

# Nature Investment as a Response to the Climate Crisis: Opportunities in Southeast Asia

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## Key Takeaways:

- Nature investments represent a logical and powerful response to the combined climate and nature emergency in Southeast Asia. Investors have the choice between a range of financial and nature market instruments.
- While the public sector must assume overall responsibility, private capital has a role to play in furnishing the US\$200 billion per annum that could be required in the region.
- We propose a biodiversity-themed sustainability-linked bond (SLB) as a way for fixed income investors to support the Malaysian government's biodiversity ambition. We also showcase a suite of mangrove restoration projects which could offer a viable investment proposition to asset owners, insurance companies and impact investors.
- Success, however, is not guaranteed. We find that mangrove restoration represents a potentially powerful nature investment opportunity in Southeast Asia, but that scalable business models are still in their infancy. A sovereign biodiversity themed SLB could offer several advantages to both investors and governments in the region but should be structured carefully as scepticism surrounding greenwashing is growing.
- Finally, we advise against an overreliance on carbon credits to provide investment returns. Instead we encourage long-term strategic incorporation of nature benefits into broader corporate investment decisions. Risk mitigation and diversification will be two important drivers for nature investing.

## 1. The impacts of climate change and nature loss in Asia

**Asia is facing a steadily mounting climate emergency.** Asia is home to over half of the world's population. It is one of the world's most densely inhabited and fastest-growing regions, with significant urbanisation. Over half of the population lives in metropolitan areas, most of which are concentrated along the coast (Shaw et al., 2022). Asia is also one of the regions most vulnerable to climate change (Eckstein et al., 2021): The IMF predicts that by the mid-2020s, rising waters will impact nearly a billion people in the Asia-Pacific region (Dabla-Norris et al., 2021). South Asian countries are particularly exposed to storms, floods, and sea level rise, though droughts and heat waves will also likely become more pronounced and frequent over time (Shaw et al., 2022). India has just experienced its hottest winter for over a hundred years (Bloomberg Green, 2023)

**Asia is subject not just to a climate emergency but to a nature crisis,** through continued habitat and species loss. The region is 'consuming' its natural capital at a faster rate than it is being replenished, leading to a decrease in the *biocapacities* of the stocks of natural assets such as fresh water, nutritious soil and forest habitats (Yousaf et al., 2021). Exacerbating this loss is the fact that global warming and nature loss are closely intertwined, through feedback loops (Ripple et al., 2023).

**Climate change is already affecting the economies of Southeast Asia and the impacts will be felt more strongly in the coming decades.** GDP impact estimates range, but under a (likely, it should be noted) 3°C scenario, over the next fifteen years national GDPs in the region could be 2–3% lower (compiled estimates available in Volz et al. (2020)). Although impacts are difficult to predict because of possible adaptations and dynamic changes, by the end of the century, GDP per capita in the region could be 6-15% lower (Kahn et al., 2021, using a RCP 8.5 'business as usual' scenario; Kahn et al., 2019).

**Government finances will be impacted both in the short and long run through both acute and chronic climate related risks.** In the short run, governments will have to spend more on reconstruction efforts in response to extreme events while tax revenues will be negatively affected by these same events. Fiscal positions in the long run will also be negatively impacted by reduced growth prospects and asset revaluations (Zenios, 2022).

## 2. Nature investing as a response to the climate crisis

**Tackling the climate crisis in Asia will require a multi-pronged approach, including investing in nature<sup>1</sup>.** The highly vulnerable position of many Asian countries in the face of climate change begs the question of how best to respond. There is broad global agreement that tackling the climate crisis must happen through a combination of mitigation and adaptation, and this will also be the case for Asia. While a significant focus must remain on decarbonisation of the region's economies, investing in nature represents a unique complementary opportunity to build resilience and lessening exposure to climate impacts already taking place (Carbon Market Institute, 2021; Raghav et al., 2020).

**Investing in nature will improve resilience and reduce negative feedback loops.** Improved resilience through nature (e.g. natural flood defences, green urban infrastructure) can help vulnerable countries in Southeast Asia deal with the consequences of climate impacts such as flood surges and heat waves (Shaw et al., 2022). But there are more reasons for protecting nature. Because of their intertwined nature, nature loss and climate change are linked via negative feedback loops, so that degradation in one in many cases have negative spillovers on the other (for instance, coral reef loss accelerates with temperature increases). Moreover, biodiversity – an aspect of nature – is closely linked to nature and climate trends and presents an additional incentive for action in the region as Southeast Asia contains several global 'biodiversity hotspots' (Shaw et al., 2022).

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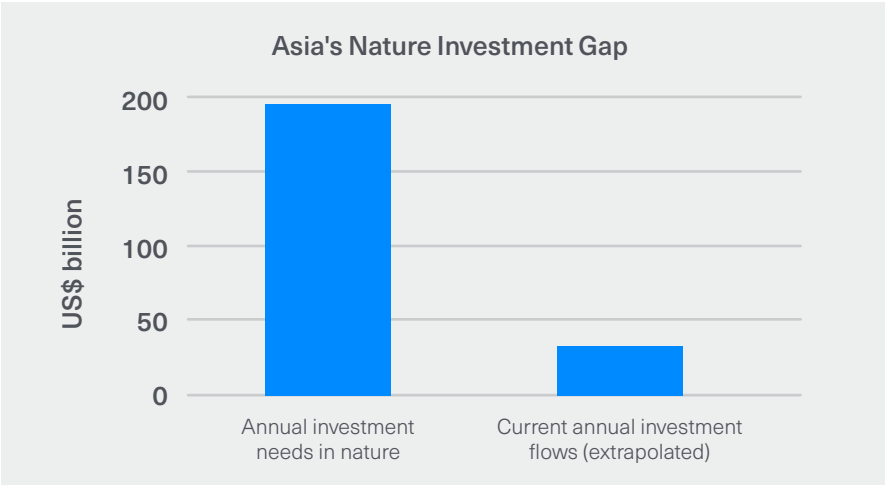
<sup>1</sup> This report mostly uses the term nature investing, but it is intended to cover the same activities as those referred to as nature-based solutions, natural capital solutions and other terms in the literature. While there are nuances to these terms, they do not matter for the purposes of this report.

