Save Water on 28 April 2005. This act basically guides six strategic components:

- Spatial planning, physical construction, land issues and population
- Forest and land rehabilitation along with water resources conservation
- Water destruction level control
- Water quality management and water pollution management
- Water use control and water demand management
- Fair, efficient and sustainable water resource utilization³⁰

An example at the action level, implemented for adaptation, is the water resources management by the Public Works Agency (*Dinas Pekerjaan Umum*) by cooperation with GTZ to overcome land water supply issues. This Project aims to reevaluate potential areas for rice production in the agricultural sector. Besides that, on the national level it serves to review the *Rencana Tata Ruang Wilayah (RTRW)*/Area Spatial Planning. With the new spatial plan, there is a new law/UU that arranges adaptation to climate change. At the Project level, a Project in Nusa Tenggara Timur on water problem solutions have been carried out since this area is most vulnerable to water supply shortages in the dry Season due to low ground water stock and low rainfall. The approach is integrated with low- carbon emission, which is hoped to be an example for simultaneous adaptation to and mitigation of climate change.

Cooperation has also been conducted with KLH and GTZ to review the vulnerability assessment in NTB by determining a location for a climate village pilot project. This activity is conducted in order to ensure safe energy, and low carbon emissions. It is hoped that this example will increase awareness of climate change.

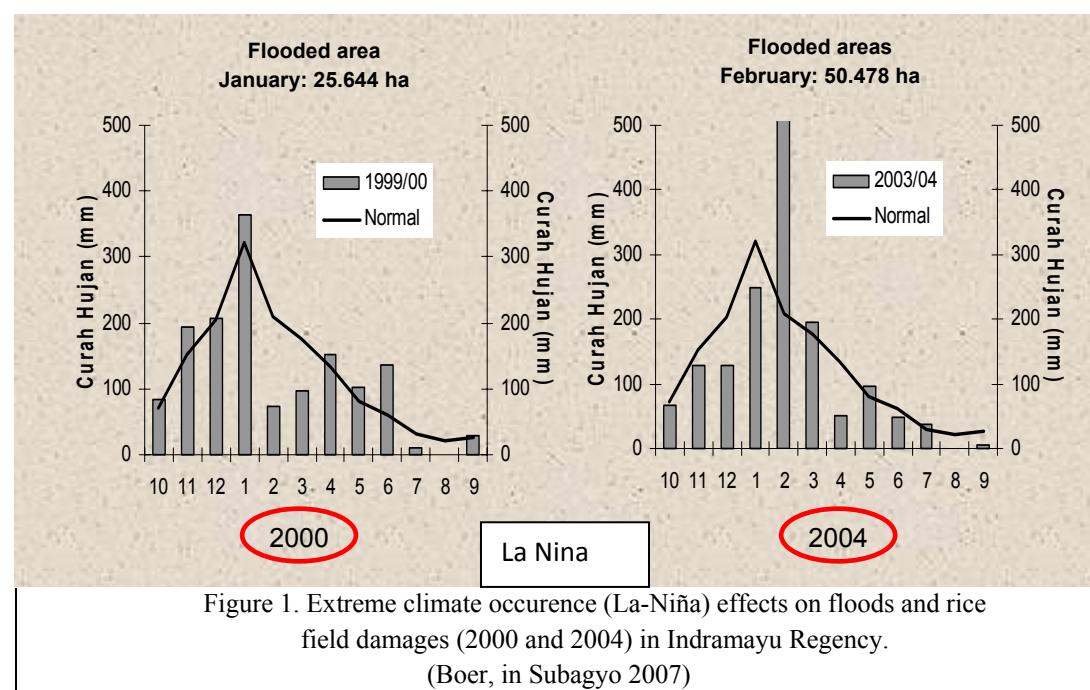
4.1.2.2. Agriculture and Health

Climate change often becomes the cause of harvest failure in Indonesia. The failure is often caused by two extreme climate conditions resulting in drought and floods. During the period 1981-1990, harvest failure caused a loss of 100,000 tonnes in each regency³¹, meanwhile during the period 1991-2000, the loss increased to 300,000 tonnes in each regency.³²

As an example, the Indramayu regency which is considered as the rice warehouse in West Java's agriculture area, experienced a loss of 25,644 ha (2000) and 50,000 ha in 2004 caused by extreme rainfall during January and February caused by La Niña. Meanwhile El Niño in 1997 caused drought, 47,995 ha rice fields and in 2003 there were 7,896 ha that did not receive adequate water and experienced drought.³³

To address this issue, research is continuously conducted by the Department of Agriculture in order to obtain seeds that are able to adapt to climate change; for instance the search to obtain plant and rice seeds able to survive in a high salinity area. To overcome land and water crises caused by sea water intrusion, research for low-emission fertilizers is also being conducted.

