



CP AXTRA

makro Lotus's

CP Axtra Public Company Limited

Biodiversity Management (TNFD) 2023 Report

31 July 2024

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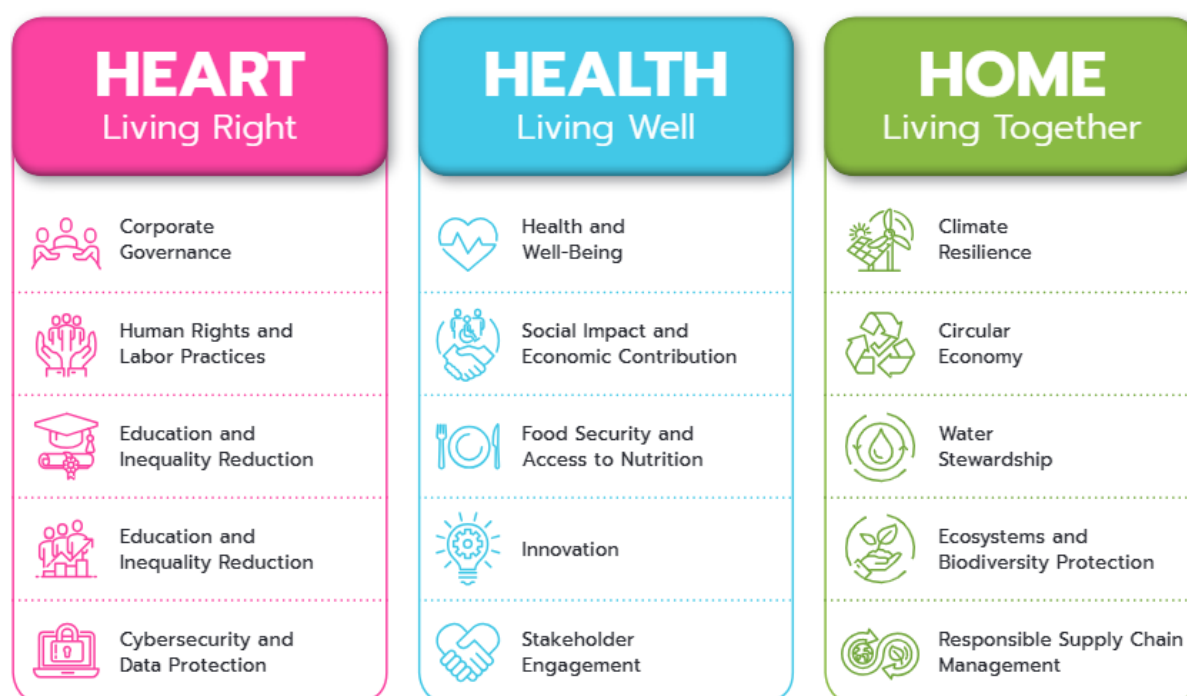
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INTRODUCTION

CP Aextra Public Company Limited (The company) operates two core businesses: member-based wholesale business and retail business. The company has been continuously expanding to provide a wide range and assortment of products to professional members, business operators, and end consumers. Headquartered in Bangkok, The company has over 2,000 branches with all types of store formats domestically and internationally. The company's wholesale business includes wholesale stores operating under the Makro brand in Thailand and international markets (except in India, where The company operates under "LOTS Wholesales Solutions") and the food service business. The company's retail business is operated by Lotus's in Thailand and Malaysia. CP Aextra remains steadfast in its devotion to becoming an industry leader whilst expanding its scope of business operations, both online and offline, to be competitive at a regional level in Southeast Asia.

As a foundation for the company's nature and biodiversity journey through establishing a baseline, awareness, and structures also articulates the commitments to protect nature and biodiversity and integrating nature and biodiversity risks and opportunities into the one of our 2030 sustainability strategy within Home - Living Together, "Ecosystem and Biodiversity Protection" as below figure 1.

Figure 1 : CP Aextra's 2030 Sustainability Strategy



This report is the company's first step for adaption of the recommendations of the Task Force on Nature and biodiversity-related Financial Disclosures (TNFD). The scope of the report covers the operation of CP Aextra PCL, its subsidiaries, and selected assets in Thailand. With reference to the TNFD – Recommendations of the Nature and biodiversity-related Financial Disclosures Issued September 2023.

Governance

Describes CP Aextra's governance around nature and biodiversity-related dependency, risks and opportunities.

Strategy

The effects of nature and biodiversity-related dependencies, impacts, risks and opportunities on CP Aextra's business, strategy, and financial planning.

Risk & Impact Management

The processes used by CP Axta to identify, assess, and prioritize and monitoring and biodiversity-related dependencies, impacts, risk and opportunities.

Metrics & Targets

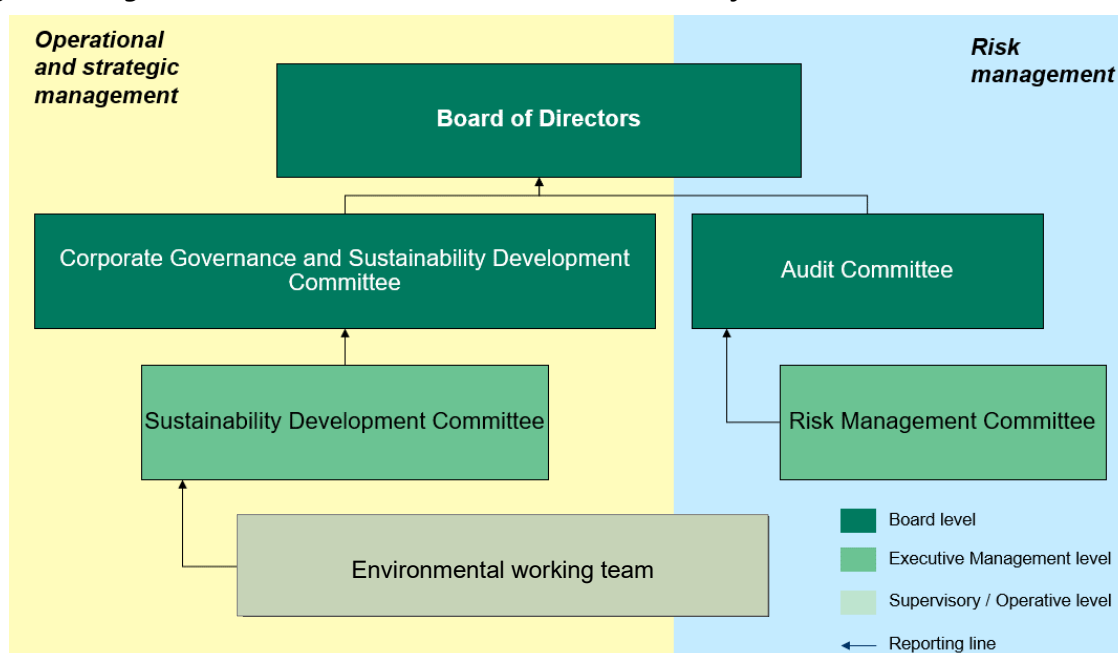
Describe the metrics and targets used to assess and manage relevant nature and biodiversity-related dependencies, impacts, risk and opportunities.

Moving forward, CP Axta seeks to continually improve its nature and biodiversity risk and opportunity management in line with TNFD recommendations and global practices. The company intends to regularly review its nature and biodiversity performance against the four pillars above and update this document on an as-needed basis.

GOVERNANCE

At CP Axta, a robust governance structure is in place to facilitate the oversight of nature and biodiversity-related issues. The Board of Directors (the Board) is the ultimate decision-making body and is responsible for the overall oversight of The company, including overseeing and approving business strategic plans and managing approaches, driving response measures related to environmental, social, and governance (ESG) issues, which also covers the management of nature and biodiversity-related risks and opportunities. The Board considers and reviews its sustainability-related issues and performance as well as mission and strategic plans at least once a year, and assigns relevant functions to develop respective action plans to address these issues.