**Moreover, nature underpins much of Asia’s economic engine.** One estimate suggests nature’s contribution to ASEAN economies is 2.19 trillion (Campaign for Nature, 2022), while another suggests biodiversity and nature loss puts 63% of Asia Pacific’s GDP at risk (Temasek et al., 2021). Indonesia and Malaysia stand out as particularly vulnerable to impacts of nature loss via the effect of ecosystem collapse on commodity production (Johnson et al., 2021). Studies modelling the impact of nature on public finances suggest Malaysia could experience up to a seven-notch sovereign downgrade, with China, India, Bangladesh and Indonesia following closely behind (Agarwala et al., 2022).

**Yet the response by Asian governments and corporates to the emerging nature crisis has so far been muted.** This applies to the adoption of natural capital accounting in government accounts as well as regulation of the private sector (Steele et al., 2021). For corporates, some attention has been given to the rollout of TNFD (Taskforce for Nature-related Financial Disclosures) – currently under consultation in Asia – but apart from a few outward-facing commodity producers, interest in providing transparency on nature risk appears to remain low while banks are also found to come up short<sup>2</sup>.

**Investments, not just disclosure.** What is more, while measuring dependencies and disclosing nature risk is an important step towards integrating nature in decision making it is by no means sufficient. To halt nature loss, such practices will have to be followed by investments. Traditionally, governments have been responsible for the majority of investments in nature (87% on a global basis (Deutz et al., 2020; UNEP, 2022)). This also applies to Asia, where interest from the private sector historically has been weak (Siman et al., 2021; Steele et al., 2021). However, this may be changing with the emerging evidence of the risks posed by nature to supply chains and the increased commitment to nature and biodiversity in the wake of the Kunming-Montreal Biodiversity COP.

**For Southeast Asia, up to US\$200 billion per annum may be required.** One study suggests ‘nature-positive’ businesses in the food, land and ocean sector in Asia-Pacific could unlock US\$1.6 trillion in annual value by 2030 and that this would require annual investments of US\$195 billion between 2020 and 2030 (Temasek et al., 2021). Assuming the same investment gap (83–85%) applies to Southeast Asia as it does on a global average, this suggests new sources of capital in the region of US\$162–\$166 billion per annum will be required<sup>3</sup>. Some of this could and should be covered by the public sector, but much of it would require private participation.



**Figure 1: The investment gap – and opportunity – for nature investing in Asia Pacific** (author’s own calculation, based on Deutz et al. (2020), UNEP (2022) and Temasek (2021) – see footnote 3)

<sup>2</sup> In a study published in March 2023, WWF finds that Asian banks are failing to take action on nature-related risks: [www.wwf.org.sg/sustainable-banking-assessment-2022-finds-that-despite-increasing-net-zero-commitments-asian-banks-also-need-to-focus-on-nature-related-risks/](https://www.wwf.org.sg/sustainable-banking-assessment-2022-finds-that-despite-increasing-net-zero-commitments-asian-banks-also-need-to-focus-on-nature-related-risks/). See also [asean.org/wp-content/uploads/2021/09/Investing-in-Sustainable-Natural-Capital-in-ASEAN-FINAL.pdf](https://asean.org/wp-content/uploads/2021/09/Investing-in-Sustainable-Natural-Capital-in-ASEAN-FINAL.pdf)

<sup>3</sup> The current gap (difference between what is needed and existing flows) for nature and biodiversity financing globally is around 83-85%, according to Deutz et al. (2022). UNEP (2022) finds a similar gap (77% in 2050, using modelling). The premise and methodology for these estimates vary but give us a useful sense of magnitude. Assuming a similar gap in Asia (we used the mid-point of Paulson’s estimate (84%)) we applied this to the US\$195 identified by Temasek et al. (2021) to illustrate the difference between Asia’s annual nature investments needs (\$195 bn) and the (extrapolated) current investment flows. Note, however, that using this average gap estimate is a conservative approach and is likely to produce an underestimate of real needs, as the gap for developing regions such as Asia is likely to be higher than for Europe and North America.

### 3. Private Investors and Nature

**Investors are driven by returns.** While the previous section exposed the nature investment gap and provided motivations for why Southeast Asian countries should invest in nature, these do not always translate easily into drivers for private investors. Corporates or financial institutions invest in nature either because they have to (e.g. mandated by regulation to compensate for damages) or because they want to. They may want to because of the potential for financial return, or for some other type of 'return' such as reputational benefits or strategic positioning.

A recent survey of the Asia-Pacific region found that investors in nature are primarily driven by securing a financial return on investment (Carbon Market Institute, 2021). This consideration trumps other motivations such as aligning with corporate sustainability goals, achieving net zero targets or improving resilience. The finding is in line with global surveys of impact investments showing an expectation of market returns by the vast majority of investors (CPIC, 2021).

**Nature investments are by many equated with carbon credits, however we believe this focus is misguided and can be misleading<sup>4</sup>.** Demand for carbon credits in both compliance and voluntary markets has been growing in recent years and market sentiment is that the growth will continue. For example, there is hope that the rulebook governing Article 6 of the Paris Agreement will eventually create opportunities for sovereign-level forest carbon payments. And Singapore will allow companies regulated under the Carbon Pricing Act to use carbon credits to offset up to 5% of their emissions from 2024. These positive developments provide investors with the signal to warrant continued interest in the market and will be one pathway for creating investments in nature. However, current concerns about the integrity of carbon credits are increasing the risks of these assets. Indeed, in recent years there has been a growing scepticism as to what carbon offsets can and should do, and about their integrity. Even if market initiatives such as the Taskforce for Scaling the Voluntary Market manage to increase transparency and carbon standards are tightened, it would be healthy to retain reservations about seeing carbon markets as a panacea for nature investments<sup>5</sup>.

