

## POLICY BRIEF COMPETITION OUTPUT

# Nusantara Blue Carbon Trading and Insurance (NBCTI) as a Funding Scheme for Low Carbon Development and Coastal Natural Resource Protection

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## Summary

The government's budget can only meet 34% of the entire climate finance demands of IDR 3,461 trillion. Given this condition, it is evident that financing sustainable development cannot rely simply on the budget of the government. In order for Indonesia to fulfill its ambitious climate change targets, a new financing mechanism is required. Through Nusantara Blue Carbon Trading and Insurance, this policy brief proposes alternative climate change funding that simultaneously acts as a concrete environmental investment (NBCTI). This aligns with the Sustainable Development Goals 13 and 14. By applying the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) mechanism, ETS (Emission Trading System), and infusing the concept of general insurance with carbon objects, Indonesia has the potential to profit, particularly with the utilization of blue carbon as a commodity.

## Climate Change Effects and Indonesia's Targets

As one of the greatest issues the international community must face, climate change is an unavoidable fact. There have been numerous global agreements devoted to discussing this subject; the Conference of the Parties (COP) is one of the most important. In an effort to combat climate change, COP, which is convened once a year, has been able to achieve numerous macro- and micro-level accords in each of its member nations. Indonesia, one of the top ten countries emitting the most carbon emissions worldwide (Worldmeter, 2022), is committed to lowering emissions by up to 41% by 2030 through international cooperation. As a follow-up, on July 4, 2017, the President issued Presidential Regulation No. 59 of 2017 concerning the Implementation of the Achievement of SDGs, and a National SDGs coordination team was constituted under the direction of the Minister of National Development Planning.

The national Sustainable Development Goals (SDGs) include a lengthy discussion on climate change in Point 13: Climate Action. Public policies and funding are crucial to attaining these objectives. As stated on the official website of the Ministry of Finance of the Republic of Indonesia, Sri Mulyani Indrawati, Minister of Finance, disclosed that the government's budget can only pay 34% of the overall climate finance needs of IDR 3,461 trillion, or approximately IDR 266 trillion every year. Given this situation, it is evident that the requirement for sustainable financing cannot rely simply on the budget of the government. In order for Indonesia to fulfill its ambitious climate change targets, which can have direct effects on the livelihoods of the populace, a new mechanism or technique of investment is required.

Alternatively, in an effort to minimize carbon emissions, the Land Use Land Use Change and Forestry

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(LULUCF) sector has the potential to become a field for reducing carbon emissions. According to the Nationally Determined Contribution (NDC), forestry accounts for 17.2% of the decrease in emissions. Among the forest types that can be improved is the ecosystem of coastal mangroves. Mangroves are large storehouses of carbon. For Indonesia, mangroves are an important negotiating card in facing climate change negotiations in Paris, December 2015. About 3 million hectares of mangrove forests grow along 95,000 kilometers of Indonesia's coast. This number represents 23% of the entire world's mangrove ecosystems (Giri et al., 2011).

Apart from being the largest, Indonesia's mangroves are also one of the world's carbon-rich forests. Mangrove forests store four times more carbon per hectare than upland tropical forests (Indonesian Agency for Marine and Fisheries Research and Development, 2015). Mangroves contribute 10-15% of coastal sediment carbon storage while global coastal areas only contribute 0.5% (Alongi, 2014). Indonesia's mangroves store 3.14 billion metric tons of carbon (PgC) (Murdiyarto et al., 2015). This amount includes one-third of global coastal carbon stocks (Pendleton et al., 2012).

Unfortunately, in the last three decades, Indonesia has lost 40% of its mangroves (FAO, 2007). This puts Indonesia at the fastest rate of mangrove destruction in the world (Campbell & Brown, 2015). Mangrove deforestation in Indonesia results in the loss of 190 million metric tons of CO<sub>2</sub> annually. This figure accounts for 42% of global greenhouse gas emissions due to the destruction of coastal ecosystems, including swamps, mangroves, and seaweed (Murdiyarto et al., 2015; Pendleton et al., 2012). That is why conserving Indonesia's mangrove forests is crucial in fighting global climate change.