Figure 1 : Organizational Structure of Nature and biodiversity Governance



Under the Board's oversight, several committees are established to assist the Board in The company's management of nature and biodiversity-related risks and opportunities, as well as oversee daily operations and report back to the Board in a timely manner (**Figure 1**). These committees include the following:

- Corporate Governance and Sustainability Development (CG&SD) Committee
- Sustainability Development Committee
- Risk Management Committee, under the Audit Committee

In addition, the environmental protection working team was established since June 2022 under the Sustainability Development Committee to enhance the implementation of nature and biodiversity strategy. The roles and responsibilities of each committee are summarized below.

Table 1 : Roles and Responsibilities of Key Functions

CP Aextra Functions	Composition	Nature and biodiversity-related Roles and Responsibilities
Board level		
CG & SD Committee (Board Level)	Chaired by an independent director and consists of non-executive directors knowledgeable and experienced in sustainability issues	- Identify and monitor material of nature and biodiversity-related risks and opportunities - Endorse policy, framework and strategies to promote sustainability development and nature and biodiversity resilience in the company for the Board's approval - Supervise, monitor and review the company's operations against its nature and biodiversity strategy, action plan and goals through corporate-level oversight - Report directly to the Board
Executive management level		
Sustainability Development Committee	Chaired by one of the Board members, the committee consists of senior executives from all departments responsible for economic, social and environmental performance	- Oversee the efficiency and effectiveness of sustainability and nature and biodiversity performance throughout the company - Establish targets, develop strategies, management approaches, and performance indicators for nature and biodiversity-related issues - Assign working groups to drive organizational performance to comply with the company's objectives - Monitor and review progress on nature and biodiversity actions on a quarterly basis, prepare annual action plans on materiality issues and ESG risks, for the CG & SD Committee's approval - Communicate the progress and commitment of the nature and biodiversity dimension within sustainability strategies to internal and external stakeholders
Risk Management Committee	The committee consists of company executives and 12 executives with expertise and experience in risk management. It is structurally independent of the	- Formulate a risk assessment framework and risk management policies covering environmental risks (including nature and biodiversity change) - Oversee nature and biodiversity-related risk management - Defines the direction of risk management of The company according to its risk appetite and risk policy

	business lines and reports directly to the top management of the company.	▪ Review corporate strategies to ensure the adequacy and appropriateness of risk management for nature and biodiversity-related issues ▪ Report to the Audit Committee and the Board on its performance annually
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Supervisory / Operational level

Environmental Working Teams	Chaired by a member of the Sustainability Development Committee and consists of 17 representatives across departments including Sales and Operations, Supply Chain Management, Construction and Facilities, Risk Management and Compliance, Sustainability, Finance Planning and Analysis, Corporate General Affairs, Account	▪ Establish operational targets related to nature and biodiversity risk management and resilience with respect to indigenous people, communities and affected stakeholders. ▪ Implement GHG emissions reduction and offset programs and provide quarterly updates to the Sustainability Development Committee ▪ Examine technology options and identify solutions for nature and biodiversity resilience that are suitable for the company ▪ Monitor and ensure compliance with internal environmental policies as well as laws and regulations ▪ Engage with stakeholders to raise awareness on nature and biodiversity issues, and collaborate with relevant stakeholders on nature and biodiversity management, monitoring and resilience. ▪ Communicate environmental performance to the Sustainability Development Committee and to other stakeholders via reports and other disclosure channels at least once a year
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Additional information on the governance framework of CP Axta's 2023 Annual Report page 103.

[Sustainability Reports | CP Axta](#)

STRATEGY

To maintain healthy and diverse ecosystem of this planet, CP Axta has established policy to achieve the “No Net Loss” and “Nature Positive Strategy” within 2030 which scope of commitment are all operations, suppliers, vendor, and partners. See more detail at Biodiversity and No Deforestation policy at website link [biodiversity-policy-en.pdf \(cpaxtra.com\)](https://cpaxtra.com/biodiversity-policy-en.pdf)

Figure 2 : CP Axta’s Biodiversity Protection Strategy



The operations with efforts to manage biodiversity values and apply operating practices by setting commitment to prohibit operations where have impacts on species classified as critically endangered, endangered, or vulnerable on the IUCN Red List, endemic species, internationally recognized areas (UNESCO World Heritage sites, Ramsar Wetlands, important biodiversity areas, Conservation of Nature Category or IUCN Category I-IV zones and any adjacent areas to critical biodiversity areas including Protect and restore rare and endangered species by restricting use of any harmful substance or technology to protect soil health and prevent ecosystem destruction and degradation throughout the own operation, supplier and value chain including partners

Conducting a biodiversity risk assessment. Identify risks and opportunities have been classified to short, medium, long-term based on the financial impacts. Nature positive strategy is aimed to halt nature loss and reverse the degraded ecosystem that is align with according to TNFD Framework. The strategy is our framework to manage nature-related risks in our operation, supply chain and partners. In addition, It also helps us to convert the nature-related risks to business opportunities.

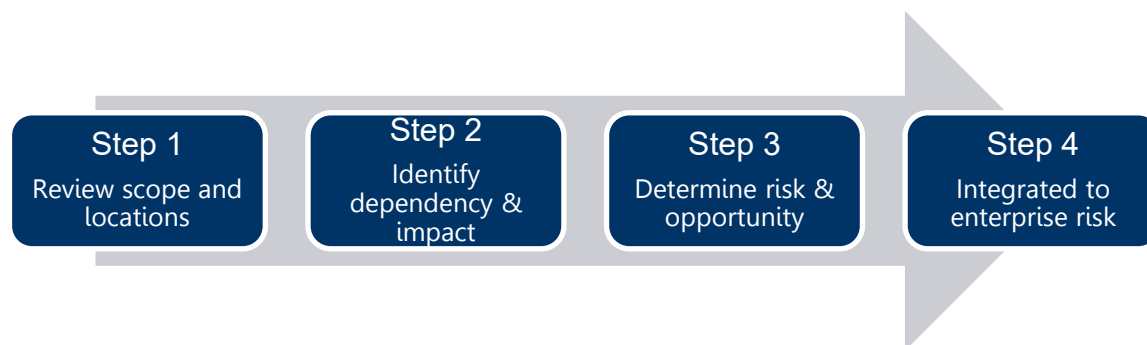
Application of a mitigation hierarchy including avoidance, minimization, restoration, and offset shall be effectively implemented when the potential risk to biodiversity and deforestation is identified. And

engagement with stakeholders on biodiversity and encourage all supplier to have a commitment to “No deforestation” and engage with the supplier to ensure that the risk of deforestation shall be managed properly during the contractual period.

RISK & IMPACT ASSESSMENT

To enable CP Aextra’s strategy for risks and opportunities associated nature and biodiversity. The company conducted a risk assessment process shown with each step explained below.

Figure 4 : Process Step of Biodiversity Risk Assessment



Refer to framework and methodologies from TNFD and analytical tools from IBAT and WWF Biodiversity Risk Filter to assess biodiversity risk location. Including review, the latest nature and biodiversity-related policies and regulations i.e UNESCO World Heritage, and IUCN., market trends and historical hazard events. The location specific approach are applied for assessment are own operation, adjacent areas to own operations (0-5 kms), upstream and downstream activities with Integrated Biodiversity Assessment Tool (IBAT) and WWF Biodiversity Risk Filter. Also reviewed the risks and opportunities reported by its peers to identify and shortlist and opportunity drivers potentially most relevant to The company’s business and operation.

The physical and transition risks from each driver towards short-term, medium-term, and long-term time horizons inform the comparative significance of each driver to CP Aextra’s business. Each driver was subsequently assigned with an indicator from external nature and biodiversity scenarios. The results were normalized and presented as a heatmap to inform the relative materiality of each driver to business

The company has integrated biodiversity risk and opportunity into the multi-disciplinary company-wide risk management processes of corporate risks that shown on company’s website at [Enterprise Risk Management Manual \(cpaxtra.com\)](https://cpaxtra.com/Enterprise-Risk-Management-Manual) in the identification to enhance and align the biodiversity risk and opportunity with the corporate’s overall risk management system.