**In addition to integrity concerns, a second challenge with carbon credits is their low price.** Current prices are in the \$5/tonne range for voluntary offsets and are a far cry from the level needed to properly incentivise nature protection<sup>6</sup>. They have also been quite volatile. Moreover, they are certainly not a good reflection of the 'true' value of carbon (the social cost of carbon is generally thought to be in the \$70-\$100/ton range<sup>7</sup>) – let alone capture non-carbon benefits. While it has been argued (Koh et al., 2021; Sarira et al., 2022) that forest carbon projects have a significant potential in Southeast Asia, we believe this potential is significantly overestimated when quality, full costs and long-term viability are factored in (Köberle et al., 2021).

**Instead, investing in nature can be seen as a risk mitigation and diversification strategy for real asset investors.** Because of the challenges related to the carbon market, investors should look beyond carbon and to other additional investment drivers. These motivations will vary by type of investor and allow us to broaden the universe well beyond those with a focus on carbon offsets. For example, commodity producers increasingly invest sustainably via certification schemes (e.g. FSC for timber) which mandate nature-positive management methods. Their investments may have timber or rubber as a core offering and revenue source, but nature is an important co-product which enhances the sustainability and longevity of their investments through improved resilience, premium pricing as well as reputational benefits. For these investors, the primary driver is not carbon – indeed carbon revenues are often included only as an

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4 This survey shows Asia-Pacific investors believe carbon revenues dominate returns:

[carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Nature-Based-Investment-in-the-APAC-Region-Scoping-Study-June-2021.pdf](https://carbonmarketinstitute.org/app/uploads/2021/06/FINAL-Nature-Based-Investment-in-the-APAC-Region-Scoping-Study-June-2021.pdf).

5 In January 2023, an investigation by the Guardian newspaper and others re-ignited a long-standing debate around integrity, results and shortcomings around carbon offsets ([theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe](https://theguardian.com/environment/2023/jan/18/revealed-forest-carbon-offsets-biggest-provider-worthless-verra-aoe))

6 Prices vary by vintage and project type. Median price in August 2022 for forest conservation projects were \$8/tonne and for afforestation/ reforestation \$14/tonne (source: [abatable.com/blog/carbon-credits-pricing](https://abatable.com/blog/carbon-credits-pricing)). However, according another source (Carbon Credits ([carboncredits.com/carbon-prices-today](https://carboncredits.com/carbon-prices-today)), they were as low as \$2.5/tonne in the first months of 2023 (accessed on March 9th, 2023)

7 The social cost of carbon (SCC) is subjective and depends on a number of assumptions. The UK Government Economic Service (GES) has since 2002 recommended a SCC of £70/tonne, while the US government uses \$51/tonne. Research from 2022 suggests the SCC today should be \$185/tonne (Rennert et al., 2022).

upside in financial modelling. Given the importance of nature-based commodities such as timber, palm oil, fisheries and agriculture in Southeast Asia, the potential for combining the production of commodities with environmental benefits holds potential – if done properly. Likewise, financial investors may be driven to nature by risk considerations if by investing in real assets (via e.g. forestry companies) they can achieve diversification from financial assets and a hedge against inflation. Returns on real assets are often counter-cyclical and have low correlation with other asset classes such as bonds or equity indices – the result of which is reduced volatility of the portfolio (Samitas et al., 2022; TIAA-CREF Asset Management et al., 2014).

**Nature can also be an addition to fixed income portfolios.** At the other end of the spectrum from real asset investors, institutional money managers can get exposure to nature investing through green bonds or other standardised financial instruments. To these investors -who may be motivated by ESG mandates- the impact achieved by bond proceeds invested in nature are welcome but fiduciary duty is the overriding concern. Very little expertise about nature is required and the risks are (usually) simply the credit risk of the issuing institution. Globally, nature-related green bonds are estimated to represent around 6% of issuances (see Holtedahl et al. (2022) and Dasgupta (2021)). The largest issuers of green bonds in Asia are the PRC, Japan, South Korea, Indonesia and India, and several of these have nature-related categories included in their frameworks (Azhgaliyeva & Kapsalyamova, 2021).

**Figures 2 and 3 summarise the various entry points for private investors in nature, where we have distinguished between *financial market instruments and nature market instruments*<sup>8</sup>.** The former are easy to access structures which can be traded. Examples include nature-focused green bonds and green equity (shares). They have appealing features such as liquidity and investor familiarity. Nature market instruments on the other hand are investments made directly in the nature asset- such as land. These investments are illiquid and require greater sophistication on the part of the investor but can provide useful exposure to alternative investments and have welcome hedging properties. We can think of Figures 2 and 3 as presenting a ‘menu’ for investors, where the type of nature investing chosen will depend on investing mandates as well as appetite for risk.

**Nature is an emerging asset class and data on regional investment volumes are hard to come by, yet it is clear that private investors will have to play their part<sup>9</sup>.** Globally, private annual investment flows into financial and nature instruments have been assessed to be in the tens of billions at most (see e.g. US\$41 billion figure in Holtedahl et al. (2022). UNEP (2022) arrives at a US\$26 billion figure). In contrast, in section 2 we suggested total additional investment needs in Southeast Asia to be around US\$162–\$166 billion. Some of this will have to come from private sources via the vehicles presented in Figures 2 and 3.

