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Sequestered Solutions: The Crucial Role of Blue Carbon Ecosystems in Southeast Asia

By Keith Paolo C. Landicho

Southeast Asia is home to some of the [world's largest blue carbon stocks](#), with 37% of the world's mangroves and 23% of seagrass meadows, yet it is also experiencing alarming rates of loss. Yet from 2002 to 2012, 2.5 million hectares of mangroves have been lost, while seagrass meadows have been reduced by 20,000 hectares per annum, owing to several pressures such as coastal development, pollution, and rising sea levels. Moreover, the rapid degradation of these ecosystems poses a significant threat not only to biodiversity but also to the region's ability to withstand climate-related natural hazards and mitigate climate change effectively, as these habitats are crucial for carbon sequestration.

Despite the immense potential of mangroves and coastal wetlands to capture or sequester carbon, there has been minimal progress in countries in Southeast Asia to recognise and protect these resources. Only Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Timor-Leste, and Vietnam have recognised these ecosystems in their [Nationally Determined Contributions](#) (NDCs), a climate action plan to cut emissions and adapt to climate impacts, under the Paris Agreement. Even among these countries, only Timor-Leste and Vietnam acknowledge the eco-

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systems' capacity as "carbon sinks" which absorb more carbon from the atmosphere than they release. As for the others, the mention of enhancing the protection, conservation, restoration, and preservation of these ecosystems is a step in the right direction.

Blue Carbon Ecosystems

Blue carbon refers to the carbon dioxide captured from the atmosphere by coastal and marine ecosystems like mangroves, salt marshes, and seagrasses. Blue carbon ecosystems are highly efficient in capturing and storing atmospheric carbon dioxide in the biomass and sediments—[up to ten times greater than tropical forests and three to five times more carbon per equivalent area than tropical forests.](#)

Blue carbon ecosystems are also able to provide benefits such as coastal protection, habitat for marine life, and water filtration. In terms of protection, mangroves play a key role in suppressing wind and storm surge impacts on adjacent coastal communities. This was affirmed in a study conducted by [Krauss and Osland](#) (2019) and even considering the changing climate conditions by [Blakespoor et al.](#) (2017). In fact, a representative of Yagasu, an Indonesian non-governmental organisation, highlighted how a village in Aceh Besar district in Aceh province of Indonesia, suffered only minor losses in the 2004 Indian Ocean Tsunami—[mangrove forest \(of about 200 metres\) fringing the village.](#)

The carbon-storing capability of blue carbon ecosystems can be characterised as a [double-edged sword](#). The degradation of these ecosystems can release the large amounts of sequestered carbon back into the atmosphere and ocean. Additionally, climate change accelerates this degradation. Rising sea levels, increased storm intensity, and changes in temperature and salinity weaken these ecosystems, making them more vulnerable to erosion and habitat loss. As they degrade, the carbon they once stored is re-released, amplifying the challenges of climate change mitigation.

Blue carbon ecosystems are also under pressure from industries such as [aquaculture](#) and [agriculture](#) which continue to drive the destruction of blue carbon ecosystems. This destruction is often compounded by the fact that many local communities who live near these ecosystems depend on

them for their livelihoods, creating a conflict between economic development and environmental conservation.

Blue Carbon Science into Policy

The [ASEAN Blue Economy Framework](#), adopted in September 2023, seeks to drive sustainable economic growth by harnessing the region's abundant marine resources. The blue economy offers a dual opportunity, it not only fuels economic development but also addresses pressing environmental challenges. The framework supports social progress while ensuring environmental protection to meet both present and future needs, and aligns with the [ASEAN Community Vision 2025](#)'s emphasis on a sustainable and inclusive community.

Assessing the influence of regional initiatives focused on blue carbon conservation, protection, restoration, and preservation on national strategies would be invaluable. This is particularly crucial for countries that have yet to integrate blue carbon ecosystems into their NDCs. Such efforts will enable Southeast Asian nations to achieve two key objectives: enhancing climate resilience and promoting sustainable development.

SUGGESTED READINGS

ASEAN Studies Center. (2023). *Redefining commodities in international trade: ASEAN Blue Carbon Initiative and its role in navigating climate crisis in the Southeast Asia region.* ASEAN Studies Center, Universitas Gadjah Mada.