Dependency and Impact

Dependencies are aspects of environmental assets and ecosystem services that a person or an organisation relies on to function. While, the Impacts refer to a change in the state of nature (quality or quantity), which may result in changes to the capacity of nature to provide social and economic functions. Impacts can be positive or negative. They can be the result of the company’s or another party’s action.

Table 2 : CP Axtra's Dependency and Impact

	Own operation Adjacent area (0-5 kms)	Upstream activities- fresh food production	Upstream activities-food & beverage manufacturing	Downstream Activities – Delivery
Dependency				
Soil quality	Low	High	Low	Low
Water quality	High	High	Medium	Low
Impact				
Climate Change	Medium	Medium	High	Medium
Land use	Medium	Medium	Low	Low
Water use	Medium	High	High	Low
Ocean use	Low	Medium	High	Low
Air pollution	Low	Low	Medium	High
Solid waste pollution	High	Low	Medium	Medium
Soil pollution	Low	Medium	Low	Medium
Water pollution	Medium	Medium	Low	Medium
Alien species	Low	Medium	Low	Not applicable

Towards to No net Loss and NPI targets for priority areas to work which Priority Areas are identified based on risk assessment data on dependencies and impacts across a company's value chain to determine the relative contribution of different locations to a company's overall biodiversity related risk exposure include the state of nature in value chain locations, the Needs of value chain stakeholders such as dependency on ecosystem services.

Table 3 : CP Axtra's Biodiversity Exposure & Assessment

	Number of sites	Area (Unit: Hectares)
Number and area of own operation including Distribution centre and head offices	Makro = 180 sites Lotus's = 2,465 sites Total CP Axtra = 2,645 sites	Makro = 108.66 Lotus's = 177.24 Total CP Axtra = 285.90
Number of biodiversity impact assessments for own operational sites	Makro = 180 sites Lotus's = 415 sites Total CP Axtra = 595 sites	Makro = 108.66 Lotus's = 142.38 Total CP Axtra = 251.04 (87.8% of total area)
Significant biodiversity impact, or are in proximity to critical biodiversity	Makro = 1 site Lotus's = 1 site Total CP Axtra = 2 sites locate nearby protected area without any significant impact or stakeholder's complaint.	Makro = 0.08 Lotus's = 0.02 Total CP Axtra = 0.10
Significant biodiversity impact, or are in proximity to critical	Makro = 1 site Lotus's = 1 site	Makro = 0.08 Lotus's = 0.02

biodiversity sites have a biodiversity management plan	Total CP Aextra = 2 sites (100%)	Total CP Aextra = 0.10
significant biodiversity impact, or are in proximity to critical biodiversity sites have a biodiversity management plan	Makro = 1 site Lotus's = 1 site Total CP Aextra = 2 sites	Makro = 0.08 Lotus's = 0.02 Total CP Aextra = 0.10
Number of biodiversity impact assessment sites - supplier (% assessed of total supplier)	Critical tier I = 328 sites (100%) Tier 1 = 1,908 sites (35%) Total = 2,236 sites (41%)	
Significant biodiversity impact, or are in proximity to critical biodiversity - supplier	Critical tier I = 0 site Tier I = 0 site Total = 0 sites	

Note: 1 hectare = 10,000 sqm.

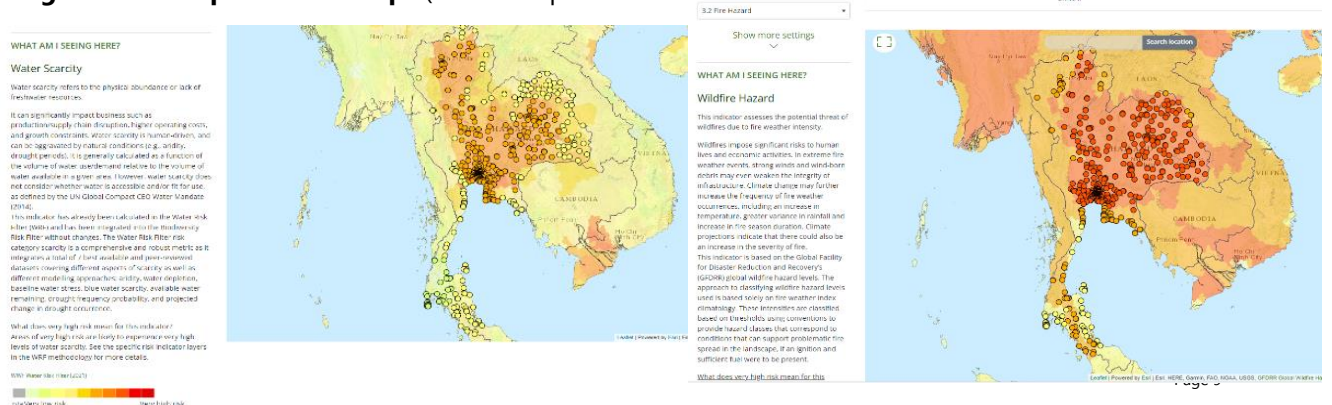
Physical Risks

CP Aextra categorized physical risks into two types, **acute** and **chronic** risks, and identified the physical risk to The company's assets and operations, value chain. All the significant assets are coverage of this assessment includes 616 key assets (store, head office, distribution centers and warehouse) including suppliers from CP Aextra's portfolio across wholesale and retail stores under different scenarios and time horizons.

Table 4 : CP Aextra's Physical Risks

Physical Risk Type	Identified Physical Risk Driver	Baseline (2023)	Medium term (2030)	Long term (2050)
Acute	Riverine floods	Moderate Risk	Moderate Risk	Moderate Risk
Acute	Wildfires	Moderate Risk	High Risk	High Risk
Acute	Tropical Cyclones	Moderate Risk	High Risk	High Risk
Acute/Chronic	Extreme heat	Low Risk	Moderate Risk	High Risk
Acute/Chronic	Water scarcity	Low Risk	Moderate Risk	High Risk
Acute/Chronic	Landslides	Low Risk	Moderate Risk	High Risk

Figure 5 : Example of Risk Maps (see all maps and detail in Annex II)



Transition Risks and Opportunities

Following TNFD recommendations, CP Axta categorized transition drivers into four types: **policy and legal**, **market**, **technology**, **reputation** and **financial system**. As explained, the assessment was conducted and the results are provided as summary table as below, including the identification of transition drivers, relative materiality of each driver based on the assessment, and potential financial system risk or opportunity.

As the company focuses on the comparative significance of each driver between the base case and the low-carbon case, as it assumes that most transition drivers can be influenced by various factors not related to nature and biodiversity change or low-carbon economy transition. CP Axta can capture the precise impact of nature and biodiversity-related risks and opportunities have on its business.

Table 5 : CP Axta's Transitional Risks & Opportunity

Transition Risk Type	Identified Physical Risk Driver	Baseline (2023)	Medium term (2030)	Long term (2050)
Policy and Legal	Increasing risk from new laws and regulations	Low Risk	Moderate Risk	Moderate Risk
	Risk from operation within the additional conservation area	Low Risk	Moderate Risk	Moderate Risk
	Tightening restrictions on plastic products	Low Risk	Low Risk	Moderate Risk
Technology	Low-carbon logistics and renewable technology	Limit Opportunity	Moderate Opportunity	Moderate Opportunity
Market	Market-driven shift toward Green Consumerism	Low Risk	Low Risk	Moderate Risk
	Growth of digital marketplaces	Moderate Opportunity	High Opportunity	High Opportunity
Reputation	Social Media, Community or stakeholder's complaint	Moderate Risk	High Risk	High Risk
Financial system	Higher access to finance and capital due to stakeholder recognition	Moderate Opportunity	High Opportunity	High Opportunity

METRICS AND TARGETS

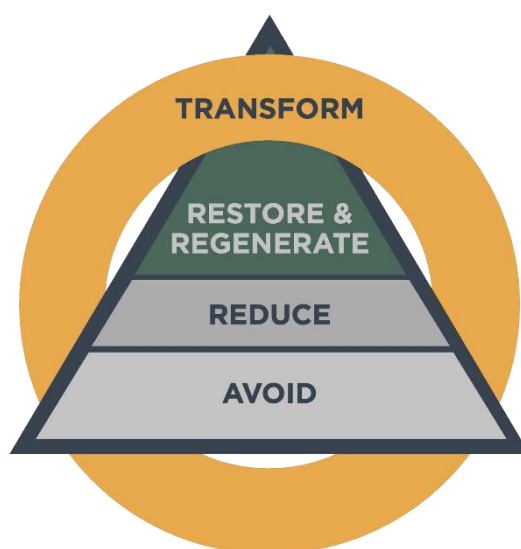
Once the drivers and their materiality were identified and assessed, CP Axta reviewed and identified the implications of each driver on various aspects of The company's business, from the upstream supply chain to downstream customers. The company also discussed the mitigation measures currently in place or planned in the future among internal stakeholders. The key findings of this discussion enabled CP Axta to formulate a nature and biodiversity action plan and integrated as material into Enterprise Risk Management system (ERM) and routine monitoring and reporting the progress to the Board of Director.