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<sup>8</sup> Classification based on Holtedahl et al. (2022): *Can Markets Save Nature? Investing in Nature to Tackle Biodiversity Loss and Enhance Food Security*, available from [imprl.biz/FoF3](https://imprl.biz/FoF3). The classification focuses on return-seeking private instruments and does not include philanthropic funding or blended finance instruments – both of which are additional and helpful to the instruments we have listed.

<sup>9</sup> Although starting from a low level, efforts to build data bases are emerging, see e.g. Flammer et al., (2023)’s recent analysis of 33 private biodiversity deals.

<b>Investor</b>	Institutional or Retail	Institutional or Retail	Institutional or Retail	Institutional Impact Philanthropy	Institutional Impact Philanthropy
<b>Financial Return and Risk</b>	Same as plain vanilla bonds Low risk (credit)	Coupon depends on nature-related corporate achievements. Low risk (credit)	Similar to standard investments in equity/shares. Medium-high risk	Return depends on structure of fund and seniority / tranche of investor	Returns vary according to outcomes of underlying investment (it can be zero). Low risk for principal; high risk for return
<b>Examples Southeast Asia (SEA)</b>	Asian Development Bank 2021 Green and Blue Bond	Case Study 1	KKR's equity stake in GreenCollar	Akaria Capital	Vietnam Emission Reduction-Linked Bond
<b>Instrument</b>					
<b>Attraction for Investors</b>	Use-of proceeds bonds allow investors to support sustainable activities while taking on no new risk or due diligence requirements	Similar to green bonds, but proceeds are not invested in nature assets. Instead the issuer sets targets to improve nature-related metrics at the corporate level	Allows investors to support sustainable commodity production or services	Investing through impact funds creates positive environmental and social impacts, but drawbacks include lower liquidity, lower ticket sizes and greater time-investment than standard equity or bonds	Allows investors to participate in innovative structures with limited risk. Downside includes complex and time-consuming structuring process

Figure 2: Financial Market Instruments

<b>Investor</b>	Private equity Philanthropies Timber Investment Management Organisation	Project owner (landowner or farmer) Carbon developer	Project owner (landowner or farmer)
<b>Financial Return and Risk</b>	Returns based on sale of goods (regenerative agriculture, timber production) Carbon revenues usually only considered as an upside Low-medium risk	Returns are based on the sale of carbon credits High risk	Returns are based on the sale of ecosystem services such as water quality or quantity, wetland restoration, or biodiversity High risk
<b>Examples Southeast Asia (SEA)</b>	New Forests' investments in sustainable tropical hardwood plantations	Case Study 2	Viet Nam Payments for Forest Environmental Services (PFES)
<b>Instrument</b>			
<b>Attraction for Investors</b>	Exposure to real assets with environmental co-benefits	Exposure to real assets and access to carbon credits (voluntary or compliance)	Exposure to real assets with opportunity to access ecosystem services. Downside includes complex and time-consuming structuring process

Figure 3 Nature Market Instruments

## 4. Case Studies

To further strengthen investors' understanding of opportunities related to natural capital, we showcase two Asia-based case studies. Although both are intended to create positive nature outcomes, Case 1 is an example of a *nature market instrument* and is relevant for investors wishing to get exposure to real assets while Case 2 illustrates a *financial market instrument* where the invested capital is only indirectly tied to the nature project.

**We have chosen to look at investments in coastal resilience (Case 1) and biodiversity (Case 2).**

As we saw in Section 1, sea level rises, floods and storms are projected to be among the dominant climate risks in Southeast Asia. Around 25% of the population in Asia reside in areas that regularly experience flood events and in a review of the impacts of climate-related disasters on public finances, Volz et al. (2020) found that the largest contingent liability in Southeast Asia over the previous three decades – amounting to 3% of GDP – was realised in Thailand after the flooding of 2011. Given the predominance of risks related to sea levels/storm surges, nature investments to protect and restore the coastline seems like an urgent priority – and is discussed in Case 1. Similarly, increased understanding of biodiversity's crucial role in underpinning natural capital and the commodity-dependent Southeast Asian economies is the motivation for the choice of Case 2.





## Case 1: Investments in mangrove restoration



**Type of Investor:** Impact investor, asset owner, or insurance company



**Background:** Mangrove restoration, together with coral reef protection and wetland restoration have been shown to have multiple financial, environmental and social benefits<sup>10</sup>. Marine-based restoration tends to offer co-benefits in the form of improved livelihoods for the surrounding community (fish populations increase when natural ecosystems are restored), improvements in biodiversity and in carbon storage (Su et al., 2021). It is impossible to give an exact estimate of the value created by mangroves, but one study suggests mangroves globally produce annual flood risk reduction for 15 million people and over \$65 billion worth of property value (Menéndez et al., 2020). Their carbon storage potential is substantial, often outperforming other types of forests (Donato et al., 2011).

Southeast Asia is the region with the most extensive mangrove forests in the world and together with the Caribbean is also experiencing the greatest losses of mangroves (Leal et al., 2022). In Indonesia, emissions related to mangrove loss account for up to 20% of the national emissions related to deforestation (Raghav et al., 2020). The causes of mangrove deforestation are primarily encroachment from urban expansion, and pollution from aquaculture and agriculture activities (Giri et al., 2015).

And although the world is waking up to the value of mangroves (according to the Global Mangrove Alliance, over the last 20 years, mangrove forests have shifted from being one of the fastest-diminishing habitats on Earth to being one of the best protected), the pace is insufficient: It has been suggested that to meet the global conservation funding gap, some \$11 billion will be necessary over the next twenty years to restore mangroves globally (EarthSecurity, 2020; Leal et al., 2022). For Indonesia, it has been calculated that a five-fold acceleration is required to meet its mangrove restoration targets (Mongabay, 2022).