In the health sector, the government has responded by providing an action plan along with activities such as health briefings for community on the impacts of climate change such as dengue fever, malaria, and other tropical diseases along with research on several diseases that might arise due to the impact of climate change. Civil society institutions such as PMI (Indonesian Red Cross) have designed climate change programs into their work objective by conducting herbal treatment for viruses predicted to develop when the temperature rises.



4.2. Grass Roots and NGO Efforts

With regards to activities involving the Muslim community in Indonesia to address climate change, it must be acknowledged that even though they exist, they are not significant. The climate change program and Islam have not become the grass roots and national Indonesian NGO mainstream. But in several aspects, environmental awareness (in general) for the Muslim community have begun by involving the communities' Islamic leaders (*Ulama*) and scholars to review Islam's teaching on environmental

conservation. The Ulama and scholars network in Indonesia have begun to pay more attention to this issue in line with the concern of Muslims who want to live their daily life according to Islam. One of the reasons is that the mainstream and solutions to environmental problem usually have a foreign approach that is usually hard for Muslims to accept. With the efforts of the Muslim scholars and activists, slowly the Muslim grass roots activists are beginning to be moved and the middle class Muslims are also beginning to realize the importance of maintaining and conserving the environment.

On the practical level, many Muslims individually conduct environmental activities – even though not focused on climate change – professing that their motivation was based on their religious beliefs.³⁴ Besides this, several years ago several *pesantren* (Islamic Boarding School) received the Kalpataru³⁵ environmental pioneer award for their creation of environmental conservation project and direct wisdom in maintaining the environment.

4.2.1. Conservation Education through Islamic Ethics

Islamic environmental ethics in Indonesia were introduced by Fazlun Khalid in 2002 through a workshop using Al-Qur'an, Creation and Conservation approach. This material is the training to trainers (ToT) material that was first conducted in Sungai Penuh Jambi, Sumatera and *Pondok Pesantren Al Washilah Garut*.³⁶ In 2006, Fazlun introduced a similar event in cooperation with Conservation International Indonesia, by conducting a workshop on Islam and Natural Resource Conservation in Mandailing Natal. Then WWF, Conservation International Indonesia and Islamic Foundation for Ecology and Environmental Sciences (IFEES) carried out another workshop, in the same year and using the same method, with ulama and Islamic figures in Nangroe Aceh Darussalam.³⁷

In 2004, INFORM facilitated a meeting of *Ulama* to develop environmental *Fiqh*, involving 33 *pesantren ulama* and several environmental activists to compile Islamic wisdom on environmental and nature conservation. The *Fiqh al Bi'ah* report, became the initial document that assisted several activities connecting Islam and environmental understanding. This report has been distributed around 5000 copies all around Indonesia and can also be downloaded at Conservation International Indonesia's website and has become the reference for *pesantrens* and environmental activists who have direct contact with the Islamic community in their work. Several *pesantren* have adopted it and have started to teach *fiqh al bi'ah* and included it in their curriculum, for instance *Pondok Pesantren Darul Ulum Lido, Bogor*.³⁸

Awareness activities using Islamic and environmental ethics in Indonesia became more complete with the *Fiqh al Biah* document along with books published on Islam and the Environment. Several universities have seen the Islam and Environment phenomenon as an important subject. For the first time in Indonesia, *Kajian Islam dan Lingkungan* (Islamic and Environmental studies) have been established by Universitas Islam Walisongo Semarang, in 1995. The university then developed undergraduate and postgraduate programs on Islam and Environmental studies more comprehensively. Universitas Muhammadiyah Jakarta (UMJ) followed their example by establishing a postgraduate program on Islam and Environment in 2007, and UIN Syarif Hidayatullah Jakarta is planning to open a postgraduate program on Islam and Ecology.