CP Axta set the targets and key performance indicators in different time horizons for the focused nature and biodiversity as the of the company's enterprise risk management system. The company believes that setting annual performance targets as its interim progress is complementary to the success of our 2030 Sustainability Targets. In terms of nature and biodiversity-related targets are summarized as follows;

Table 6 : Metrics - Targets and Performance

Sustainability Target	Metrics and KPI Measurement (Baseline year – 2020)	2023 Performance
No Net Loss	100% own operation and supply chain are assessed to ensure not locate in the natural conservation area or deforestation. - Sustainable and traceable sourcing - Zero food waste to landfill by 2030 - Sustainable packaging by 2030	100% operate on legally approval area and 41% suppliers are assessed. - Own brand has certified by MSC and ASC and 100% No selling the marine juvenile. 100% plastic packaging is recyclable, reusable or compostable. 100% store - No giving free plastic shopping bag for customer. 100% store - No single use polystyrene food packaging selling.
Net Positive	- Every site participates the biodiversity promoting program - Planting 200,000 trees by 2030	80 sites are participating in the food waste delivered to support the animal conservation centers. - Planting 68,228 trees
Climate Action	- Carbon neutral by 2030 and Net Zero by 2050 - Transition to 100% online delivery with EV within 2030	- Reduce 1% GHG emission 13%Renewable energy utilization 10% of online delivery fleet have shifted to EV

The mitigate actions and projects are developed on the basis of the mitigation hierarchy follow SBTN (2023) Step 4. Act and the example of projects as follow,

Figure 6 : The SBTN ART3 Action Framework Mitigation Hierarchy

AVOID

Example projects that have been taken to prevent environmental impacts.

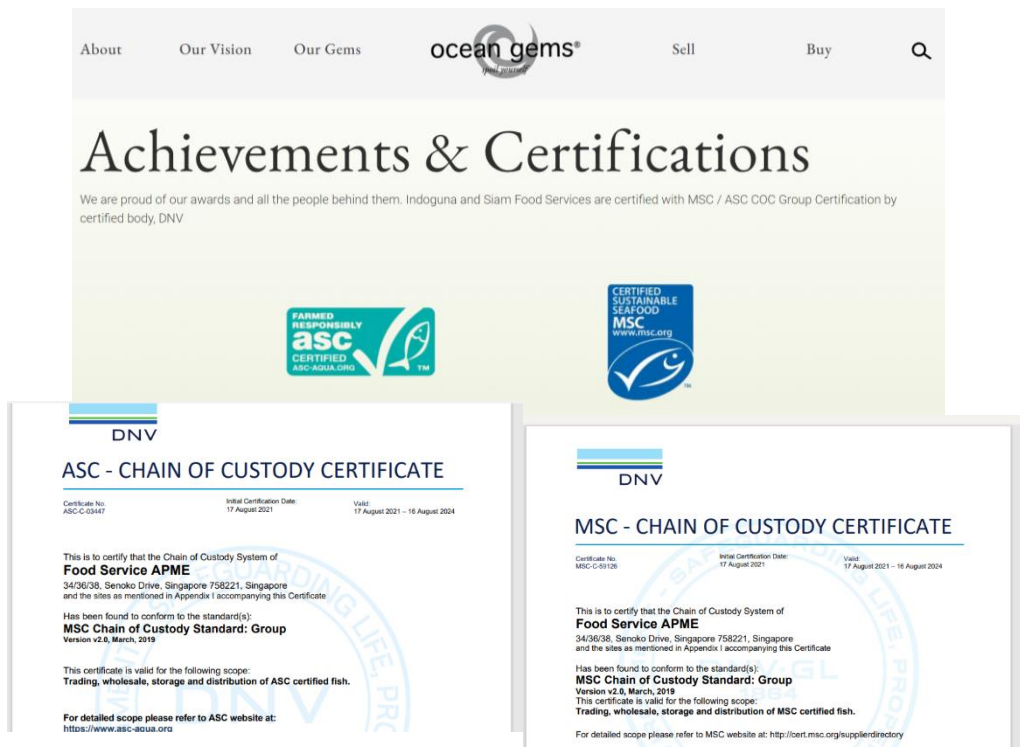
"Sustainable Sourcing" Project

The company prioritizes sustainable sourcing for raw materials and products related to tuna. The selected tuna must not belong to endangered species or red list, as per the International Union for Conservation of Nature (IUCN) guidelines. The company verifies the sources, tuna species, and fishing methods, ensuring they have no adverse impact on the environment. Additionally, The company checks with its partners to ensure compliance with human rights, labour practices, and occupational health & safety regulations for workers. The commitment covers 100% of the products in this category under The company's trademark.



"Own Brand Seafood & Aqua Product Are Certified ASC & MSC"

The "ocean gems" is our seafood and aqua own brand product has 42 items which are certified by Marine Stewardship Council (MSC) and Aquaculture Stewardship Council (ASC)



See detail at <https://www.ocean-gems.com/about/achievements-asc> and <https://www.ocean-gems.com/about/achievements-msc>

REDUCE

Example of company's actions to minimize or reduce impact or dependency on nature by new development of process and products.

"Save Water, for Future Water Conservation" Project

The Save Water, Save Future project since 2018. To reduce water consumption. by returning the treated effluent to reuse in the green area, and cleaning the waste house or loading area. This project can reduce the amount of water used and recirculate water to improve resource efficiency and reduce operation costs. In 2023, over 72 stores are participating.



"Banana Tree-Packaging" project

Store implemented biodegradable single-use packaging by applying fresh banana tree for the "Local Organic Vegetable" and permanently available at every store for whole year. Over 1,022,997 pieces (equal to 7.16 tons) or 9% of single use plastic are replaced with banana tree packaging.



REGENERATE

Example actions to increase ecological productivity in relation to nature's contribution to people.

" For Better Life of High Land Farmer" Project

The project aims to survey, educate, and promote farmers in the northern and northeast provinces which are chronic water stress areas. For improving the efficiency of agriculture production and less impact to biodiversity. The company collaborates with the Department of Agricultural Extension and universities to enhance the sustainable and nature based solution farming i.e. use of the water-dropping system,

stopping chemical pesticides by replacing with local herb, and transforming to organic farming. The company also advice the kind of fruit and vegetable that consume less water and high demand.



"Groundwater Banking System" Project

The company adopted a nature solution follow the King Rama IV, the groundwater bank has been installed within the water stress areas. It's simply technology and nature-based solution which only the water sump with rock and vertical piping are installed to collect flash rainfall or well-treated wastewater and flows through the vertically piping to underground reservoir also increase water absorption into the soil. This concept improve water scarcity impacts and from the pilot project at store - Yasothon province and expands to another water stress area in Maha Sarakham province. This knowledge is shared to local farmer and the nearby community. The 20 farmers and communities in water stress are trained and participate the project. The result as over 32 cubic meters per day has returned to nature through groundwater bank system and more than 155,520 Baht in cost savings per year.



RESTORE

We aim to return an area to the original ecosystem and supporting species recovery also ecological restoration at the sites.

