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Cross-border resource management in Southeast Asia:
the cases of Greater Mekong region, the Heart of Borneo and Coral Triangle[1]

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Abstract

Climate change is a grave threat to the economies, societies and the natural environment of the Asia-Pacific region, including in Southeast Asia. The impacts of climate change will become increasingly severe and irreversible unless action is taken today to begin to stabilise and then reduce global greenhouse gas emissions.

Countries in the Southeast Asia's region share many important areas enriched with high level of natural resources, biodiversity and many other economic potentials such as from food, fiber, tourism and other goods and services. These include Greater Mekong sub-region (GMS), Heart of Borneo (HoB) and Coral Triangle (CT) areas. Hundreds million of people live in these regions and more others depend on resources, goods and services coming from these regions for their livelihoods. However, climate change will profoundly affect biodiversity, water resources, and economy in these regions, all of which in turn will impact their people.

The observed and projected impacts of climate change include the increase in the severity of droughts, flooding, fires, coral bleaching, the gradual increase in sea level rise, and the increase in frequency of extreme weathers including storms which will be destroying natural and human-made systems in the area. The impacts of climate change will worsen these already pressured ecosystems due to illegal and destructive logging, over-fishing and over-exploitation of natural resources. These problems have contributed to tensions amongst countries and conflicts and social unrest amongst players and stakeholders on the ground.

The challenge facing governments is to devise climate-smart development strategies that also mainstream climate change adaptation and mitigation as well as conserve the region's globally important biodiversity, ecosystems and natural resources. This challenge can be met if the threats are addressed in an integrated and coordinated way within a harmonised regional legal framework.

Countries in these three important cross-border areas have come up with pledges, programs and plans to address these issues including through joint ministerial collaboration, regional initiatives and others. Stronger climate adaptation strategies and variety of proper actions have to be further developed and eventually implemented which will contribute to the improvement and healthier ecosystems of the areas and the strengthening the communities' resilience to climate change resilience in these three important cross-border areas.

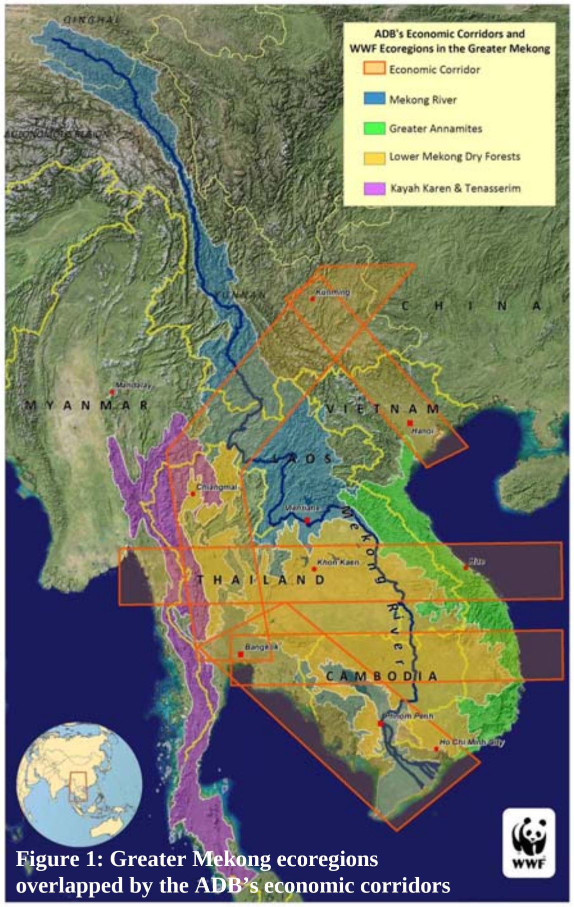

Figure 1: Greater Mekong ecoregions overlapped by the ADB's economic corridors

Climate change in important cross-border natural resource management areas of Southeast Asia

Climate change is a grave threat to the economies, societies and the natural environment of the Asia-Pacific region, including in Southeast Asia. The impacts of climate change will become increasingly severe and irreversible unless action is taken today to begin to stabilise and then reduce global greenhouse gas emissions.