By preventing mangrove deforestation, Indonesia can meet a quarter of its 2020 emission reduction target (Murdiyarto et al., 2015). Land-use change is the main cause of mangrove deforestation in Indonesia. This means that the aspect of monitoring is one of the weaknesses that must be addressed immediately so that mangrove forests can be conserved.

Through Nusantara Blue Carbon Trading and Insurance, this policy brief proposes a comprehensive solution to conserve mangroves ecosystems that simultaneously acts as a climate change funding. This aligns with the Sustainable Development Goals' 13.3, 13.a, 13.b, 14.5, 14.7, and 14.c. targets. Indonesia has the potential to gain from the implementation of REDD+ (Reducing Emissions from Deforestation and Forest Degradation) and ETS (Emission Trading System), particularly with blue carbon as a traded commodity. In addition, a national insurance mechanism is included so that the blue carbon protection function in Indonesia may be adequately assured.

## The Nusantara Blue Carbon Trading and Insurance Scheme

Conceptually, the NBCTI mechanism refers to the REDD+ (Reducing Emissions from Deforestation and Forest Degradation) program governed by Minister of Environment and Forestry Regulation No. 70 of 2017 and the ETS (Emission Trading System) governed by Presidential Regulation No. 98 of 2021. Nonetheless, this policy's development also focuses on the insurance plan for blue carbon commodities. NBCTI exists as a solution to improve the quality of monitoring and management of mangrove conservation, by involving the community, NGOs, provincial and central government, as well as private sector and international parties.

The idea of NBCTI has 2 main activities, namely blue carbon insurance and blue carbon trading (blue carbon: carbon stocks of coastal ecosystems and one of the largest is mangroves). Basically, this idea is the development of the merger between COP 3 Kyoto (about Kyoto Protocol), COP 21 Paris (Paris Agreement), COP 22 Marrakesh (Marrakesh Declaration), and COP 27 Sharm el-Sheikh (Sharm el-Sheikh Climate Change Conference).

### The Concept of Blue Carbon Insurance

Insurance is a concept that arises because of concerns. This concern is based on the estimation of the total loss in the future due to a certain reason. In this case, the issue of concern is the impact of climate change, in the form of natural disasters and other losses. This insurance is carried out nationally in Indonesia. In the first step of the idea, mangroves are guaranteed, both in quality and quantity, through the mangrove carbon insurance mechanism. The blue carbon insurance mechanism is chosen because it is a powerful way to tackle the impact of climate change and can be borne together.

Fundamentally, the carbon insurance system is offered as a possible means of protecting coastal natural resources that can be shared. As with the general application of the insurance concept, the blue carbon insurance program (specifically in mangroves) involves two primary stakeholders.

Central Government (The Insurer)	Provincial Government (The Insured)
<ul style="list-style-type: none"> <li>• Manage the fund through BPD LH</li> <li>• Develop a national strategy or action plan for emission control with NBCTI</li> <li>• Indonesian blue carbon commodity monitoring</li> <li>• Preparation of protections, including determination of each province's blue carbon rehabilitation area</li> <li>• Conduct monitoring, reporting, and verification (MRV)</li> <li>• Establish reward and disincentive schemes for the insured party.</li> </ul>	<ul style="list-style-type: none"> <li>• Develop strategies and plans for NBCTI implementation in their respective regions</li> <li>• Arrangement of protections</li> <li>• Develop plans for NBCTI profit sharing that are optimal and sustainable.</li> <li>• In compliance with insurance regulations, provinces must pay insurance premiums and have the right to receive insurance policy (rehabilitation coverage).</li> <li>• Responsible for achieving the mangrove rehabilitation safeguards framework</li> </ul>

Figure 1. The Two Main Actors and Their Roles in NBCTI Nationally  
Source: Authors Analysis (2023)

The insured and the insurer are the entities involved in this notion. The insured is the provincial government responsible for the coastal region in their jurisdiction, which is represented by the NBCTI implementing party. In this notion, the insured party requests protection from the insurer (the central government) by paying a set amount of money for a specific time period, or an insurance premium. The purpose of premium payments is to mitigate unforeseen risks.