“Planting Trees” Project

Lotus's, in collaboration with the Khao Yai National Park Conservation Foundation under the Next Gen New World project, organized youth training activities, including tree planting and forest fire stopping. The project has continuously planted over 61,000 trees in national parks in many provinces. The employees participated planting 500 seedlings, at stores, distribution centers, and community. Furthermore, Lotus's collaborates with partners in the campaign to generating funds through the sale of eco-friendly dishwashing liquid products. For every product sold, donated 1 Baht to support tree planting activities in Thailand. In 2023, 61,000 seedlings are planted, and 1,209,234 Baht are donated to support tree planting activities.



Altogether, makro is implementing the project to conserve the native trees based on urban reforestation principles. The planting with native perennial trees, such as bamboo, mango, and jackfruit including rare species tree i.e Teak, Siamese rosewood etc. The project aims to conserve species of local perennial trees, reduce greenhouse gases, improve soil health and being food source and biodiversity education center for employees, customers and nearby communities. In 2023, there are 7,228 perennial trees at stores and more accumulated trees every year.



"AXTRA Care - Save the Turtle and Elephant" projects

As turtle and elephant are at risk species, The company actively collaborated with government, community and suppliers to support the Conservation centre. Under the project "Love the sea, Save the turtle: at "Man Nai" island which is the largest this archipelago. And continuously donate the food waste from stores to support the turtle and elephant upcountry many conservation centres.



TRANSFORM

The company address the fundamental drivers of nature loss, protecting nature and human well-being and improving the functioning of real and financial economy across supply chains and sector.

"Transform the Fishery Supply chain of Thailand - Saving the Juvenile Marine Animals " project

According to SDG-14 (Life below water), The company aims to transforms the national fishery industry. CP Axtra collaborate with government, media and announce our commitment that whole CP Axtra's supply chain "Stop catch, Stop purchase and Stop sell juvenile marine animals". The objective is utilized the economical mechanism drive the wide change to the fishery supply chain in Thailand. For protection the juvenile marine animals, which is fundamental of food chain for biodiversity and ocean ecosystem. The commitment is publicly communicated to all relevant partners and suppliers including stakeholders, communities, media and NGOs. The actions are starting from the enforce the traceability, the proper sourcing, defining & inspect the size and species, equipment, and fishing methods, ensuring no adverse impact on the freshwater and ocean environment. Additionally, this initiative aims to drive to

sustainable fishery by changing the system and behaviour. Altogether, with the educate to raising awareness among suppliers, producers, traders, and local fishery groups till the customer and consumer.



The commitment are broadcasting on TNN News and can watch at link: [“แม่โคร-โลตัส”หนุนทะเลยั่งยืน
ชวนคนไทยไม่บริโภคสัตว์น้ำวัยอ่อน | TNN ข่าวค่ำ | 6 มิ.ย. 65 \(youtube.com\)](https://www.youtube.com/watch?v=6m5y65y6y6y)

"Transform to Clean Energy and EV Utilization" Projects

Aims to carbon neutral by 2030 and Net zero by 2050. CP Axtra transforms to RE100 -renewable energy 100%. The solar rooftop are installed 87 stores from 111 stores and distribution centers (or 78%). In addition, there 2 stores of Makro achieved the "Global Sustainable Energy and Environment in 2023" (GSEE) from Provincial Electricity Authority of Thailand.

The green refrigerant with "Water-Loop Cooling System." Replacing the traditional refrigerant improves energy efficiency by the smaller size of the compressor and reduces GHG emissions from refrigerant. The pilot project installation is at the two stores (Lat Kra Bang and Pink Lao branches) and expanding plans for the others. The green refrigerant is significant low carbon emission which the reduce GHG 598 tons of CO2 equivalent per year, reduce energy consumption 481,800 kilowatt-hours per year and cost saving 1,927,200 Baht per year.

Also green logistics; the Hydrogen Fuel cell and EV are replacing fossil fuel vehicle for own operation and enforce all supplier both upstream and downstream transportation. Furthermore, all stores are utilizing EV forklifts which decrease greenhouse gases emission and increase cost savings. In 2023, reduce carbon emission 77,421.80 tons of CO2 eq. and energy saving 1,204,962.37 Baht per year.





ANNEX I : GLOSSARY

Alliance for Zero Extinction (AZE) site: highest priority KBAs. AZEs will trigger critical habitat status due their extreme importance for the last known populations of highly threatened (CR and EN) species.

Important Bird and Biodiversity Areas (IBAs): Important Bird and Biodiversity Areas (IBAs) are priority sites for bird conservation because they regularly hold significant populations of one or more globally or regionally threatened, endemic or congregator bird species, or highly representative bird assemblages.

IUCN Protected Area Management Categories: assigned to legally protected areas by national government agencies to allow international comparison between national protected area networks, based on management objectives of a protected area. Assigning IUCN categories to protected areas is encouraged, although their use is voluntary, and therefore not all protected areas have an IUCN category assigned to them. These protected areas are designated or recognised at the national level and should not be treated as less important than protected areas to which a management category has been assigned or reported. The six categories are:

- Ia: To conserve regionally, nationally or globally outstanding ecosystems, species (occurrences or aggregations) and/or geodiversity features: these attributes will have been formed mostly or entirely by non-human forces and will be degraded or destroyed when subjected to all but very light human impact. Strictly protected areas set aside to protect biodiversity and also possibly geological/ geomorphological features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

- Ib: To protect the long-term integrity of natural areas that are undisturbed by significant human activity free of modern infrastructure and where natural forces and processes predominate, so that current and future generations have the opportunity to experience such areas. Large area of unmodified or slightly modified land, and/or sea, retaining its natural character and influence, without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

- II: To protect natural biodiversity along with its underlying ecological structure and supporting environmental processes, and to promote education and recreation. Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities.

- III: To protect specific outstanding natural features and their associated biodiversity and habitats. Areas set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove.

- IV: To maintain, conserve and restore species and habitats. Protected areas aim to protect particular species or habitats and management reflects this priority. Many category IV Protected Areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

- V: To protect and sustain important landscapes/seascapes and the associated nature conservation and other values created by interactions with humans through traditional management practices. Areas where the interaction of people and nature over time has produced an area of distinct character with significant ecological, biological, cultural and scenic value and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

- VI: To protect natural ecosystems and use natural resources sustainably, when conservation and sustainable use can be mutually beneficial. Generally large areas, with most of the area in a natural condition, where a proportion is under sustainable natural resource management and where low-level non-industrial use of natural resources compatible with nature conservation is seen as one of the main aims of the area.

IUCN Red List of Threatened Species (IUCN RL or Red List): international standard for assessing threat status for species. The Red List is compiled by IUCN's global network of experts, specialist groups and partners. For further information, please see the IUCN Red List of Threatened Species website. Red List categories are:

- Critically Endangered (CR): Highest risk of extinction. A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered, and it is therefore considered to be facing an extremely high risk of extinction in the wild.

- Endangered (EN): Very high risk of extinction. A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered, and it is therefore considered to be facing a very high risk of extinction in the wild.

- Vulnerable (VU): Risk of extinction. A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable, and it is therefore considered to be facing a high risk of extinction in the wild.

- Near Threatened (NT): A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered, or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- Least Concern (LC): A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable, or Near Threatened. Widespread and abundant taxa are included in this category.

- Data Deficient (DD): A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

Key Biodiversity Areas (KBAs): Key Biodiversity Areas (KBA) are 'sites contributing significantly to the global persistence of biodiversity', in terrestrial, freshwater and marine ecosystems. Sites qualify as global KBAs if they meet one or more of 11 criteria, clustered into five categories: threatened biodiversity; geographically restricted biodiversity; ecological integrity; biological processes; and, irreplaceability. KBAs comprise an "umbrella" set of internationally-recognized priority sites for biodiversity that include Important Bird and Biodiversity Areas (IBAs); and Alliance for Zero Extinction (AZE) sites. For further information please see the Key Biodiversity Areas website. Protected Area designation: Within IBAT users can filter protected areas data by designation in the following categories:

- National: Protected areas designated or proposed at the national or sub-national level ● Natura 2000: A European network of protected sites under the European Habitats and Birds Directives, aiming to protect the most valuable and threatened European habitats and species.