Stankovic, Milica & Mishra, Amrit & Rahayu, Yasmiana & Lefcheck, Jonathan & Murdiyaraso, Daniel & Friess, Dan & Ćorkalo, Marko & Vukovic, Teodora & Vanderklift, Mat & Farooq, Syed Hilal & Gaitán-Espitia, Juan Diego & Prathep, Anchana. (2023). *Blue carbon assessments of seagrass and mangrove ecosystems in South and Southeast Asia: Current progress and knowledge gaps.* The Science of The Total Environment. 166618.

UBS Optimus Foundation & UBS Climate Collective. (2023). *The Big Blue: Supporting Blue Carbon Ecosystems in Southeast Asia.*

World Economic Forum. (2022). *Blue carbon: The potential of coastal and oceanic climate action.* World Economic Forum.

CLIMATE CHANGE



NEWS & COMMENTARIES

Climate change is already forcing millions of people to migrate – and it will only get worse

The International Organisation for Migration estimated earlier this year that some 7.4m Africans left their homes in 2022 because of the effects of climate change. Some were driven out overnight by cyclones, or flooding, and hope to return when the disasters have abated.

Ben Farmer

The Telegraph | 5 September 2024

Tens of thousands in South Korea protest lack of climate progress

More than 30,000 protesters gathered in South Korea's capital, demanding more aggressive action by the government to combat global warming.

Sebin Choi and Daewoung Kim

Reuters | 7 September 2024

Climate change could wipe out Bali's iconic padi fields and other top Unesco sites: Study

Bali's picturesque subak rice fields could face extinction owing to climate change, leaving the island's landscape and way of life irrevocably altered. But such a scenario can be avoided with countermeasures to cope with changing rainfall patterns, among others.

Linda Yulisman

The Straits Times | 7 September 2024

Fighting climate change: Over 15ha of mangroves planted in Indonesia under Temasek Foundation's efforts

In efforts to revitalise the area and improve livelihoods, Singapore's Temasek Foundation – the philanthropic arm of state investment firm Temasek – teamed up with Indonesian partners in 2021 to begin a community-based mangrove restoration programme in Indonesia's Banyuasin in South Sumatra province.

Saifulbahri Ismail and Louisa Tang

Channel News Asia | 9 September 2024

SELECTED PUBLICATIONS

State of the climate in Africa 2023

In Africa, 2023 was one of the three warmest years in the 124-year record, depending on the dataset used. The mean temperature was 0.61°C higher than the 1991–2020 average and 1.28°C higher than the 1961–1990 average. The African continent warmed at a rate of +0.3°C/decade between 1991 and 2023, a slightly faster rate than the global average.

Geneva: World Meteorological Organization
2024

Climate change, vulnerability and migration: Impacts on children and youth in Southeast Asia

This report examines the impacts of labour migration on children in the context of climate change – whether they stay behind or migrate themselves. Through interviews with pre-adolescents and teenagers in six villages in Cambodia, Laos and Vietnam, as well as young returned migrants, migrant parents and grandparents, it portrays life at the intersection of climate change, poverty, marginalization and injustice.

Vigil, S., et al.

World Vision International and Stockholm Environment Institute | 2024

EVENT & ANNOUNCEMENT

World Maritime Day

This year's theme, "Navigating the future: safety first!" reflects the International Maritime Organization's (IMO) work to enhance maritime safety and security, in tandem with the protection of the marine environment, whilst ensuring its regulatory development process safely anticipates the fast pace of technological change and innovation.

Worldwide

26 September 2024

ENERGY SECURITY



NEWS & COMMENTARIES

Is Southeast Asia's nuclear power ambition within reach?

As governments in Southeast Asia find ways to achieve clean and secure energy systems, there is growing interest in the possibility that nuclear power, through advanced small reactors, will be the region's source of clean energy in the future. However, they would first need to enhance their existing nuclear governance frameworks and mechanisms.

Julius Cesar Trajano and Mely Caballero-Anthony

RSIS Commentary | 15 August 2024

Asia-Pacific region may miss RE targets

Countries in the Asia-Pacific region except China are likely to miss their renewable energy (RE) targets by 2030 if they don't come up with solid policies that would attract investments and boost capacity.