To sum up, the blue carbon insurance system involves the following two stakeholders:

- 1) Provincial Government, as the insured and responsible party for Coastal and Small Islands. This insured party is responsible for the conservation and rehabilitation of local mangroves.

- 2) The central government or state of Indonesia, as the insurer/guarantor and producer/seller of blue carbon as well, Through BPD LH, all carbon credits that have through the MRV process from all insured parties (a total of 38 provinces in Indonesia) are aggregated and incorporated as Indonesian carbon credits. This quantity will thereafter be available for trading on the carbon market with Annex I nations or the private sector.

In an effort to enhance the performance of the province (the insured), there are also incentive and disincentive schemes in place. This provision requires the federal government to share profits with provinces that have performed successfully in restoring blue carbon ecosystems (incentive mechanism). However, if there is a fall in blue carbon ecosystem commodities, the insured party will receive a disincentive in the form of a reduction in the cost of distribution. Nonetheless, the province remains to acquire an insurance policy to enable the rehabilitation of its degrading blue carbon land.

As a holistic protection concept, NBCTI prioritizes not only ecology-economics but also human welfare. In the course of implementing blue carbon rehabilitation, the insured party must accommodate local coastal residents. The key to the success of blue carbon ecosystem restoration is coastal communities.

### **The Concept of Blue Carbon Trading**

Carbon trading involves other countries and private sectors as buyers of Indonesia's mangrove carbon sequestration. In this carbon trading, Indonesia as a carbon sink country will benefit from emitting countries, which on average are developed countries. The profits obtained by the Indonesian government from the proceeds of blue carbon trading are then used for financing and monitoring of mangrove conservation.

Blue carbon trading is a development of carbon trading in general which often uses carbon sequestration from trees on the land. The carbon trading plan at NBCTI is inspired by the largest forest-based emission prevention initiative in the world, the Katingan Mentaya project, which can effectively execute the ETS system. The Katingan Mentaya Project's carbon trading program involves the local and international purchase of carbon credits to enterprises that create carbon in excess of the specified limit (offsetting).

The utilization of blue carbon, such as mangroves, is the primary distinction between carbon trading in the Katingan Mentaya project and the NBCTI project. Mangroves can absorb 33 billion tons of carbon with an area of only 3.31 million hectares (approximately 2.6% of the total area of Indonesia's tropical rain forests; 125.9 million hectares). This computation is greater than all of Indonesia's tropical rain forests combined. With this enhanced capacity for absorption, NBCTI's proposition is a tantalizing idea to consider. In addition, carbon credits from a particular form of blue carbon are sold to parties seeking to offset emissions.

Industrial countries (Annex I/Annex B) and the private sector that have attained the offset emission from the prescribed carbon credits will subsequently work with Indonesia through efforts to rehabilitate commodity blue carbon ecosystems. This method is very intriguing, as it involves mutualism. For other countries (Annex I/Annex B) and the private sector, exorbitant fines for excess carbon emissions will not be imposed, whereas Indonesia will be able to boost

state revenues and restore its blue carbon ecosystem. In addition, after the collaboration has begun, a carbon credit certificate representing the rehabilitation effort will be created and thereafter exchanged on the carbon market. After Measurement, Reporting, and Verification (MRV) of the NBCTI implementation results, the state or private sector with an agreement with Indonesia will pay for carbon credits.

Internally, the organization that oversees the ETS NBCTI mechanism and trading proceeds is the Environmental Fund Manager (BPDLH), which is regarded as the guarantor under the insurance mechanism. Ongoing funding for carbon insurance initiatives will come from trading results.