- Regional Seas: Protected areas established under Regional Seas Conventions such as OSPAR ● World Heritage: A landmark or area which is selected by the UNESCO as having cultural, historical, scientific or other form of significance, and is legally protected by international treaties. The sites are judged important to the collective interests of humanity.

- Ramsar: Wetlands protected by national governments to fulfil their obligations under the Convention on Wetlands of International Importance (commonly called the Ramsar Convention).

- MAB: A global network of sites established by countries and recognized under UNESCO's Man and Biosphere Programme to promote sustainable development based on local community efforts and sound science.

Protected Area governance: Within IBAT users can filter protected areas data by governance in the following categories: z

- Governance by government, which includes federal or national ministry or agency, sub-national ministry or agency, and government-delegated management
- Shared governance, which includes transboundary governance, joint governance, and collaborative governance.
- Private governance, which includes individual landowners, non-profit organisations, for profit organisations, governance by indigenous peoples and local communities, including indigenous peoples and local communities

ANNEX II : RISK MAP ANALYSIS RESULT

WHAT AM I SEEING HERE?

Water Scarcity

Water scarcity refers to the physical abundance or lack of freshwater resources.

It can significantly impact business such as production/supply chain disruption, higher operating costs, and growth constraints. Water scarcity is human-driven, and can be aggravated by natural conditions (e.g., aridity, drought periods). It is generally calculated as a function of the volume of water as demand relative to the volume of water available in a given area. However, water scarcity does not consider whether water is accessible and/or fit for use, as defined by the UN Global Compact CEO Water Mandate (2014).

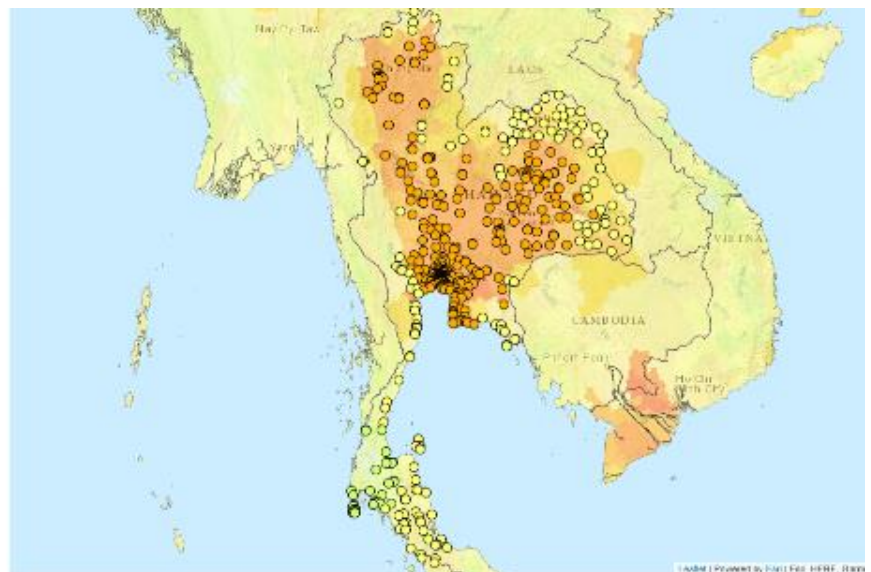
This indicator has already been calculated in the Water Risk Filter (WRF) and has been integrated into the Biodiversity Risk Filter without changes. The Water Risk Filter risk category scarcity is a comprehensive and robust metric as it integrates a total of 7 best available and peer-reviewed datasets covering different aspects of scarcity as well as different modelling approaches: aridity, water depletion, baseline water stress, blue water scarcity, available water remaining, drought frequency probability, and projected change in drought occurrence.

What does very high risk mean for this indicator?

Areas of very high risk are likely to experience very high levels of water scarcity. See the specific risk indicator layers in the WRF methodology for more details.

WWF Water Risk Filter (2021)

Very low risk Very high risk



3.2 Fire Hazard

Show more settings

WHAT AM I SEEING HERE?

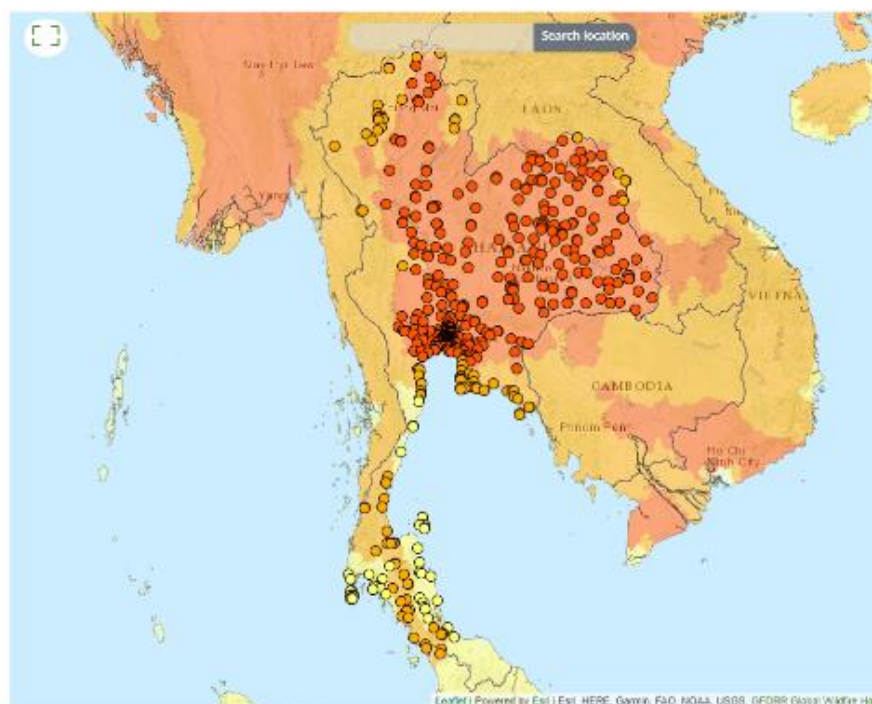
Wildfire Hazard

This indicator assesses the potential threat of wildfires due to fire weather intensity.

Wildfires impose significant risks to human lives and economic activities. In extreme fire weather events, strong winds and wind-borne debris may even weaken the integrity of infrastructure. Climate change may further increase the frequency of fire weather occurrences, including an increase in temperature, greater variance in rainfall and increase in fire season duration. Climate projections indicate that there could also be an increase in the severity of fire.

This indicator is based on the Global Facility for Disaster Reduction and Recovery's (GFDRR) global wildfire hazard levels. The approach to classifying wildfire hazard levels used is based solely on fire weather index climatology. These intensities are classified based on thresholds using conventions to provide hazard classes that correspond to conditions that can support problematic fire spread in the landscape, if an ignition and sufficient fuel were to be present.

What does very high risk mean for this



3.1 Landslides

Show more settings

WHAT AM I SEEING HERE?

Landslides

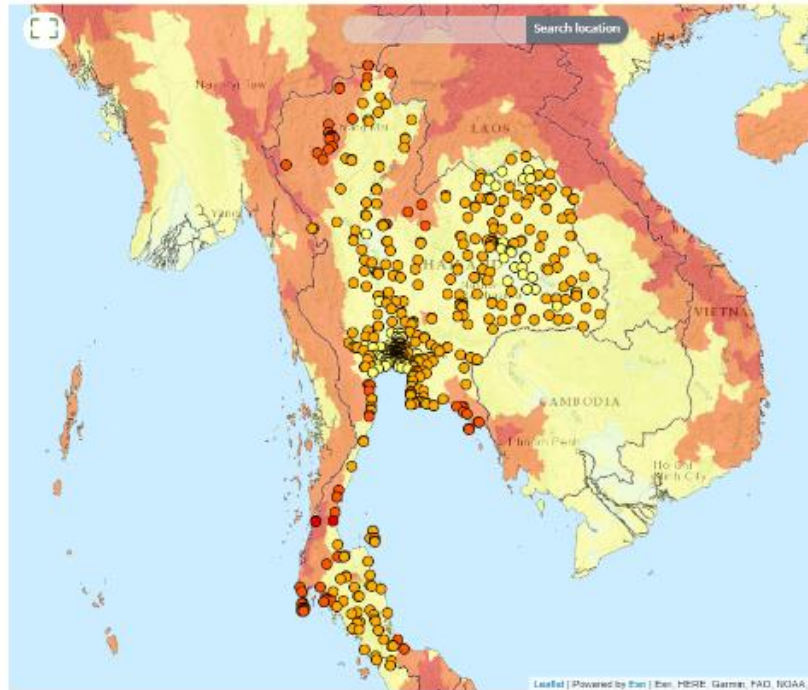
This indicator assesses the potential threat of rainfall- and earthquake-triggered landslides.