Overall in Asia, climate change can lead to damages to natural, communal and business assets from extreme weather, loss of agricultural outputs due to droughts, flooding, trans-boundary haze and unseasonal weather and disruption to business from infrastructure damage or disruption. There has been an observed rise in the price of agricultural products as a result of water scarcity, loss of soil moisture, floods and storm surges and other physical impacts as well as competition for other land uses. In some areas, impacts of climate change have disrupted the tourism sector as a result of the destruction of coral reefs, forests and other national tourism assets.

Countries in the Southeast Asia's region share many important areas enriched with high level of natural resources, biodiversity and many other economic potentials such as from food, fiber, tourism and other goods and services. These include Greater Mekong sub-region (GMS)[1], Heart of Borneo (HoB)[2] and Coral Triangle (CT)[3] areas. Hundreds million of people live in these regions and more

[1] **The Greater Mekong** is home to nearly 300 million people and contains some of the richest and most valuable habitats on Earth, comprising Cambodia, Lao People's Democratic Republic, Myanmar, Thailand, Vietnam, and Tibet Autonomous Region, Qinghai and Yunnan Provinces of the People's Republic of China. Around 80% of the population depends on the productive capacity of healthy natural systems to sustain key ecosystem services such as clean water, food, and fibre. The Mekong River itself provides food security to at least 60 million people with fish as their main protein source. The Greater Mekong sub-region, (i.e. Cambodia, Lao PDR, Thailand and Vietnam), constitutes of 60 million ha of tropical forests and rivers having high conservation values.

[2] **The Heart of Borneo** covers 24 million ha of equatorial rain forest including some of the most biologically diverse habitats on earth, stretching along the border of Indonesia, Malaysia and Brunei. These forests posses staggeringly high endemism levels across all groups of plants and animals and is one of the only two places on earth where orangutans, elephants and rhinos still co-exist and where forests are currently large enough to maintain viable populations. The HoB area covers the source of 14 of Borneo's 20 major rivers, which is critical in ensuring clean water and food (fish) supplies to a large number of human settlements. Borneo Island is home to about 16 million people and big percentages of the populace are heavily dependent on agricultural products and forest produce for their livelihood.

[3] **The Coral Triangle** areas of 600 million ha span the so-called CT6 archipelagic countries, i.e. Indonesia, Thailand, Philippine, Papua New Guinea, Solomon Island and Timor Leste. These countries, which have important coral reef areas known as coral triangle area, include 30 per cent of the world's coral reefs, 76 per cent of its reef building coral species and more than 35 per cent of its coral reef fish species as well as vital spawning grounds for other economically important fish such as tuna, thus it is important for the global fisheries and conservation effort.

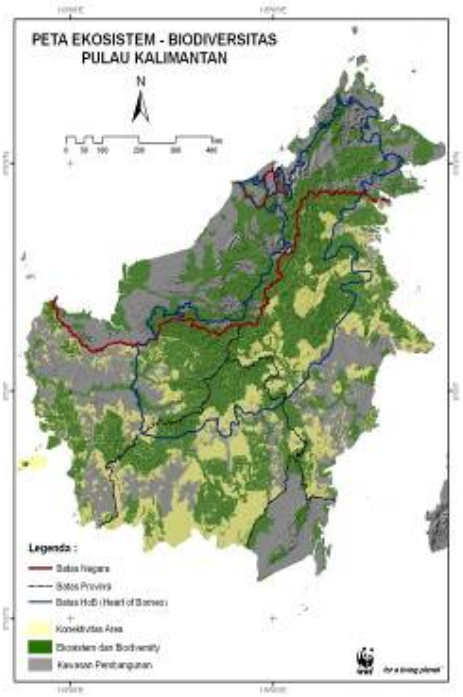

Figure 2: The Heart of Borneo

others depend on resources, goods and services coming from these regions for their livelihoods. However, climate change will profoundly affect biodiversity, water resources, and economy in these regions, all of which in turn will impact their people.

