TASKFORCE ON NATURE-RELATED FINANCIAL DISCLOSURES

2023



TNFD

Golden Birdwing : Asia Cement Ecological Park

2023

Asia Cement Corporation
TNFD Report

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TNFD Disclosure Report

Taskforce on Nature-related Financial Disclosures

Date of Publication: December 2024

Cover Story

In this lush, green park, a Golden Birdwing elegantly rests on the blooming Common Lantana. This is not just a photograph, but a symbol of Asia Cement's unwavering commitment to environmental protection.

The Golden Birdwing (Troides aeacus formosanus Rothschild), a subspecies endemic to Taiwan, is a precious third-class conservation species. In recent years, due to urbanization and habitat loss, coupled with the scarcity of herbaceous plants, the presence of this graceful creature in the wild has become increasingly rare. However, in Asia Cement's ecological park, we witness hope.

Since 2004, Asia Cement Corporation (hereinafter referred to as ACC, the Company, or Asia Cement) has carefully planned a 5.38-hectare ecological park next to its manufacturing plant. Through continuous planning of conservation facilities and habitat creation, a rich variety of nectar plants, herbaceous plants, and native tree species have been planted, providing a safe sanctuary for these fragile and precious lives. Nowadays, on clear days, the graceful figure of the Golden Birdwing can often be seen fluttering in the park, where they, along with other species of butterflies and Phasmatodea, settle and reproduce, coexisting harmoniously with our industrial facilities. Through persistent planning of conservation facilities and habitat creation, a wealth of nectar plants, herbaceous plants, and native tree species have been planted to create a safe sanctuary for these fragile and precious lives. Similarly, the cement industry can also contribute to ecological conservation while pursuing sustainable development.

About this Report

Following the Taskforce on Nature-related Financial Disclosures (TNFD), ACC has established a natural governance framework for biodiversity. The Board of Directors formed the Corporate Sustainability Committee to oversee biodiversity development. Under the CEO, the Corporate Sustainability Implementation Committee was established to assess biodiversity risks and opportunities, plan and execute biodiversity-related initiatives, and report regularly to the Corporate Sustainability Committee on implementation results.

Scope of Report

This report defines the organizational boundary as the main operational site of Asia Cement Corporation - the Hualien Plant, including the manufacturing plant area, the Xincheng mountain Quarry, and the Ecological Park. The reporting information primarily focuses on 2023. Considering that this is ACC’s first report prepared based on the TNFD framework, certain sections include information from adjacent years. The report is structured according to the TNFD LEAP methodology: Locate, Evaluate, Assess, and Prepare (LEAP).

This report follows the official version of the TNFD released in September 2023 (Fig. 1-1), building upon the Taskforce on Climate-related Financial Disclosures (TCFD) framework while incorporating nature-related aspects such as land and freshwater. It aligns with the natural change driver framework established by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) and demonstrates ACC’s commitment to managing natural environments and landscape resources, as well as its dedication to biodiversity conservation.

Features of the Report

This report has the following features: I. It fully adopts the latest TNFD framework, rigorously implements the LEAP assessment process, deeply analyzes the bidirectional relationship between corporate operations and the natural environment, and captures the industry's dependence on and impact on nature. II. It engages in deep cooperation and co-authoring with local universities, and based on the original TNFD framework, it innovatively integrates ecosystem services assessment and social impact surveys, incorporating more rigorous and detailed evaluation in the LEAP approach, making it the first TNFD report with an academic foundation. III. It provides a comprehensive analysis of ACC's main operating sites in Taiwan, including the manufacturing plant area, the Xincheng mountain Quarry and the Ecological Park. It conducts an in-depth and systematic investigation and provides an important reference for the sustainable development of the industry.