Landslides impose significant risks to human lives and economic activities. Landslides have become more prevalent because of anthropogenic disturbances, such as land-cover changes, land degradation and expansion of infrastructure. These are further exacerbated by more extreme precipitation due to climate change, which is predicted to trigger more landslides and threaten sustainable development in vulnerable regions.

The Global Landslide Hazard Map has been used as the basis for this indicator. It presents a qualitative representation of global landslide hazard on a global scale. It is a combination of the Global Landslide Hazard Map: Median Annual Rainfall-Triggered Landslide Hazard and the Global Landslide Hazard Map: Earthquake-Triggered Landslide Hazard.

What does very high risk mean for this indicator?

Areas of very high risk have a high landslide



3.6 Tropical Cyclones

Show more settings

WHAT AM I SEEING HERE?

Tropical Cyclones

This indicator assesses the predicted maximum wind speed (mph) on a 50-year return period.

Storms can impact companies and value chains through a variety of ways, including building and property damage, flooding, or power outages, which may lead to temporary or permanent company closures and loss of revenue.

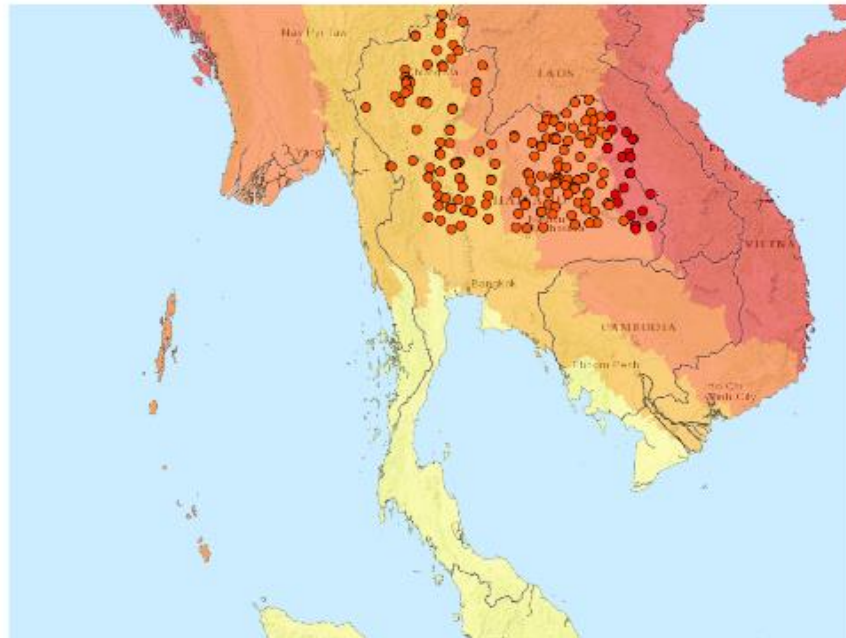
This indicator is based on GFDRR's tropical cyclonic strong wind and storm surge model, using information from 2,594 historical tropical cyclones, topography, terrain roughness and bathymetry. This database is the most up-to-date repository of information associated with tropical cyclones.

What does very high risk mean for this indicator?

Areas of very high risk are predicted to experience very high maximum wind speeds (>120mph) on a 50-year return period. See the documentation for more details.

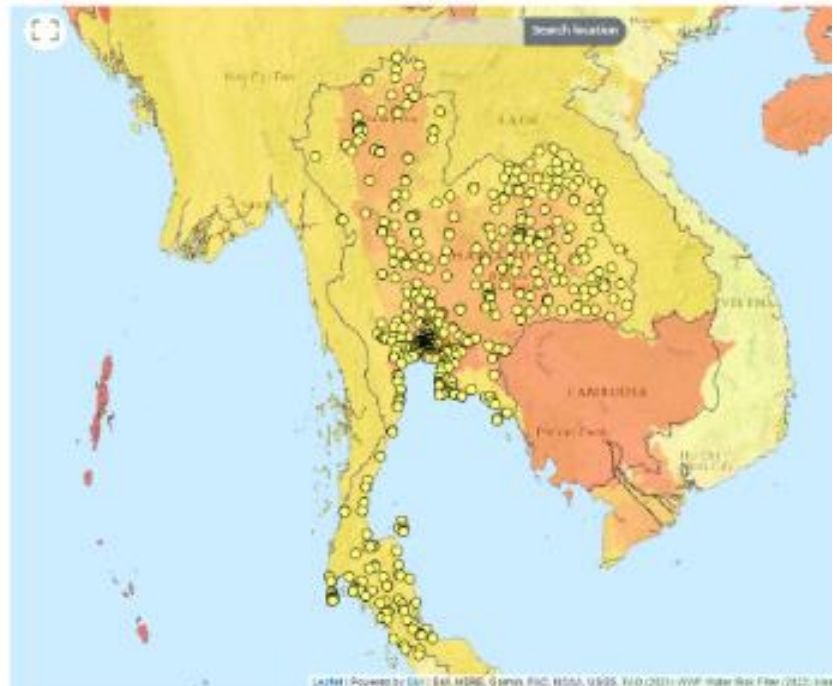
GFDRR (2017)

Very low risk Very high risk



✓

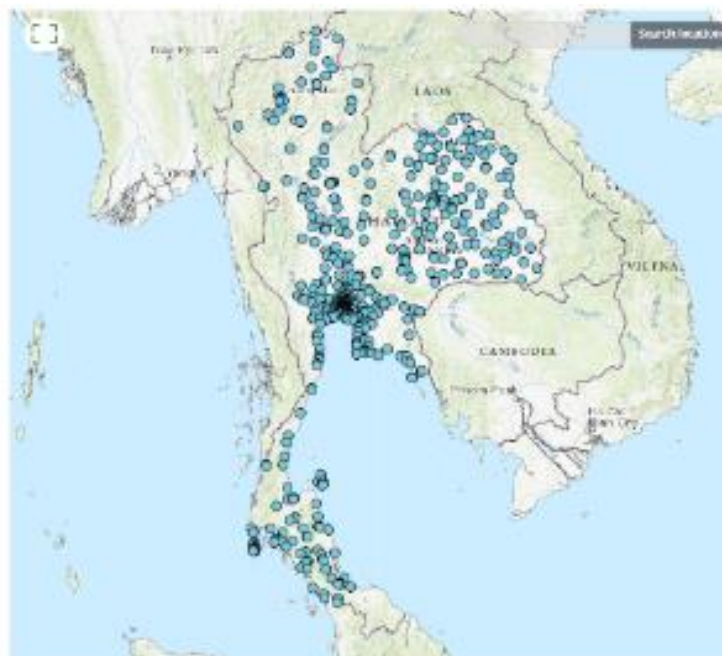
For food inventory, TAD data on prevalence of moderate or severe food insecurity in the total population in a country-by-country basis was used. Please note this data source is only available on a country level. For water scarcity, the Water Risk Index (WRI) data has been incorporated into the Biosecurity Risk Filter without changes. See the specific risk indicator layers in the WRI methodology for more details. For air quality, Harmers average concentrations of PM_{2.5} were used. PM_{2.5} is the annual global surface concentrations (micrograms per cubic meter) of all composition ground-level fine particulate matter of 2.5 micrometers or smaller.