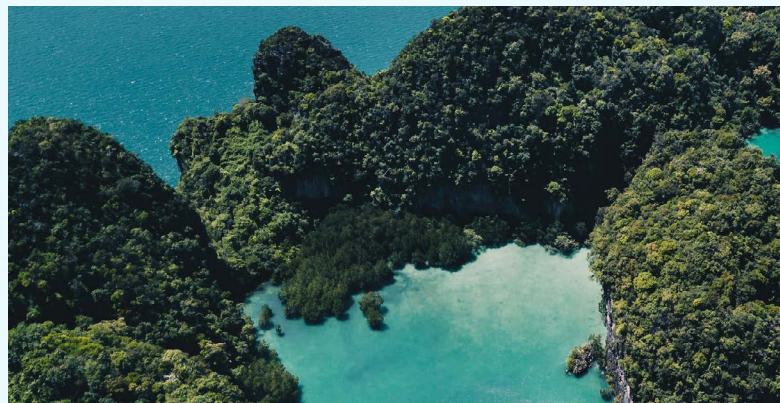
**Structure:**

We offer three options for mangrove restoration in Southeast Asia, each representing a different investor profile and context. We do this to highlight the range of entry points that nature projects can offer investors – from asset owners to insurance companies and impact investors.

### 1. Mangrove forests as a cost-effective resilience investment (Zephyr Power)<sup>11</sup>.

**Investor: Asset owner.**

Zephyr Power is a 50 MW wind farm located on the Indus River Delta approximately 60km from Karachi (Pakistan). The project is built on intertidal mudflats which over time have degraded as mangroves were cut to provide firewood and clear the area for fishing for the local population. To protect the wind farm assets (including roads and cables) from further erosion and storm surges, the owners of Zephyr Power decided to invest in mangrove restoration on the project site. The investment in mangrove restoration is projected to return up to 20 times its value and generating savings of up to US\$7 million in maintenance costs over the project's 25-year timeframe. In addition, the restoration has positive spillovers for the local economy: fish and shrimp populations are increasing, resulting in increased value and employment for the local community. **In this case, the investment in nature makes financial sense from an asset management perspective – independently of the positive effects on the local economy, carbon storage and biodiversity.**



<sup>10</sup> In one study, researchers found an overwhelming case for undertaking coral reef restoration - via a benefit-cost ratio of 6.3 (Borja, R et al., 2020).

<sup>11</sup> A concise but detailed case study of Zephyr Power's mangrove investment can be accessed here: [earthsecurity.org/reports/the-investment-value-of-nature-the-case-of-zephyr-power-limited](https://earthsecurity.org/reports/the-investment-value-of-nature-the-case-of-zephyr-power-limited)

## 2. Mangrove restoration in a coastal asset insurance mechanism (RISCO).

### Investor: Insurance company

RISCO is a proposed global insurance mechanism with a pilot envisioned for the Philippines. A third-party organisation would be responsible for implementing mangrove restoration and oversight, while insurance companies would insure coastal assets such as hotels which benefit from mangrove restoration, and in turn pay a fee to this organisation. The region's large insurance coverage gap should help provide motivation for the scheme (Volz et al., 2020). The RISCO mechanism allows for two revenue streams: i) Primarily payments from insurance companies who benefit from lower risk exposure. Over time, insurance companies could potentially translate the reduction in risk into reduced insurance premiums for coastal asset owners. ii) In the short run, RISCO also proposes the inclusion of revenues from the sale of ('blue') carbon credits. RISCO has calculated that the potential revenues 'far exceed' CAPEX and OPEX<sup>12</sup>. **RISCO highlights the potential effective insurance value of mangroves but also the challenges with implementing restoration efforts covering a large area and multiple participants (as would be necessary for an insurance mechanism).**

## 3. Mangrove restoration for blue carbon and sustainable fish farming

### Investor: Impact investor

This case considers a hypothetical investment in mangrove restoration in Southeast Asia, with carbon storage and fish farming benefits. A 5,000-hectare investment has been shown to potentially generate US\$20.5 million in carbon income and US \$60 million in organic prawn sales over the 32-year project lifespan, resulting in an IRR of 15.18%<sup>13</sup>. Sustainable livelihoods and coastal protection for the local community would be additional to these private benefits. **Due to the extended payback period (over 10 years) and perceived (and real) project risks, this type of investment would only be suitable for 'impact investors' with 'patient' capital and a mandate to create social and environmental value. Alternatively, mainstream investors could participate via a fund using a blend of commercial capital, grants and concessional capital from a development bank or philanthropy.**

12 Detailed feasibility results can be found here: [cpilabs.wpenginepowered.com/wp-content/uploads/2019/03/RISCO-Instrument-analysis-1.pdf](https://cpilabs.wpenginepowered.com/wp-content/uploads/2019/03/RISCO-Instrument-analysis-1.pdf)

13 Project estimates and details can be found here: [ecosperity.sg/content/dam/ecosperity/en/reports/Report\\_The-Business-Case-for-Natural-Climate-Solutions-Insights-and-Opportunities-for-SEA.pdf](https://ecosperity.sg/content/dam/ecosperity/en/reports/Report_The-Business-Case-for-Natural-Climate-Solutions-Insights-and-Opportunities-for-SEA.pdf)



### Conclusion:

**Mangrove restoration represents a potentially powerful nature investment opportunity in Southeast Asia, but scalable business models are still in their infancy.** Mangroves represent an opportunity for investors to direct capital to triple bottom line opportunities and the three examples show that a range of investors may have reason to be interested. However, despite a long-standing awareness of the benefits of mangroves, investment levels remain low. And there are mixed results when projects do get funded (according to one study, 15–20% of mangrove projects fail (Wetlands International, 2021)).