4.2.2. Tree Planting

Tree planting actions in several areas in Indonesia have been done by the government; the trees were planted voluntarily by the community, the majority pioneered by the *pesantren* (Islamic boarding school). Adaptation projects through tree planting driven by *pesantren* were conducted in several areas, such as Ma'had Al- Zaytun, that have planted teak and other trees amounting more than 300,000 on a 1200 ha area. *Pondok pesantren* Al Wasilah in Garut rehabilitated 35,000 ha of critical land through 112 groups in several villages driven by the *Pesantren* Al Wasilah Head KH Ahmad Thonthowi Musaddad.³⁹

Another example is *Tuan Guru*: Hasanain Juwaini, one of the *ulama* who initiated the “*Menggagas Fiqh Lingkungan* (Fiqh al Biah)” forum “greened” 30 hectares of the *pesantren* Al Haramain area in Nusa Tenggara Barat (NTB) with various plants. Besides that, he also implemented environmental *da'wah*, provided free seed for the community and pioneered land rehabilitation in NTB. In 2005, several *pesantren* around the Gunung Gede Pangrango National Park in Sukabumi, Cianjur and Bogor were involved in the tree planting action with Conservation International Indonesia, planting several native plants including several plants with economic values that have potential to boost the *pesantren*'s economy.⁴⁰ The tree planting activities with *pesantren* still continue up to now in cooperation with other partners. Basically *pesantren* are potential partners to conduct real environmental actions since these schools are very close to the society and surrounding community.

4.2.5 Environmental *Fatwas*

Environmental *Fatwas* are becoming one of the most important “icons” to involve Muslims in environmental conservation in Indonesia. The *ulama* in the *Majlis Ulama Indonesia* (Indonesia Council of Ulama—MUI) issue *fatwas* according to the questions and needs of the community in order to provide explanations according to Islam's shari'a applied in daily life. In response to illegal logging, forest fires and illegal mining, on 13 December 2006 or 22 Zulqaidah 1427 Hijriah, Komisi Fatwa Majelis Ulama Indonesia (MUI) Wilayah IV Kalimantan provided a response by issuing two *fatwas* on: Illegal logging and illegal mining, and the burning of forests and smoke-clouds.

The *Head of Ijtima' Komisi-Komisi Fatwa MUI Wilayah IV Kalimantan* (Fatwa commission for Indonesian Council of Ulama regional IV, Kalimantan, which includes Central, South, East and West Kalimantan) in Banjarmasin, Prof Drs HM Asywadie Syukur LC stated that MUI felt it important to issue a *fatwa* on illegal logging and illegal mining, as a guideline for the community.⁴¹

There is no research yet on the impacts of the two *fatwas*, but when I visited central Kalimantan during the 2007 dry season, I found a different atmosphere there: unusually, there are not as much haze and forest fires as the previous years. At the same time, the Central Kalimantan government has tightened the fire control which succeeded in reducing up to 91% of hot spots: compared with 2006 when there were 42,100 hot spots, in 2007 there were only 3,700 hot spots left. Even though there are no clear indications that the decrease in hot spots were caused by *fatwa*, it was clear that the public awareness increased with the *fatwa* phenomenon; which in this case was able to support the policy makers in taking firm action to overcome environmental problems including forest fires.

In line with the above, the government is becoming stronger due to the support from the *ulama* in eliminating illegal logging and illegal mining rimes, since besides breaking the law, religion also condemn it according to the *fatwa* issued by *Majelis Ulama Indonesia*.

4.2.6 Eco-Pesantren Program

Eco *Pesantren* is an effort to raise environmental awareness starting from Islamic schools. This program was initiated by the MoE with the assistance of NGO partners and the *pesantren* world itself. The reason for MoE to work with *pesantren* is because of the potential power held by these Islamic schools. There are 17,000 *pesantren* in Indonesia, which have very strong roots in the community. Besides that, there are 10 *Pondok Pesantren* who received the *kalpataru* - the highest environmental award in Indonesia – for their initiative in pioneering environmental conservation. Usually *pesantren* can support themselves without government aid. The objectives of the eco *pesantren* are, among others:

- Raising awareness that Islam’s teaching is the guideline for environmentally friendly behaviour
- Implementing Islam’s teaching in daily activities
- Empowering *pesantren* communities to improve the environmental quality based on *al-Qur'an* and *al Sunnah*
- Increasing activities that have value added from economical, social and ecological aspects
- Making the *pondok pesantren* into environmentally conscious learning centres for the *pesantren* community and surrounding community
- Socializing environmental materials in the *pondok Pesantrens*’ activities
- Developing *pondok pesantren* areas that are good, clean and healthy.⁴²

This eco *pesantren* program is still in the initial phase, but managed to encourage Islamic educational institutions to care more about the environment, especially climate change and global warming issues. A lot of *pesantren* have taken their own initiatives for environmental conservation, which should be passed on to other *pesantren* in order to raise awareness about climate change mitigation and adaptation. The Eco *Pesantren* media serve as long term socialization efforts to involve Muslims at the grass root levels in caring about the environment. Several examples of *pesantren* that care about the environment are: *pesantren* Nurul Iman in Bogor, which has become a pioneer in waste management; *Yayasan Pondok Pesantren SPMAA* at Desa Turi, Lamongan, East Java, with their biogas.