To summarize the concept of blue carbon trading and blue carbon insurance, the following is the general framework for the Nusantara Blue Carbon Trading and Insurance concept.

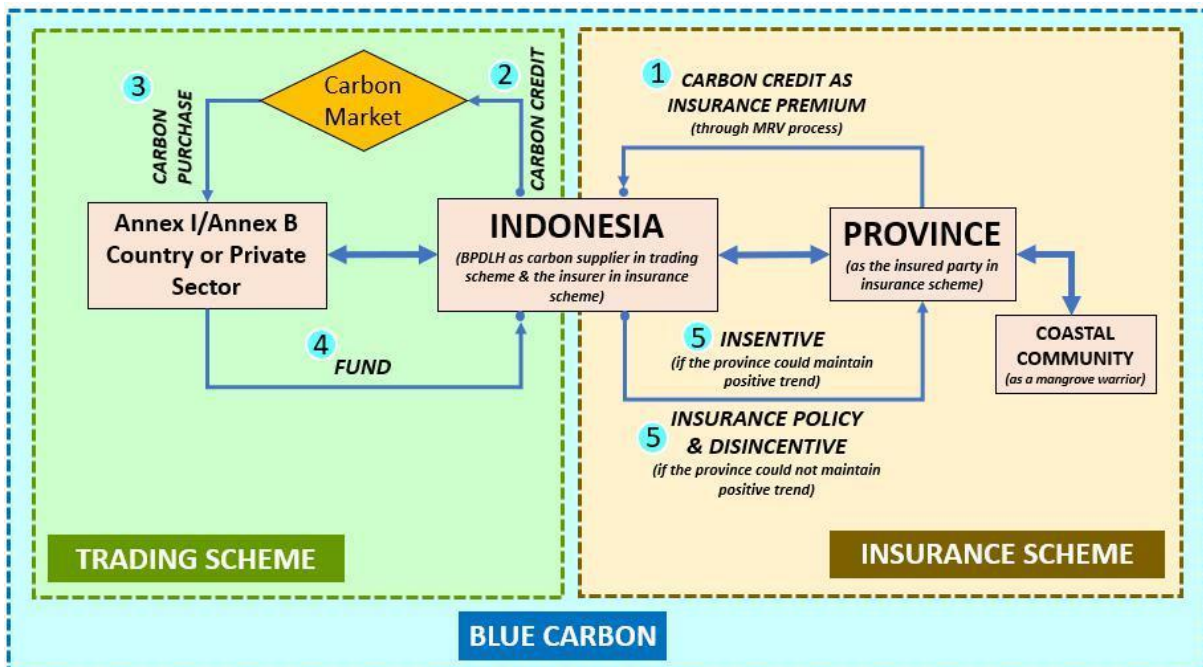


Figure 2. Nusantara Blue Carbon Trading and Insurance (NBCTI) Framework  
Source: Authors Analysis (2023)

## Policy Implications and Recommendations

Nusantara Blue Carbon Trading and Insurance is an alternative for low-carbon development financing and comprehensive protection of coastal natural resources through insurance schemes within the internal scope of Indonesia and trading schemes within the domestic and international scopes. The NBCTI concept executes a future environmental investment strategy centered on blue carbon ecosystems by utilizing insurance instruments in bilateral agreements. The insurance also protects all aspects associated with the development of coastal ecosystems, beginning with coastal communities and extending to all levels of local and central government. This approach is advantageous not just from an ecological and economic standpoint, but also from a social perspective.

Regarding the NBCTI scheme, this will undoubtedly be a reinforcement of presidential decree No. 98 of 2021 in terms of promoting the implementation of carbon pricing to accomplish

sustainable development objectives (SDGs 13 and 14 related to climate change and safeguarding marine ecosystems).