Both the slow take-up and mixed result suggest there are barriers at work. Studies have found that they include uncertainty around the ability to cash in on carbon payments (carbon methodologies are improving but there is still a perception of risk) and a lack of attention to important details around restoration species, methods, and local buy-in - which mean projects sometimes fail to achieve their intended outcomes (Lovelock et al., 2022; Temasek et al., 2021)<sup>14</sup>. Making mangrove restoration overly dependent on the carbon market is unlikely to be a smart strategy, given the continued uncertainty in the carbon market and the benefits of a diversified cash flow reflecting the multitude of benefits that exist in addition to carbon sequestration. One route for market players going forward will therefore be to explicitly monetise more of these benefits – be that externally (e.g. through payment for ecosystem services or insurance) or internally (as in the case of Zephyr Power).

14 One study argues that mangrove restoration is not a new idea in Southeast Asia, but have traditionally been done for short-term and specific gains which may not serve broader needs ([frontiersin.org/articles/10.3389/fmars.2022.987737/full](https://frontiersin.org/articles/10.3389/fmars.2022.987737/full)).

A discussion of barriers to 'blue carbon' in Southeast Asia can be found in this study: [gov.uk/government/publications/uk-singapore-cop26-universities-network-policy-reports/nature-based-solutions-for-climate-change-mitigation-challenges-and-opportunities-for-the-asean-region](https://gov.uk/government/publications/uk-singapore-cop26-universities-network-policy-reports/nature-based-solutions-for-climate-change-mitigation-challenges-and-opportunities-for-the-asean-region)

## Case 2: Sovereign sustainability-linked bond tied to biodiversity metrics



**Type of investor:** Institutional, financial



**Background:** Sustainability-linked bonds are debt instruments where the coupon paid by the issuer is linked to the achievement of certain targets (KPIs). In contrast to a green (or social) bond, SLBs are not use-of-proceeds bonds - in other words, the funds raised can be directed towards any type of investment. This makes the instrument suitable as a type of *transition finance* and makes it attractive to issuers wishing to fund their transition towards Net Zero. The first SLB was issued by the Italian energy company Enel SpA in 2019 and the total SLB universe today stands at about \$190 billion<sup>15</sup>.

Only two countries have issued sovereign SLBs to date, both in 2022. Chile's SLB is linked to achieving a reduction in the country's absolute GHG emissions and increases in renewable energy production, while Uruguay targets reductions in GHG intensity of the country's GDP and preservation of native forests. However, we expect sovereign SLBs to become more common over time as investors become more familiar and comfortable with the instrument: indeed proposals have recently been put forward for nature related SLBs for Brazil and Sri Lanka, both countries with sizeable sovereign debts as well as biodiversity challenges<sup>16</sup>. A possible structure for Malaysia is proposed below.



**Structure:** Malaysia SLB

- Malaysia's sovereign debt is currently approx. 70% of GDP with investment grade credit rating (BBB+(Fitch), A-(S&P), A3(Moody's) (IMF, 2023)). The country has recovered relatively well from the COVID-19 Pandemic and the GDP growth outlook for 2023 is 4–5%.
- At the same time, Malaysia is a signatory to the Paris Agreements and has submitted an NDC whereby it commits to reducing its economy-wide carbon intensity by 45% by 2030 compared to 2005 levels. Forestry, energy and waste have been identified as the sectors with greatest GHG reduction potential<sup>17</sup>. Malaysia is also a 'biodiversity hotspot': It is considered 'megadiverse' based on the richness and endemism of its species and ranks 12th in the world according to the National Biodiversity Index<sup>18</sup>. Vast swaths of its territory are covered in forests (58% in 2020, according to the World Bank<sup>19</sup>) but pressure on forests and other natural habitats is constant as a result of a growing population and economic growth – especially via expansion of agriculture and timber activities. Malaysia has committed to protecting its biodiversity through various initiatives, including signing up to the original 1992 UN Biodiversity Convention, creating a National Policy on Biological Diversity (1998 and updated with implementation plans for 2016–2025) and re-affirming commitments at COP15 in Montreal in December 2022.
- A biodiversity-linked SLB could strengthen Malaysia's commitment to biodiversity improvements and simultaneously raise or refinance much needed government debt. It would be the first SLB to have a biodiversity target as its KPI (Uruguay has a target for forest conservation but not explicitly linked to biodiversity).

<sup>15</sup> This dwarfs in comparison to the \$3.2 trillion of green and social bonds. Source: [climatebonds.net/2022/11/green-bond-market-hits-usd2tn-milestone-end-q3-2022](https://climatebonds.net/2022/11/green-bond-market-hits-usd2tn-milestone-end-q3-2022). According to Environmental Finance, the amount raised through SLBs in 2022 was \$73 billion. Source: [efdata.org](https://efdata.org) and [environmental-finance.com/content/news/moodys-sustainable-bonds-to-secure-record-15-market-share-in-2023.html](https://environmental-finance.com/content/news/moodys-sustainable-bonds-to-secure-record-15-market-share-in-2023.html).

<sup>16</sup> Proposed structure for Sri Lanka here: [anthropocenefii.org/afii-green-bonds-duration#79025176-b242-4101-89e5-7444e0527a0c](https://anthropocenefii.org/afii-green-bonds-duration#79025176-b242-4101-89e5-7444e0527a0c) and Brazil here: [reuters.com/markets/rates-bonds/bank-floats-10-bl-brazilian-bond-plan-halt-amazon-deforestation-2022-12-19](https://reuters.com/markets/rates-bonds/bank-floats-10-bl-brazilian-bond-plan-halt-amazon-deforestation-2022-12-19)


<sup>17</sup> Source: [myclimate.org/2021/10/04/7886](https://myclimate.org/2021/10/04/7886)


<sup>18</sup> Source: [cbd.int/countries/profile/?country=my](https://cbd.int/countries/profile/?country=my)