The most recent models for Greater Mekong suggest continued warming, increased climate variability, and more frequent and damaging extreme climate events (Eastham *et al.*, 2008). Wetter rainy seasons are expected to lead to increased flooding, and drier dry seasons will exacerbate water shortages. Altered precipitation patterns and warmer temperatures will likely reduce the productivity of agriculture and fisheries threatening food security, and substantially alter the composition and function of the region's ecosystems. Rising seas and saltwater intrusion will cause major coastal impacts especially in the Mekong Delta, which is one of the three most vulnerable deltas on earth (IPCC, 2007 -WGII).

These impacts would result in displacement of local communities and their livelihoods. People are not the only community that will be on the move. As temperatures rise, wildlife species will also begin to migrate in search of cooler habitats. This could lead to isolation of their populations and human wildlife conflict. In the Mekong region countries where land tenure systems are weak, there is a resulting rise in migration, conflict and social unrest, leading to the increased marginalization of subsistence and small holder agriculture.

In the Heart of Borneo, a climate simulation for a particular forest corridor of Betung Kerihun National Park and Danau Sentarum National Park, in Kapuas Hulu district in West Kalimantan Province (Indonesia's part of HoB) suggests that incidence of drought and forest fires may have an adverse impact on local livelihoods and threaten the remaining population of orangutans within the corridor (Saleh *et al.*, 2009). During the forest and land fires of 1997/98, over 6.5 million ha were affected in Kalimantan. Millions of people were affected by the fires and the resulting smoke and haze. Tensions have risen amongst countries whenever smoke and haze – and associated illegal logging issue – affecting neighbouring countries. Hundreds, if not thousands, of orangutans were killed during this disaster, and smoke from the fires contributed significantly to global carbon emissions. The

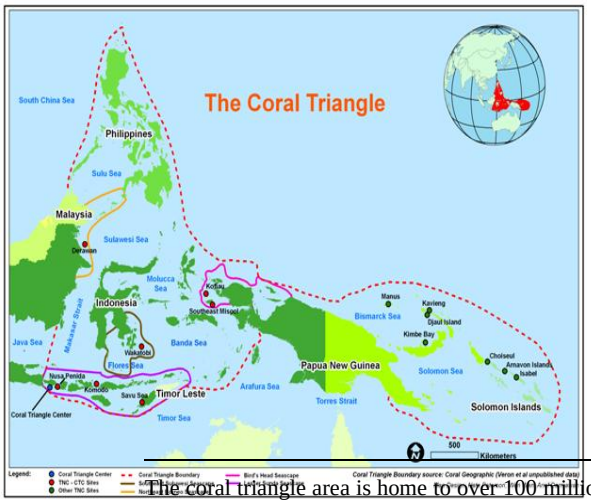

Figure 3: The Coral Triangle

The coral triangle area is home to over 100 million people who depend on the products and services of coastal and marine resources and ecosystems.

economic costs were estimated to exceed US$ 9 billion.

An unusually strong El Nino played a role during this period, but the fires were mostly set by humans. This trend towards increasingly devastating fires has continued in recent years, with 2002 and 2006 ranking amongst the highest rate of forest fires in Indonesia's history. In September 2006 alone, there were 26,561 hot spots, the highest since August 1997, with 37,938 (Hariri and Ardiansyah, 2007).