*Note: Distinguished Professor Li Chun-Hung and his team from the Department of Natural Resources and Environmental Studies, National Dong Hwa University

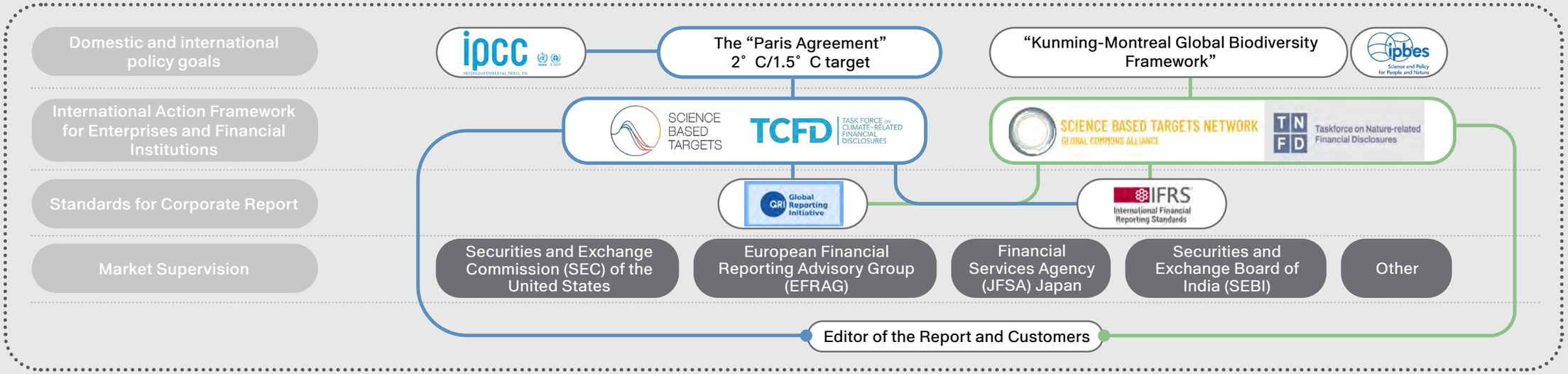


Fig. 1-1 TNFD and Other Nature and Climate-related Framework Standards Source: This report references TNFD (2023). “Suggestion for TNFD Operations” (Fig. 6) drawn

TNFD is a framework, not a standard. TNFD collaborates with partner organizations as knowledge collaborators, incorporating relevant standards into the TNFD framework, including standards from the International Sustainability Standards Board (ISSB), the Global Reporting Initiative (GRI), and the European Financial Reporting Advisory Group (EFRAG). The TNFD report includes governance, strategy, risk and impact management, metics and targets. It primarily addresses the mechanisms established within the organization (governance) to respond to changes in the natural environment, the actions taken (strategy), the risk and impact management efforts, the specific goals to be achieved, and how various assessment indicators are used to measure the desired outcomes (metics and targets).