<sup>19</sup> Source: [data.worldbank.org/indicator/AG.LND.FRST.ZS?locations=MY](https://data.worldbank.org/indicator/AG.LND.FRST.ZS?locations=MY)



- Malaysia is not new to the world of green instruments: in 2021 it issued a sovereign sustainability sukuk (Islamic bond instrument) of \$1.3 billion, in line with ASEAN Capital Markets Forum (ACMF)’s green bond standards. Additionally, the country has almost \$5bn in outstanding corporate sustainable bonds, and in late 2022 the country issued guidelines for SLB sukuks in line with the International Capital Market Association (Asian Development Bank, 2022).
- The proposed sovereign SLB would therefore build on Malaysia’s existing experience with issuing sustainable bonds and benefit from guidance from nationally relevant guidelines. It could be used to refinance the sustainable sukuk when that instrument expires in 2031 and would holistically tie in the country’s sovereign debt structure with its sovereign sustainability ambitions as expressed through its Paris Agreement and biodiversity commitments.
- To make this SLB proposal more tangible, we propose some potential KPIs (the government could choose 1–2 of these). Note that the KPIs target biodiversity indirectly by improving habitats and ecosystems outcomes (rather than targeting specific species<sup>20</sup>):

 % of territory defined as national parks/protected areas. This could include both terrestrial and marine areas<sup>21</sup>. Current area under protection is about 11%, and this could be increased to, say, 18%, or aligned to targets the government has already set through its national policy on biological diversity<sup>22</sup>.

 % of forests or land planned for restoration, using native species. This KPI is different from the previous one in that it goes beyond protection to aim for restoration of previously damaged areas. These may include degraded protected forests, forests where wood is harvested, and agriculture.

 Requirement that forestry, farming, and aquaculture activities be certified or otherwise carried out in line with high sustainability standards (such as FSC). This would ensure that impacts on ecosystems, flora and fauna are mitigated, although thought would have to be put into how exactly to create the indicator (including the use of a binary as opposed to a % target).

20 Emerging research suggest this may be an effective conservation approach. See e.g. Jung, M et al. (2021).

21 Indeed, the extension of marine protected areas (MPA) is seen as a useful tool in the protection of mangrove and seagrass habitats in Southeast Asia, with several ecosystem and carbon sequestration benefits (see Siman K., et al (2021))

22 See [ketsa.gov.my/ms-my/pustakamedia/Penerbitan/Nasional%20Policy%20on%20biological%20Diversity%202016-2025%20Brochure.pdf](https://ketsa.gov.my/ms-my/pustakamedia/Penerbitan/Nasional%20Policy%20on%20biological%20Diversity%202016-2025%20Brochure.pdf)

- In addition to the benefits of potentially reaching a new and larger pool of investors and strategic alignment with sovereign policy objectives, the SLB structure offers potential financial benefits as there has been evidence that the yield spread between sustainability and conventional bonds is negative<sup>23</sup>: For example, if Malaysia were to refinance its current sustainability sukuk by issuing an SLB in the same amount, then -assuming a yield differential of 9 bps over 10 years -it could save around \$11 million. It is important to keep in mind, however, that these savings could be entirely washed out by a coupon step-up if the government doesn't reach its sustainability targets.
- For investors, buying Malaysia's SLB would mean supporting the government's biodiversity endeavours with the attraction of not taking on any substantial new risk. A key advantage of a nature related SLB is that it is an investment that could offer scale: countries issue bonds in the hundreds of millions or billions rather than the much smaller amounts that are directed at many of the other instruments listed in Figures 2 and 3. Sovereign bonds make up a large share of many investors' portfolio and can be a key instrument for channelling capital to emerging markets.
- Finally, although probably unnecessary in the case of Malaysia, sovereign bonds can be 'enhanced' by donor funding (Holtedahl et al., 2022). The participation of philanthropies has been crucial in restructuring the debt of the Seychelles and Belize (both have issued blue bonds) and donor assistance has been proposed for a Sri Lanka SLB (Erlandsson et al., 2022). The purpose of such 'enhancements' is to lower the risk profile of the instruments and increase interest from mainstream investors in emerging market debt.



**Conclusion:** A sovereign biodiversity linked SLB could offer several advantages to both investors and governments in Southeast Asia, although the instruments is not without critics. The strongest criticism against SLBs is that they can easily become an instrument for greenwashing if the KPIs are not set at ambitious levels. At its worst, an SLB can sanitise an issuer's image while allowing it to continue with business as usual – and there is evidence that has indeed been the case with many SLBs so far<sup>24</sup>. However, it's important not to prematurely reject the idea: Further research based on more and improved data will clarify both how much of an issue greenwashing really is and more importantly help investors demand robust targets<sup>25</sup>. The emergence of stricter standards (such as the EU Taxonomy), guidelines (from ACMF or national authorities in Asia), and the improved use of external verification will help in this respect.

<sup>23</sup> Kölbel, J. et al. (2022) find an average yield differential of 9 bps in their sample of corporate SLBs. However, other research suggests there is no such yield differential (FT, Feb 14 2023, *Sustainability bond market stumbles as investors get picky*). The SLB market is new, and any findings should be interpreted with caution.

<sup>24</sup> Analysis by Bloomberg in October 2022 found greenwashing of SLBs to be a significant challenge (see [bloomberg.com/news/features/2022-10-04/greenwashing-enters-a-22-trillion-debt-market-derailing-climate-goals?cmpid=BBD011123\\_GREENDAILY&utm\\_medium=email&utm\\_source=newsletter&utm\\_term=230111&utm\\_campaign=greendaily](https://www.bloomberg.com/news/features/2022-10-04/greenwashing-enters-a-22-trillion-debt-market-derailing-climate-goals?cmpid=BBD011123_GREENDAILY&utm_medium=email&utm_source=newsletter&utm_term=230111&utm_campaign=greendaily)). In a recent case, the Brazilian meatpacker JBS is facing a complaint issued through the US Securities and Exchange Commission (SEC) for what activists believe to be misleading claims related to their SLB (see e.g. Financial Times, Jan. 18 2023).