Moving to marine and coastal areas, a new report entitled "*The Coral Triangle and Climate Change: Ecosystems, People and Societies at Risk*" states that if the world does not take effective action on climate change, coral reefs will disappear from the Coral Triangle by the end of the century, the ability of the region's coastal environments to feed people will decline by 80 per cent, and the livelihoods of around 100 million people will have been lost or severely impacted (WWF and the University of Queensland, 2009). Depletion of fish stocks will increase competition which would lead to potential conflicts such as the use of destructive fishing technologies (e.g. dynamite and cyanide). As the number of fish declines, according to Richard Pollnac (Willson Center, 2008), "the competition increases, and so we've got competition between people who are using different gear types. We've got competition of migrants versus locals. We've got competition concerning small-scale versus commercial fisheries".

A combination of climate change and marine and coastal degradation will lead to destruction of coral reefs over the course of the century by rapid increases in ocean temperature, acidity and sea level, while the resilience of coastal environments also deteriorates under faltering coastal management.

This could further contribute to the increase in level of poverty, food insecurity, the suffering of economies and possible increases in migration of coastal people to urban areas. Tens of millions of people could be forced to move from rural and coastal settings due to loss of homes, food resources and income, putting pressure on regional cities and surrounding nations.

Existing environmental degradation and other threats

Even without climate change, these three important cross-border areas of Southeast Asia have faced continuous challenges in terms of environmental degradation and other related threats. In GMS, ecosystems are under increasing pressure, and according to an Oxfam report (2007) "*the ability of natural resources to continue to support poor peoples' livelihoods in the Mekong is at a crisis point. Forests and rivers are in a state of rapid ecological decline caused by human over-exploitation*". Furthermore, economic development corridors (infrastructure development linking national boundaries) focusing on agricultural products and raw materials) cut through ecoregions fragmenting habitats (as seen in Figure 1), fuelling the resource-hungry economies of China, Vietnam, and Thailand. This has resulted in devastating impacts including illegal timber and wildlife trade, agricultural conversion and mass migration.

In HoB, despite its importance, Borneo has one of the world's highest deforestation rates. Once almost completely covered in forests, today half of the island's forest

cover remains. The remaining is mostly situated in the Heart of Borneo. Between 1985 and 2005, Borneo lost an average of 850,000 ha of forest annually. If the destruction continues reaching the Heart of Borneo, this will affect a source for at least 14 of the island's 20 major rivers. Maintaining the forests in good condition is therefore vital for the people, from ensuring the island's water and food supply, to moderating the impacts of droughts and fires, and to supporting ecological and economic stability in the lowlands.

At the same time, coastal and marine ecosystems in the Coral Triangle (as with coral reefs elsewhere) are already under extreme pressure from locally and regionally originating factors such as declining water quality, resource extraction and over-fishing. CT is part of an area that has emerged as one of the planet's economic hubs. Fast population and economic growth have fuelled unsustainable coastal development and boosted demand for expensive marine resources such as tuna, shark fin, turtle products and live reef fish. If the destruction continues, this will disturb multi-billion dollars of economies from tuna, tourism, and coral reef ecosystems.

Urgent action is required to avert the loss of coastal, forest and other terrestrial resources and the resulting growing vulnerability of human inhabitants to poverty in these three important cross-border natural resource management areas and the respected countries. Local and regional factors which have been driving continuous pressures to these ecosystems which contribute to decline in the level of ecosystems quality, goods and services, and unsustainable resource extraction, need to be addressed with a sense of urgency and combined efforts from different countries.

The impacts of climate change will worsen these already pressured ecosystems through the increase in the severity of droughts, flooding, fires, coral bleaching, the gradual increase in sea level rise, and the increase in frequency of extreme weathers including storms which will be destroying natural and human-made systems in the area. Climate adaptation strategies and variety of proper actions have to be developed within the Greater Mekong Sub-region, the Heart of Borneo and the Coral triangle, three important cross-border areas which can contribute to the improvement and healthier ecosystems of the areas and the strengthening the communities' resilience to climate change resilience.