Overfishing occurs in areas that have been exploited at levels that exceed the capacity for replacement by production and growth of the exploited species. Species that are being overfished are producing catches that are below the level that could be sustainably derived. As a result of intense exploitation, most fisheries generally follow sequential stages of development: undeveloped, developing, fully exploited, overfished, and collapsed, in ascending order where marine fish availability is limited, all fish stocks that were assessed by the SEA-ANADIS project as anything other than developed were considered

What does very high risk mean for this indicator?
In areas of very high risk for this indicator it was estimated that over 50% fish stocks collapsed/rebuilt and/or overexploited/rebuilding. See the documentation for more details.

See Appendix 1 for CT 320.



3.3 Plant/Forest/Aquatic Pests and Diseases

Show more settings

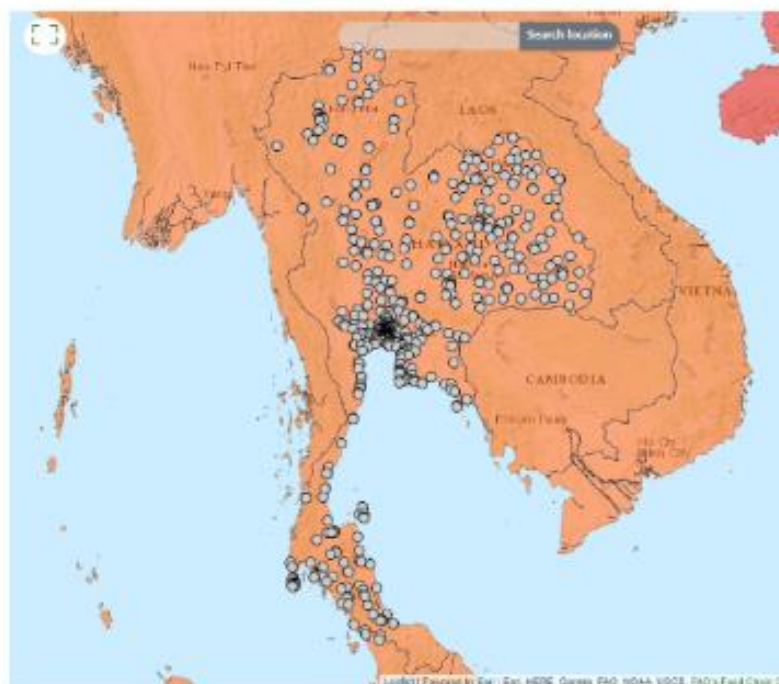
WHAT AM I SEEING HERE?

Plant/Forest/Aquatic Pests and Diseases

This indicator assesses the potential threat from transboundary animal and plant pests and diseases.

As genetic and species diversity is lost and ecosystems are degraded, the complexity of the overall system can be compromised, making it more vulnerable and potentially creating new opportunities for disease emergence. Emerging diseases include transboundary animal and plant pests and diseases, including forest/pests and diseases, including forest/pests and diseases, including forest/pests and diseases. Food safety threats can have a large impact on food security, human health, livelihoods and trade.

To estimate the frequency of zoonotic, vector-borne and water-borne diseases, data from the FAO's Food Chain Crisis Early Warning Bulletin (2018-2020) was used. The purpose of the dataset is to inform of forecasted threats to animal and plant health and food safety that may have a significant impact on food and nutrition security. Please note that the source data for this indicator is only available on a country level.



3.2 Forest Productivity and Distance to Markets

Show more settings

WHAT AM I SEEING HERE?

Forest Productivity and Distance to Markets

This indicator refers to aspects of productivity and commercial access to timber - more specifically the total potential sustainable supply of timber as well as aspects of accessibility for commercial timber harvesting and availability of infrastructure for the subsequent transport to markets.

Forests, both natural and managed, provide timber for construction as well as wood and paper products for domestic use and export. Globally, forests provide over USD 600 billion, or 1% of global GDP, through wood-based products (World Bank 2020). At low extraction rates, it is sustainable and can continue to be provided at the rates consumed. At high extraction rates, it is unsustainable and may damage the co-benefits for other services provided by forests. A lack of timber supply or a lack of accessibility to markets can significantly impact business through production/supply chain disruption, higher operating costs, and growth constraints.

This indicator was calculated on the basis of relative realized timber services indices (RRTSI) - a function of



Show more settings

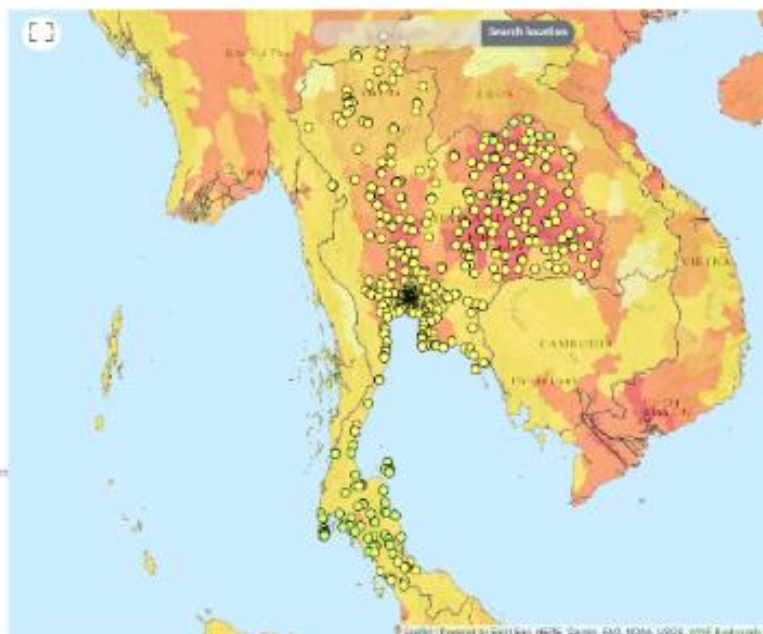
WHAT AM I SEEING HERE?

Regulating & Supporting Services - Enabling

Many businesses rely on ecosystem services that regulate or support production processes, including the cultivation of crops or breeding of animals. Declines in enabling ecosystem services such as soil health, water quality, and habitat provision can result in increased costs of production or inability to operate.

It comprises the indicators: 1) Soil Condition, 2) Water Condition, 3) Air Condition, 4) Ecosystem Condition and 5) Pollination. See the specific indicators for more details.

WRI Biodiversity Risk Index (2013)



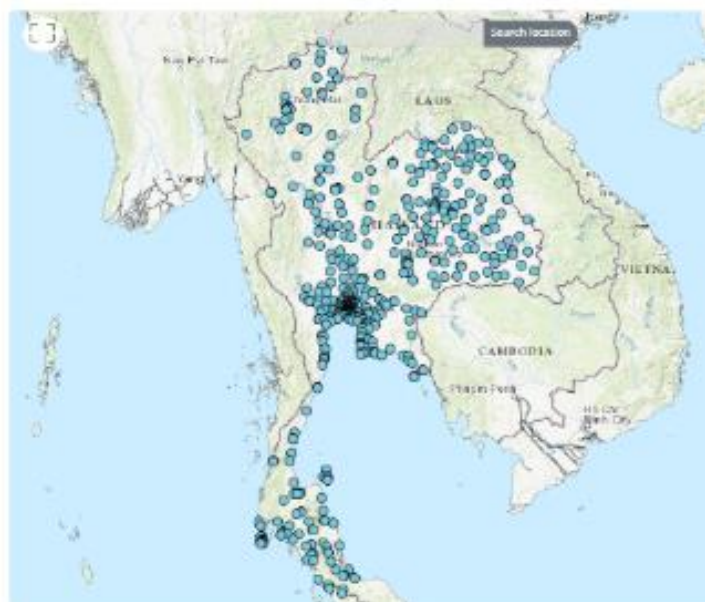
Show more settings

WHAT AM I SEEING HERE?

Indigenous Peoples (IPs) and Local Communities (LCs) Lands and Territories

Whilst global data on IPLC territories exists, this indicator has not yet been included in the map visualisation and the risk assessment. Inclusion of this indicator will be a priority for the next phase.

not



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