<sup>25</sup> The World Bank has drawn up a list of research questions for sovereign SLBs in this report: [documents1.worldbank.org/curated/en/935681641463424672/pdf/Striking-the-Right-Note-Key-Performance-Indicators-for-Sovereign-Sustainability-Linked-Bonds.pdf](https://documents1.worldbank.org/curated/en/935681641463424672/pdf/Striking-the-Right-Note-Key-Performance-Indicators-for-Sovereign-Sustainability-Linked-Bonds.pdf) (p.39)

## 5. Outlook for nature investments in Southeast Asia

**Climate change is already impacting Southeast Asia and together with the risk of ecosystem collapse provide strong motivation for investing in nature.** This paper has framed the case for nature investing from both a public and private perspective. The likely impacts of climate change on Asian economies and the multiple benefits created by restoring nature all point to a strong investment case led by the public sector. The response to COVID 19 demonstrated the ability of governments to mobilise vast sums when required, and the nature crisis should not be treated any differently. Yet, the private sector should feel empowered too – to use nature to protect and enhance their own assets and by offering up capital for new nature-based forward-looking ventures. Investors also have a key role to play in supporting governments – for example by buying nature related sovereign debt.

**Yet, nature investments are not forthcoming on the scale needed. The lack of sufficient predictable revenue streams has perhaps the strongest cooling effect on private investors.** We can categorise barriers to nature investing into policy and implementation barriers<sup>26</sup>. Policy barriers refer to the lack of incentives to invest in nature ('business model') or the presence of subsidies or other regulatory barriers which undermine such investments (conflicting policies are known to have a detrimental effect on mangrove restoration in Indonesia, for example<sup>27</sup>). In Asia-Pacific these are viewed as the most important barriers by market participants, according to a recent survey (Temasek et al., 2021).

**But creating the business model is only step one. Implementation barriers related to scale, data monitoring and human factors can foil what in theory looks like a potentially promising investment.** The presence of supportive legal frameworks and institutional readiness on the ground is key in a nature context. Around 80% of biodiversity globally is under the control of indigenous and local communities<sup>28</sup>, yet land tenure and the rights of indigenous and local populations to part of the benefits from nature projects have often been overlooked in the past. Data collection – for impact reporting or standard verification - can be costly. The data must be site specific and although significant advances are being made in the use of technology (e.g. through satellite monitoring), the complexity and site-specificity of for example biodiversity metrics are still limiting the prospects for automation. Investment scale is another often-quoted barrier to efficient investments (Temasek et al., 2021): Nature projects are often small, but larger project sizes make for more profitable investments and are more likely to be met with interest by investors with minimum ticket sizes.

**A lack of awareness of opportunities and poor understanding of benefits have been pointed out as limiting investor interest in nature** (Temasek et al., 2021; UNEP, 2022), **and the hope is that this report has contributed to mitigating that gap for Southeast Asia.** A range of options exist, from 'armchair investing' in fixed income markets with little need for detailed understanding to money directed at real assets where investors are tied in over time. We offered two case studies: one outlining different investment vehicles for mangrove investing and another proposing a biodiversity linked SLB for a sovereign issuer. While these are very different in terms of their investment profile and impact on creating additional financial flows, they are all part of mainstreaming nature into the investment agenda.

**Although important as a current signal, we warn against overreliance on the carbon market to provide the investment case for nature.** Currently, carbon markets are seen as the dominant driver of nature investments in Asia and while the direction of both local compliance carbon markets and international voluntary markets will continue to provide a price signal to investors, it is a risky signal. This is primarily because of the unresolved challenges related to the integrity and acceptability of forest related carbon. Revenues from other types of credit such as soil conservation or blue carbon may sound attractive but standards for these are even less developed. And while in the wake of COP15, proposals are emerging to create credits for biodiversity, these would have the added challenges of a missing standard

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<sup>26</sup> The barriers to nature investing are well documented in the literature and discussed for example in UNEP (2022) and Ecoprosperty (2021). Holtedahl et al. (2022) discuss five enabling conditions which would allow investors to overcome these barriers. Carbon Market Institute (2021) discusses barriers in the context of Asia-Pacific.

<sup>27</sup> Source: [news.mongabay.com/2022/12/indonesias-mangrove-revival-hindered-by-conflicting-policies/?mc\\_cid=9455af43ef&mc\\_eid=51bd2beabf](https://news.mongabay.com/2022/12/indonesias-mangrove-revival-hindered-by-conflicting-policies/?mc_cid=9455af43ef&mc_eid=51bd2beabf)

<sup>28</sup> And it can be higher in places: in some Pacific Islands for example, customary ownership over relevant land tracts is often over 90% (Carbon Market Institute, 2021, p.32)

measurement metric and a lack of fungibility (no CO<sub>2</sub> tonne equivalent exists for biodiversity). Much work remains to improve the quality, integrity, and equity of carbon and nature credits and as long as the challenges are not resolved, business models relying solely on credit revenues will remain risky.

**Instead, we recommend a holistic view where investing in nature can be seen as a risk mitigation and diversification strategy and as a way of future-proofing portfolios.** Nature investing may be perceived as risky but not investing in nature is also risky. Both for the countries suffering from the depletion of natural resources and the increasing impacts from extreme weather events, but also for investors who fail to recognise the risks and opportunities by nature and are unprepared for the future. This is perhaps nowhere clearer than in the commodity and agriculture sector, where supply chains will benefit from a long-term perspective on risks to build resilience to weather, ecosystem as well as reputational shocks.

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