Mainstreaming climate change adaptation-mitigation in the development agenda

Fortunately, there is still a window of opportunities for countries[4] in these three important cross-border areas to get their acts together to solve these climate and other environmental challenges. At global level, these countries need to push a stronger global climate agreement that sets out clearly plans and rules for reducing emissions so that these countries can develop their economies with confidence, while avoiding the increased vulnerability and impacts of extreme weather, economic disruption and social upheaval that will accompany severe climate change.

[4] GSM (Cambodia, Lao PDR, Thailand and Vietnam); HoB (Indonesia, Malaysia, and Brunei); CT (Indonesia, Thailand, Philippine, Papua New Guinea, Solomon Island and Timor Leste)

A new and stronger global climate agreement – which formal discussion and negotiation started in Bali – will also provide new economic opportunities by driving technological development and transfer, and asset turn-over, which in turn will lower the cost of emission reductions. Climate protection and development can go hand in hand; indeed they must for either to be successful.

In Greater Mekong sub-region, climate change will amplify development pressures and its interaction with these other global change drivers making this region one of the most vulnerable in the world. The challenge facing governments is to devise climate-smart development strategies that also conserve the region's globally important biodiversity, ecosystems and natural resources. This challenge can be met if the threats are addressed in an integrated and coordinated way within a harmonised regional legal framework.

There is a proposal to have an Asia's first regional climate adaptation agreement in GMS. This proposal would provide a substantial framework by forging innovative cooperation, incorporating sustainable solutions, and linking these solutions across all social, economic, and environmental sectors. This proposed agreement responds to the threats that undermine the region's development and poverty reduction achievements, and which transforms the region's development to a climate-resilient and low-carbon future. Such an agreement would establish common targets for development and conservation as well as implementation mechanisms that are coordinated at the regional scale to support the development aspirations of neighbouring countries.

The proposed agreement would incorporate climate change adaptation in development planning, guarantee transboundary management of high conservation value areas, implement regional standards for sustainable development and ensure that subsequent development is integrated around agreed regional land use plans. It is hoped that by 2011 government consensus on the need for a binding agreement would be reached and a legally binding Mekong Protocol in force by 2014.

On June 19th, 2009, actions to strengthen the subregion's resilience to climate change and help design and develop adaptation initiatives have been incorporated in the Joint Ministerial Statement of the Greater Mekong Subregion Economic Cooperation Program (ADB, 2009). This Joint Ministerial Statement also touches the importance of reducing environmental risks to local livelihoods and GMS development plans, including those posed by climate change and poor ecological infrastructure.

In the short-term, according to this statement, the countries in GMS will us BCI (Biodiversity Conservation Corridors Initiative) initiative to combine climate change resilience-enhancing and ecosystem protection efforts with effective channeling of economic stimulus to the rural poor within the economic corridors. Among the medium- to long-term priorities are renewable and clean energy, as well as environment-friendly and economically efficient transport and sustainable agricultural development. This pledge is a good starting point and if this continues to be realized on the ground in GMS, a better future could be achieved.

In the Heart of Borneo, series of meeting were convened in the region that pledged the importance of having a wider management unit to protect and sustainably develop these inland areas leading to a collective understandings and intentions to

develop sub-regional cooperation to conserve, maintain and manage forest connectivity. After years of high level of discussion at ASEAN and amongst three countries, an expression of commitment through declaration entitled "Three Countries, One Conservation Vision" was announced in Bali, Indonesia, on 12 February 2007.

Implementation frameworks that make this partnership operational were discussed in the 1st tri-lateral meeting hosted by the government of Brunei Darussalam in 19-20 July 2007. Programs and plans of actions were hence developed incorporating five pillars namely Transboundary Management, Protected Areas Management, Sustainable Natural Resource Management, Ecotourism Development, and Capacity Building.