Vincent Mariel Galang

Aisan Power | 4 September 2024

Indonesia to launch nuclear watchdog and pursue domestic uranium production

Indonesia is set to establish the Nuclear Energy Program Implementation Organization (NEPIO) this year, a key step in its nuclear energy strategy that includes plans for domestic uranium production.

Antara

Jakarta Globe | 9 September 2024

Southeast Asia expected to boost coal trade as China approaches peak

Governments' focus on energy security and affordability has supported the continued use of coal, particularly as it helps to keep electricity tariffs relatively low.

Sudarshan Varadhan

Reuters | 10 September 2024

SELECTED PUBLICATIONS

Phasing out coal power in two major Southeast Asian thermal coal economies: Indonesia and Vietnam

The study finds that a two-pronged approach of prioritizing renewable energy growth, alongside halting the construction of new coal plants, would be the most practical and viable way forward to reduce coal dependence in both countries, rather than an "oversized" early focus on coal plant closures.

Thang Nam Do and Paul Burke

Energy for Sustainable Development, Vol. 80 | 2024

The elusive quest for sustainable mini-grid electrification: New evidence from Indonesia

This report finds that many "mini-grids" for rural electrification in Indonesia did not operate properly a few years after commissioning. This finding corroborating older concerns about the sustainability of mini-grids that have been voiced for several years.

Mike Duthie, et al.

Energy for Sustainable Development, Vol. 80 | 2024

EVENT & ANNOUNCEMENT

Asia Clean Energy Summit

ACES is the region's leading event focusing on clean energy technology, policy and finance supported by leading government agencies, research institutes and industry in Singapore.

Singapore

22-24 October 2024

FOOD SECURITY



NEWS & COMMENTARIES

Romania condemns Russia's 'deliberate attack on cargo ship' carrying Ukrainian grain

On 11 September, Russia reportedly struck a cargo ship carrying 25,000 tonnes of grains after it left Ukraine's port. Russia has not signed on to continuing the Turkey-brokered Black Sea Grain Deal which allows safe passage of cargo across the Black Sea. Romania's Foreign Ministry decried Russia's reported act as an "unprecedented escalation" of the war in Ukraine.

Martin Fornusek

The Kyiv Independent | 13 September 2024

India leads with world's largest food-based safety net programs: MoS agri

During the recent G20 Agriculture Ministerial Meeting in Cuiab, Brazil on September 12-14, 2024, India's minister highlighted its food-based safety net programs as a best practice, with close to 800 million food "ration card holders" benefitting from its Public Distribution System according to the [website](#) of the National Food Security Portal.

Press Trust of India

The Business Standard | 14 September 2024

PM Anwar calls for immediate halt to fertiliser, seed monopolies

Malaysia's Prime Minister Datu Seri Anwar Ibrahim sent a strong message to cartels and monopolies for agricultural inputs such as seed and fertiliser, warning that these industries "can no longer be controlled (... by them) like before." He stressed the food sector is a crucial pillar that the country must develop and focus on.

Bernama

Bernama | 14 September 2024

China's fading hunger for grain spells trouble for world farmers

China's push for greater domestic food production and reduced import dependence in agriculture, makes more grains available in international markets, potentially easing pressure on global food price inflation. However, this approach is starting to hurt the farmers in the countries which used to be significant exporters to China such as farmers in the United States, Australia and France.

Bloomberg

The Straits Times | 16 September 2024

SELECTED PUBLICATIONS

Impact of crop commercialization on smallholder farmers' resilience to shocks: Evidence from panel data for rural Southeast Asia

This study measures the impact of commercialisation of crop farming on the resilience of farmers to shocks in Thailand and Vietnam. The former is measured by the share of crops sold, while the latter is measured by the stability of food consumption patterns amid shocks. Their findings reflected a positive impact, namely, that food consumption patterns of farmers which are commercialised (i.e., selling crops rather than using them for subsistence) are less likely to be impacted by shocks relative to subsistence farmers.