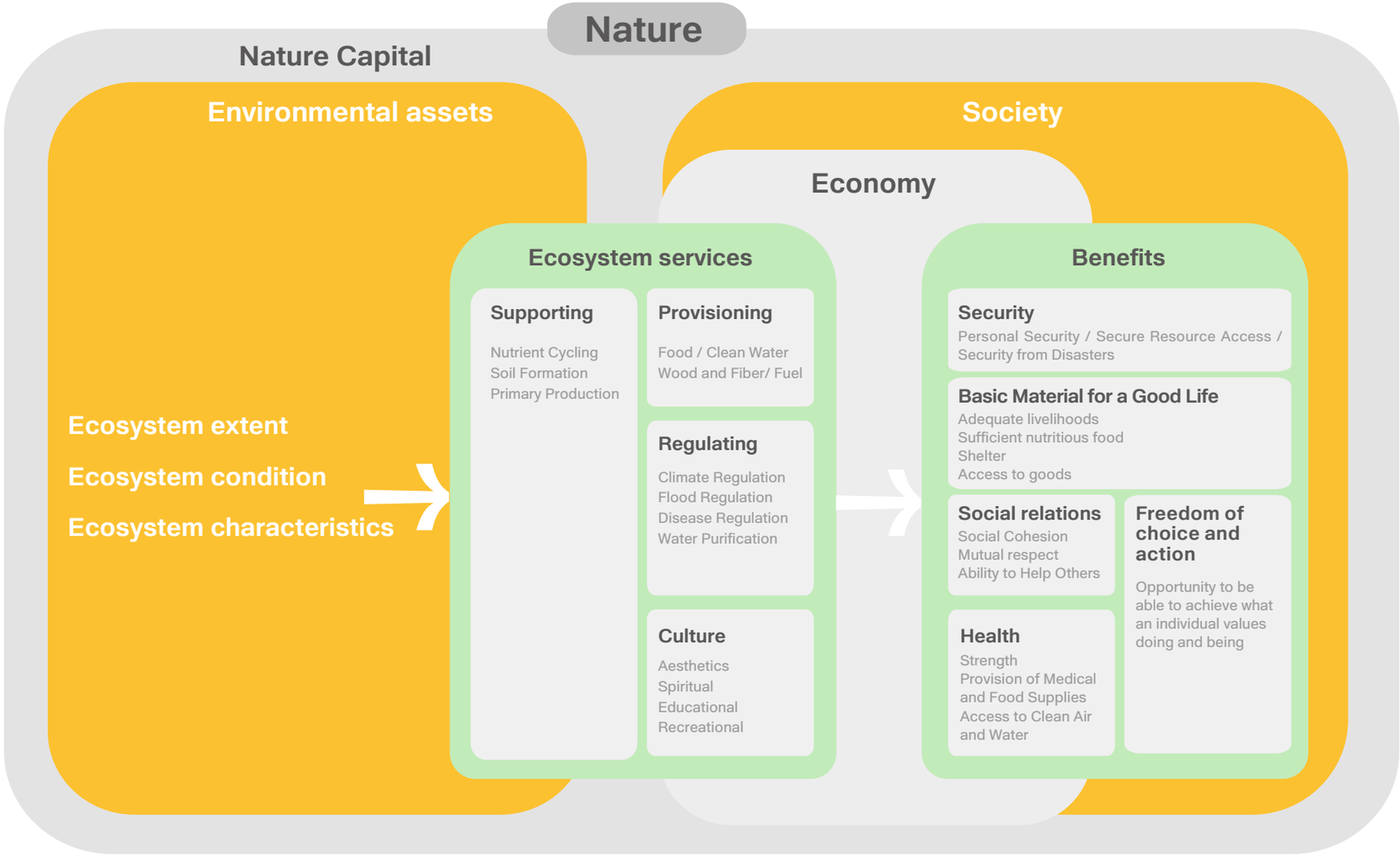


Fig. 1-2 Relations between Natural Capital, Ecosystem Services, and Well-being

Source: This report references TNFD (2023). “Recommendations of the Taskforce on Nature-related Financial Disclosures” (Fig. 9); Millennium Ecosystem Assessment (2005) drawn



Message from the General Manager

Restoring nature's vitality and enabling enterprises to achieve sustainability is not only our responsibility for this generation but also a commitment to the next!

The world is facing increasingly severe environmental challenges, with issues such as climate change and ecological imbalance that cannot be ignored. Asia Cement deeply recognizes that the development of a business is not only about creating value for itself, but also about injecting positive energy into the land and society. Therefore, we have published our first "Taskforce on Nature-related Financial Disclosures (TNFD) Report". This is not just a report, but an action blueprint, representing our permanent commitment to coexist harmoniously with nature. Through practical actions, we will thrive alongside the environment, creating a better future for society and the next generation.

This report marks an important step for Asia Cement in its sustainability vision and is the first comprehensive assessment conducted by the Hualien Plant based on the TNFD framework, examining the interaction between the Company and nature from an international perspective. After thoroughly identifying nature-related risks and opportunities, we have formulated strong and effective responses. ACC is deeply honored to collaborate with the research team from Dong Hwa University, integrating scientific methodologies with ecological and social surveys. This ensures that the report embodies both professional academic discourse and aligns with local ecological and cultural needs. This collaboration also signifies Asia Cement's commitment to closely integrating environmental protection with its core corporate development. We believe that environmental responsibility is embedded in the DNA of every member of ACC.

Asia Cement adheres to the "Kunming-Montreal Global Biodiversity Framework," ensuring the implementation of a net positive impact on biodiversity. We are committed to minimizing threats to ecosystems during development, reducing negative impacts, and fostering positive influence, striving for the restoration of the natural environment. Asia Cement has long been dedicated to promoting ecological education, strengthening environmental management, and pursuing technological advancements to achieve sustainable environmental protection, ensuring that environmental conservation and economic development go hand in hand.

To clearly identify environmental challenges, we have adopted the LEAP methodology, identifying ten nature-related risks and twelve nature-related opportunities. Based on environmental monitoring and social needs analysis, we have formulated clear response strategies and nature action plans. This represents Asia Cement's responsibility and mission to all colleagues, stakeholders, and society as a whole.