Under these programs and plans of actions, countries in HoB have stated their interests to have extensive forests in adjacent areas in order to ensure the mitigation and adaptation to climate change, management of watersheds, conservation and benefit sharing of biodiversity richness, carbon stocks, and other environmental services. The HoB Initiative vision supports the maintenance of such forests and other sustainable land use that already in place, either unexploited or managed under sustainable harvesting practices.

HoB initiative has proven to be successful to halt the expansion of 1.8 million ha of oil palm plan in the border of Kalimantan and Malaysia. The initiative was able to give initial option to develop forest and terrestrial ecosystems in a sustainable way.

To strengthen this effort, HoB initiative will endeavour to use the opportunities from a global initiative which develop policy approaches and positive incentives to reduce emission from deforestation and forest degradation (REDD). Initial investment can be made to support the formulation of strong and credible architecture of REDD in HoB, which includes the creation of policies and measures to reduce and monitor deforestation and capacity building. There is a substantial need to support early actions in testing the REDD implementation which includes testing appropriate institutional arrangement, benefit-sharing mechanisms, and of course clear reduction of emission and avoidance of deforestation.

There have been some good learning processes on the ground amongst communities related to seedling, nursery management, and to institutional strengthening, which will for community based forest restoration and sustainable forest and agriculture management. These actions will also strengthen the communities' resilience to climate change since there have been some indications signaling the shifting in seasons and the increase in the frequency of natural disasters and extreme events in this area.

In Coral Triangle area, in May 2009, the six Coral Triangle Governments launched a Regional Plan of Action for the next decade adopted at the World Ocean Conference in Manado, Indonesia. This is one of the most detailed plans for ocean conservation and the fruit of an ambitious partnership – the Coral Triangle Initiative (CTI) on Coral Reefs, Fisheries and Food Security founded in December 2007 in Bali.

With regards to climate issues, there is a need to have strong actions to reduce the social, economic and biological impacts of climate change by developing adaptation

policies and providing funding, especially for establishing and managing networks of marine protected areas and promotion of sustainable coastal livelihood. Effective management of coastal resources through a range of options including locally-managed regional networks of marine protected areas, protection of mangrove and seagrass beds and effective management of fisheries would contribute to a slower decline in coastal and marine resources.

There is also a significant need for CT6 countries to push the World leaders to support these countries in their efforts to protect their most vulnerable communities from rising sea levels and loss of food and livelihoods by helping them to strengthen management of their marine resources and by forging a strong agreement on greenhouse gas reductions at the UN Climate Conference at Copenhagen in December this year. The incorporation of the text of oceans in the climate agreement can be viewed as one of good signs to address this issue.

To further succeed, the Coral Triangle Initiative not only needs unprecedented collaboration among the six national governments, but also to engage many stakeholders within and outside the region in an effort that recognises:

- a coastal population base of more than 100 million people and hundreds of political jurisdictions and entities within the Coral Triangle;
- millions of consumers outside the Coral Triangle;
- potentially hundreds of NGOs and scores of major donors;
- and large industries such as fisheries and tourism

Overall, countries in GMS, HoB and CT, need to proactively utilise practical decisions made during Bali COP-13 which incorporate, among others, REDD and adaptation fund. These two decisions are crucial to help developing countries in these three important cross-border areas to develop its economy while ensuring reducing carbon emissions and facing with the impacts of climate change.

Conclusion

Climate change is a grave threat to the economies, societies and the natural environment of the globe, and in particular of the Southeast Asia region. To avoid the worst impacts of climate change, the global objective of climate change policy should be to avoid a warming of 2^{o}C above pre-industrial levels.

If these are not obtained, the economic and livelihood of greater populations, especially in three important cross-border natural resource management areas (i.e. Greater Mekong sub-region, Heart of Borneo and Coral Triangle areas), will be in jeopardy. Impacts have been gradually felt in these three areas. These include the increase in the severity of droughts, flooding, fires, coral bleaching, the gradual increase in sea level rise, and the increase in frequency of extreme weathers including storms which will be destroying natural and human-made systems in the area.