Manh Hung Do and Trung Thanh Nguyen

Food Policy | October 2024

Validating the food insecurity experience scale for use in analyses of recent food insecurity

The authors conducted a quantitative assessment to test whether the UN Food and Agriculture Organization's (FAO) tool, the Food Insecurity Experience Scale (FIES), can be used as a basis for reliably estimating the prevalence of acute food insecurity during shocks. It finds that the FIES can indeed be used to inform the FAO's Integrated Food Security Phase Classification (IPC) which informs emergency responses as well as medium/long-term policy planning in crises-ridden countries, following a set of methods and parameters suggested by the authors.

Carlo Cafiero, Filippo Gheri and Sara Viviani

Global Food Security | 2024

EVENT & ANNOUNCEMENT

Global Agri-Food Scientific Symposium 2024

The event aims to bring together researchers, scientists and technology providers to encourage the exchange of knowledge and catalyse scientific discussions amongst those with an interest in the food ecosystem. This platform serves to advance cutting edge science, technology and innovation, and foster collaboration to build agri-food capabilities for climate-resilient and sustainable food ecosystems.

Singapore

21-22 November 2024

HEALTH SECURITY



Photo Credit: Freepik.com

NEWS & COMMENTARIES

UNICEF issues emergency tender to secure mpox vaccines for crisis-hit countries in collaboration with Africa CDC, Gavi and WHO

UNICEF, in collaboration with the Africa Centre for Disease Control, the World Health Organisation (WHO), the Global Vaccine Alliance and other partners, issued an emergency tender for monkeypox (mpox) vaccines. It pushed for swift global vaccine distribution is essential to contain outbreaks, over 18,000 cases in Congo alone.

UNICEF

31 August 2024

Mpox vaccines to be offered to healthcare workers at highest risk and close contacts of confirmed cases

This was announced at a press conference on Wednesday (Sep 4) against the backdrop of growing concern about the “clade 1” strain, which prompted the WHO to declare mpox a global public health emergency for the second time in two years.

Ang Hwee Min and Vanessa Lim

Channel News Asia | 6 September 2024

Parliamentarians call for strengthening health workforce in the Asia Pacific

The eighth Asia-Pacific Parliamentarian Forum on Global Health concluded on 6 September 2024, with parliamentarians from thirteen countries in the Asia Pacific region emphasizing the need for a strengthened health workforce, which is essential for achieving health for all.

World Health Organization

6 September 2024

High-level mission to Sudan reaffirms WHO commitment, calls for urgent action to address and end the extreme health and humanitarian crisis

WHO Director-General Dr. Tedros Ghebreyesus and Regional Director Dr. Hanan Balkhy, completed a mission to Port Sudan, calling for urgent global action to address Sudan’s severe conflict-induced health and humanitarian crisis which is impacting millions.

World Health Organization

9 September 2024

SELECTED PUBLICATIONS

AI and biosecurity: The need for governance

Advances in AI models using large-scale biological data could greatly benefit humanity, enhancing drug development and crop yields, but also present significant risks.

Doni Bloomfield et al.

Science, Vol. 385, Issue 6711, pp. 831-833 | 2024

Temperature-related mortality burden and projected change in 1368 European regions: A modelling study

Climate change will worsen temperature-related mortality in Europe, especially in southern regions. Heat-related deaths are anticipated to rise, exacerbating health inequalities and impacting older populations by 2100.

David García-León, PhD et al.

The Lancet Public Health, Vol. 9, Issue 9, E644-E653 | 2024

EVENT & ANNOUNCEMENT

FAO Global Conference on Animal Health Innovation, Reference Centres and Vaccines

The Food and Agriculture Organization of the United Nations (FAO) is organizing its first-ever Global Conference on Animal Health Innovation, Reference Centres and Vaccines from 23 to 25 September at the FAO’s headquarters. The event aims to advance global efforts to enhance animal health, prevent disease outbreaks, and promote sustainable livestock production and One Health implementation, all while protecting human health and food security.

FAO Headquarters in Rome, Italy

23-25 September 2024

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF



Photo Credit: DFID - UK Department for International Development via Flickr.com/Creative Commons

NEWS & COMMENTARIES

Military humanitarianism in Southeast Asia: Through a women, peace and security lens

While militaries are becoming more prominent in the humanitarian space due to their functionality, there is also a need to integrate a gendered perspective – specifically through the use of the women, peace and security (WPS) agenda – to shed light on the specific risks of women and girls in disaster contexts.