Notes:

¹ Paper presented in the Workshop: Islam and Climate Change: Towards a Seven Year Action Plan, Kuwait, 29-31 October 2008, Kuwait City.

² Mittermeier, R., Robles Gil & C. G. Mittermeier. (Eds.) 1997, *Megadiversity: Earth’s Biologically Wealthiest Nations*. Cemex. New Mexico.

³ El Nino and La Nina are two terminologies of oceanic-atmospheric climate phenomena: the El Nino is a climate cycle that brings long dry months that may cause forest fires and food disasters and la Nina is a wet cycle that bring a lot of rain and causes floods and land slide disasters.

⁴ Agus P. Sari (ed). *Indonesia and Climate Change: Current Status and Policies* (Washington DC: Pelangi Energi Abadi Citra Environ for the World Bank and DFID, 2007)

- ⁵ KORAN TEMPO, September 9, 2008. Dua Perusahaan Diberi Label Hitam. p. A7. The MOE has developed an environmental standards for waste management etc. This scheme has been running for about 15 years but still about 30 industries in Tangerang and Banten do not meet the official standard for their waste management.
- ⁶ M.Indrawan, R. B Primack, J. Supriatna (2007). *Biologi Konservasi (Revised Edition)*. (Jakarta: Yayasan Obor Indonesia) p 553.
- ⁷ J.Sopahelwakan. 2003. Dari Ilmu Kebumian Ke Ilmu Sistem Kebumian: Peranan H₂O dan CO₂ dalam siklus proses bumi dan evaluasi Kepulauan Indonesia. Pidato Pengukuhan Ahli Peneliti Utama Bidang Geologi Umum. LIPI Jakarta 21 Agustus 2003.
- ⁸ Irawan, B. 2000. Stabilization of Upland Agriculture under El Nino Induced Climate Risk: In Assessment and Mitigation Measures in Indonesia. CG PRT Centre Working Paper No. 62, 78pp.
- ⁹ IPCC 2007. *Climate Change 2007. Syntesis Report: Summary for Policy Makers*. p 2
- ¹⁰ Sari, Working Paper on Indonesia and Climate Change: Current Status and Policies p 66.
- ¹¹ Susandi, A., Y. Firdaus & I. Herlianti. Impact of Climate Change on Indonesian Sea Level Rise with Referente to It's Socioeconomic Impact. EEPSEA Climate Change Conference, Bali. 2008.
- ¹² Tempo Interaktif, Gelombang Pasang Landa Pantai Utara dan Selatan Senin, 14 Mei 2007 | 20:10 WIB ; also see Serambi Indonesi. Gelombang Pasang, Warga Panik. Senin 09 Mei 2007.
- ¹³ Susandi, A., I. Herlianti, M.Tamamadin., Dampak Perubahan Iklim Terhadap Ketinggian Muka Laut Di Wilayah Banjarmasin. Program Studi Meteorologi - Institut Teknologi Bandung. 2008. Available online, Accessed 8 September 2008.
- ¹⁴ Statement by Muslim Leader during Parallel Event entitled: Religion and Conservation: Opportunities for Working Together to Avoid Deforestation and Address Climate Change, UNFCCC-COP 13. BALI, 11 DESEMBER 2007
- ¹⁵ Muhammad,A.S.,H.Muhammad.,R.Mabrur.,A.S.Abbas.,A.Firman.,F.M.Mangunjaya.,K.IB. Pasha.,M.Andriana.(Eds). 2004 *Fiqh Lingkungan (Fiqh al-Biah)*. Jakarta: INFORM.
- ¹⁶ Khalid, F & F. Mangunjaya, (eds.). 2007. *Proceeding Colloquium Islamic Fiqh on the Environment*. Wisma Syahida 21-22 June 2007. KLH, IFEES, Conservation International-Indonesia & WWF Indonesia, Jakarta.
- ¹⁷ Sari, A.P.Working Paper on Indonesia and Climate Change: Current Status and Policies p 105
- ¹⁸ Sari, A.P.Working Paper on Indonesia and Climate Change: Current Status and Policies p 106.
- ¹⁹ Interviews with Agus Gunawan, staff MoE and see the website. www.klh.go.id
- ²⁰ Sari, A.P Working Paper on Indonesia and Climate Change: Current Status and Policies p 106
- ²¹ Rett Buthler. Carbon finance could mean billions for Indonesia [mongabay.com](http://news.mongabay.com), November 5, 2006 <http://news.mongabay.com/2006/1105-indonesia.html> Accessed December 8,2006
- ²² MoE. 2007. Rencana Aksi Nasional untuk Menghadapi Perubahan Iklim (National Action Plan for Climate Change,) p39
- ²³ MoE 2007. Rencana Aksi...p40
- ²⁴ MoE 2007. Rencana Aksi...p 51
- ²⁵ MoE.2007. Rencana Aksi ...p 53
- ²⁶ MoE.2007. Rencana Aksi ... p 54
- ²⁷ MoE.2007. Rencana Aksi ...p 60
- ²⁸ MoE.2007. Rencana Aksi ...p 62