The impacts of climate change will worsen these already pressured ecosystems due to illegal and destructive logging, over-fishing and over-exploitation of natural resources. These problems have contributed to tensions amongst countries and conflicts and social unrest amongst players and stakeholders on the ground.

The decision to avoid dangerous climate change and environmental degradation does not rest in the future, but with today's governments, business and society. The countries in these three important cross-border areas have come up with some joint collaborative initiatives which directly and indirectly address these environmental challenges. Stronger climate adaptation strategies and variety of proper actions have to be further developed and eventually implemented within the Greater Mekong Sub-region, the Heart of Borneo and the Coral triangle. This will hopefully contribute to the improvement and healthier ecosystems of the areas and the strengthening the communities' resilience to climate change resilience in these three important cross-border areas.

References

ADB, 2009. Greater Mekong Subregion Economic Cooperation Program – a joint ministerial statement, 19th June 2009, Cha-Am, Thailand.

Eastham, J., F. Mpelasoka, M. Mainuddin, C.Ticehurst, P. Dyce, G. Hodgson, R. Ali and M. Kirby, 2008. *Mekong River Basin Water Resources Assessment: Impacts of Climate Change*. CSIRO: Water for a Healthy Country National Research Flagship.

Hariri, D., and I. Ardiansyah, 2007. *Mungkinkah target penurunan titik panas hingga 50% tercapai?*, WWF-Indonesia, Jakarta.

IPCC, 2007. Intergovernmental Panel on Climate Change Working Group III (IPCC WG II) 2007 – Working Group II contribution to the IPCC Fourth Assessment Report Climate Change 2007: Impacts, Adaptation and Vulnerability: Summary for Policy Makers.

Saleh, C., Y. Firdaus and M. Suhud, 2009. Scoping for climate impacts in Kapus Hulu forest corridor – a report, Jakarta, WWF-Indonesia.

WWF and the University of Queensland, 2009. *The Coral Triangle and Climate Change – ecosystems, people and societies at risk*, Sydney, Australia.

Willson Center, 2008. Troubled Waters: Anticipating, Preventing, and Resolving Conflict Around Fisheries, http://www.wilsoncenter.org/ondemand/index.cfm?fuseaction=Media.play&mediaid=985ECECD-C940-2E5E-52A8CCD06E126428

About the author

Fitrian Ardiansyah obtained a Master degree in Environmental Management and Development from the Australian National University, Canberra, focusing on **Ecological and Environmental Economics**. Previously, he obtained a bachelor degree at the Environmental Engineering Department, the Institute of Technology, Bandung, focusing on Environmental Quality Management. He has more than 11 years working experience in the field of ecological and environmental economics, natural resource management, integrated spatial and land use planning, sustainable commodities, sustainable forest management as well as climate change and energy.

His geographical coverage of works includes areas inside Indonesia and the Asia Pacific. He now serves as Program Director for Climate and Energy, WWF-Indonesia. In the field of global commodities, he is a former active member of Criteria Working Group in the Roundtable on Sustainable Palm Oil/RSPO (producing Principles and Criteria on Sustainable Palm Oil), a former member of the Executive Board of RSPO, a member of the Global Youth Forum on Agriculture Research and Development, an Advisory Board member of Asian Young Leaders Climate Forum, a technical expert member of the Roundtable on Sustainable Biofuels (RSB). In the current field of climate and energy, he is one of the experts of the Indonesia Forest Climate Alliance (IFCA) that is focusing in developing the framework of REDD (reducing emissions from deforestation and degradation) in Indonesia and currently serving as a member of Indonesian Official Delegates to UNFCCC (United Nations Framework Convention of Climate Change).

Fitrian has been active in writing articles and contributing to publications for reputable media and organizations. He is an accomplished speaker and presenter at different national and international fora, including recently at the Asia Pacific Summit of Al Gore's Climate Project.