S. Nanthini

NTS Insight | 20 August 2024

Humanitarian reform beyond the mega-crisis

While the belief that mega crises bring transformative change may have some basis in reality as reflected in previous events, the humanitarian system seems to be at an impasse.

Eleanor Davey, Fernando Espada and Kim Scriven

Humanitarian Practice Network | 10 September 2024

Dutch philanthropy to close Hong Kong office citing national security law

Porticus will be closing its Hong Kong office to open a new regional hub in Malaysia, with challenges posed by the city's national security law cited as one of the reasons for the move. This is despite previous advice received by the company that the national security law posed no threat to the organisation.

Jacob Goldberg

The New Humanitarian | 11 September 2024

Saving lives in a disaster: Singapore sets up emergency medical team certified by WHO

With Singapore's newly WHO-certified emergency medical team, it will now be country the 13th in the Western Pacific region to host such a team. This team is can now be deployed internationally within 72 hours when needed.

Lee Li Ying

The Straits Times | 13 September 2024

SELECTED PUBLICATIONS

Untangling the reality of famine in Gaza

Considering the rapidly worsening hunger trajectory in Gaza, there needs to a more widespread and enduring course-correction on aid access, civilian protection, and humanitarian security, to prevent the risk of famine conditions spiralling once again.

Refugees International

2024

Early warning systems in fragility, conflict, and violence-affected settings: Shielding communities from natural hazards amid compounded crises

This report looks at early warning systems for hydrometeorological disasters and the lessons learnt from these operations. It also highlights the particular challenges faced in settings of fragility, conflict and violence, where cascading risks can have amplified effects.

GFDRR

2024

EVENT & ANNOUNCEMENT

Women Leading Climate Action

Bringing together experts from around the region, this webinar explored the various ways in which women have been keeping climate action on the global agenda.

Webinar

2024

MIGRATION



Photo Credit: Wikimedia Commons

NEWS & COMMENTARIES

Far from home: Migrant workers from Philippines, Indonesia chase higher wages abroad, but at what cost?

Migration abroad has been a way to chase better opportunities and wages, with overseas worker remittances contributing 9.2 percent of the country's GDP alone. For many though, working overseas comes at a cost of being separated from their families/children for long periods of time. Governments should pay closer attention to such underlying social costs.

Nivell Rayda

CNA | 25 August 2024

Germany tightens controls at all borders in immigration crackdown

Germany has announced plans to tighten its border controls in an attempt to tackle irregular migration and threats from extremist actors.

Alexander Ratz and Sarah Marsh

Reuters | 10 September 2024

US 'Safe Mobility' resettlement programme is working but too narrow: Report

Safe Mobility Offices (SMOs), an initiative by the US since 2023, marked a step forward to allow qualifying migrants to file applications to resettle in the US through legal pathways, including refugee status. However, amidst legal restrictions that control the intake of migrants, some are still opting for irregular routes instead (including smugglers/traffickers).

Alice Spери

Al Jazeera | 12 September 2024

European politicians say migration is out of control. The numbers tell a different story.

According to preliminary figures compiled by the International Organization for Migration, irregular crossings over the southern borders of the EU dropped by 35 percent from January to August.

Renata Brito

Associated Press | 13 September 2024

SELECTED PUBLICATIONS

World Social Protection Report 2024 – 26: Universal social protection for climate action and a just transition

This report looks at the climate crisis and the need for a just transition to a more sustainable world, providing a global overview of progress made globally in extending social protection since 2015.

International Labour Organization
2024

Public opinion of climate migrants: Understanding what factors trigger anxiety or support

This report outlines key findings of polling and experimental data from around the world on public opinion of climate migrants. Its findings support the need to strike a balance between fostering greater public understanding of climate migration as an important issue, and mitigating anxiety about its impacts. Such a balance is essential to good policy that supports both climate migrants and the communities in which they settle.

Migration Policy Institute
2024

EVENT & ANNOUNCEMENT

Migration Realities in the United States: Looking at Causes, Trends, and Solutions Center for Migration Studies of New York (CMS)

This webinar organised by the Center for Migration Studies of New York (CMS) addresses the migration landscape in the US from sociological, demographic, resettlement, legal and policy perspectives.

Recorded Webinar
5 September 2024