- ²⁹ Interview with Agus Gunawan, Kasub Bidang Adaptasi Perubahan Iklim KLH 17 September 2008
- ³⁰ MoE.2007. Rencana Aksi ...p 65
- ³¹ Regency means an official administrative structure under a provinces; one province could be five or more regencies which then administratively formed a province.
- ³² Boer & Las, 2003. in MoE.2007. Rencana Aksi ...p 67
- ³³ Boer, 2002. in K. Subagyo. Dampak Perubahan Iklim terhadap pertanian, PP Presentation. Seminar Sehari "Keanekaragaman Hayati di Tengah Perubahan Iklim- Tantangan Masa Depan Indonesia" Hotel Grand Kemang, Jakarta, 28 Juni 2007
- ³⁴ I found some Muslim environmentalists or activists who were pioneering the environmental movement were called by their own heart, one of the reason was, because Islam teach them doing a good thing is Islam kind of worship to Allah, such as Ustadz Nasruddin Anshori of Pesantren Iman Giri, Yogyakarta or Tuan Guru (Syaykh) Hasanain Juwaini of Al Harmain Islamic Boarding School, of Nusa Tenggara Barat (NTB)
- ³⁵ Kalpataru is a national award for environment from the Ministry of Indonesia for whom has a significant contribution to the environment at the local and national level.
- ³⁶ Fazlun M. Khalid. Applying Islamic Environmental Ethics. In Richard C. Foltz (ed) Environmentalism in the Muslim World. (New York: Nova Science Publisher,2005) p. 87.
- ³⁷ Mangunjaya, F. Membangun Kesadaran Lingkungan dan Konservasi Melalui Ajaran Islam in Fachruddin Mangunjaya, H. Heryanto, R. Gholami (Eds): Menanam Sebelum Kiamat (Jakarta: Yayasan Obor Indonesia 2007)
- ³⁸ Ahmad Yani, 2007. Penerapan Pelajaran Fiqh al Biah di Dunia Pesantren (Pengalaman Pesantren Modern Daarul 'Uluum Lido) in Fazlun Khalid , & F. Mangunjaya, (Eds). Proceeding Colloquium Islamic Fiqh on the Environment. Wisma Syahida 21-22 June 2007. KLH, IFEES, Conservation International-Indonesia & WWF Indonesia, Jakarta.
- ³⁹ Kafil Yamin, Nyala Kecil 'Revolusi Hijau' dari Tungku Al Wasilah in Fachruddin Mangunjaya, H. Heryanto, R. Gholami (Eds): Menanam Sebelum Kiamat (Jakarta: Yayasan Obor Indonesia 2007) p 240-255.
- ⁴⁰ Conservation International Indonesia. Islamic Boarding Schools and Conservation. (Jakarta: Final Report CI Indonesia, 2005). 24 pp
- ⁴¹ Ilegal Logging dan Mining, Haram! MUI juga Keluarkan Fatwa Pembakaran Lahan dan Wajib Belajar. Radar Banjarmasin, Jumat, 5 Januari 2007.
- ⁴² <http://www.menlh.go.id/ecopesantren/#tujuan>, 23 September 2008.