As with future megaprojects, the implementation of this initiative requires the cooperation of multiple parties. The following parties may be involved:

- 1) **Central Government:** The Ministry of Environment and Forestry has the authority to establish policies for the surveillance, management, and conservation of the Blue carbon sink ecosystem region. Additionally, the Ministry of Agrarian Affairs and Spatial Planning, and the Marine and Fisheries Service are responsible for managing the ecosystem's spatial layout. In terms of policy development, assistance is required from the Ministry of Finance in terms of blending carbon trading regimes through the Fiscal Policy Agency.
- 2) **Regional (Provincial and Municipal) Government:** The authority of the local government can assume the majority of direct supervision and management responsibilities.
- 3) **International Agency:** The United Nations Development Program (UNDP) plays a role in executing the NBCTI concept by developing ecologically sustainable development, while the Intergovernmental Panel on Climate Change (IPCC) oversees the implementation of carbon trading and bilateral agreements.
- 4) **Coastal Communities:** Charged with monitoring the blue carbon environment region.

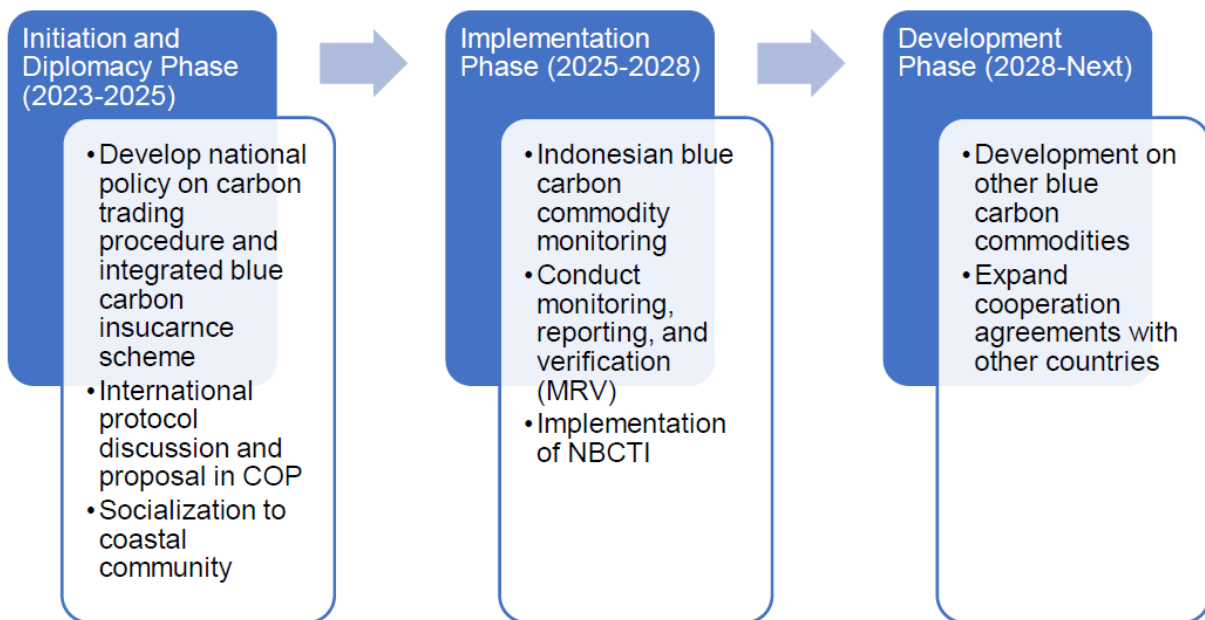


Figure 3. NBCTI Implementation Strategic Steps  
Source: Authors Analysis (2023)

The suggested NBCTI scheme is fundamentally consistent with Sustainable Development Goals 13.3, 13.a, 13.b, 14.5, 14.7, and 14.c. Nevertheless, in implementing NBCTI, there are a number of strategic targets that are proposed to the two most important domestic stakeholders (Figure 3).

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