Asia Cement likewise extends its care for nature and culture to surrounding communities, as establishing in-depth conversation and effective communication mechanisms with local stakeholders is the key to realizing positive natural value. We actively engage and collaborate with local communities, indigenous friends, academic institutions, and other partners, fostering long-term trust and creating more opportunities for the region.

"Making the environment better and the future more sustainable" is the commitment of all Asia Cement employees. Beyond being a green leader in the cement industry, we also bear the responsibility of driving industrial transformation, striving for a balance between environmental protection and corporate growth, and leaving future generations a thriving land and lasting value.

President, Asia Cement Corporation

李坤炎



In this rapidly changing world, the role of enterprises is no longer just that of an economic driver, but also one that carries the responsibility of safeguarding nature. As environmental issues become increasingly severe, ACC Hualien plant deeply understands that the key to sustainable development lies not only in current operations but also in the future of the world. In 2023, ACC Hualien plant officially launched the "Taskforce on Nature-related Financial Disclosures (TNFD)" framework. This is not only to achieve data and indicators but also to fulfill our commitment to nature and move towards true ecological coexistence.

Looking back over the years, we have made efforts in areas such as carbon reduction, circular economy, and biodiversity. Particularly in the areas of off-site compensationoff-site restoration and resource management, we have collaborated with schools, communities, and organizations across Taiwan to promote ecological protection, helping the land of Taiwan thrive even more. Through alternative fuels and waste recycling technologies, we have effectively reduced the consumption of natural resources and decreased the need for waste disposal. This not only contributes to the environment but also paves the way for sustainable development in the future.

The climate issues brought about by COP29 have highlighted the urgency of global carbon reduction and ecological protection. The conference proposed the "Loss and Damage" fund and new climate financing goals, and we deeply feel our mission in this process. We are not only promoting environmental restoration on the land of Hualien, but also aspire to play an active role in the global trend of carbon reduction. As a company, we believe that future competitiveness will depend on a deep understanding of nature and a strong sense of responsibility.

This report is our commitment to nature. I sincerely invite you to witness the efforts of ACC Hualien Plant. Let us move forward together and protect this beautiful Earth.

General Plant Manager, Asia Cement Corporation 張志鵬

Company Introduction

Asia Cement Corporation was established in March 1957, following the government's "Second Four-Year Economic Construction Plan". It was initiated by Mr. Y. Z. Hsu and others, and registered for establishment. The Hsinchu Plant was set up in Hengshan Township, Hsinchu County. In 1973, ACC continued to align with government policies by establishing a cement plant in Xincheng Township, Hualien County. The Company also acquired mineral exploration rights for Xinchengshan and has been operating the site ever since. The development goal was to establish a world-class cement plant and mine, and experts from Germany, Japan, and other countries were invited to participate in the planning and design.

In terms of environmental and ecological conservation, ACC began collaborating with the Soil and Water Conservation Engineering Institute of National Chung Hsing University in 1980. The partnership promoted phytoremediation projects, with professors from the institute jointly planning soil and water conservation plans for the mining site, teaching and transferring vegetation technologies with soil and water conservation functions. Since 1990, we have successively collaborated with the Chinese Institute of Environmental Engineering and the Society for Wildlife and Nature, introducing reforestation methods based on ecological restoration concepts and gradually laying the foundation for its current nature-simulated ecological reforestation approach.

Therefore, ACC Hualien Plant's efforts in ecological restoration began well before the government implemented the Soil and Water Conservation Act and the Environmental Impact Assessment Act in 1994. With advanced mining technology, a comprehensive mining safety plan, and ACC's nature-inspired reforestation methods, ACC demonstrates through actions that economic development and environmental conservation can coexist.

Asia Cement adheres to the principle of "Industrial development and environmental protection go hand in hand.". From the inception of the Hualien Plant, the Company invested substantial human and material resources to establish a greenhouse seedling system at the mine, cultivating various indigenous plants and transplanting them to the residual walls of the excavation site. The successful vegetation greening efforts have garnered recognition from both domestic and international experts. In terms of pollution control, ACC introduced state-of-the-art dust collection equipment, effectively controlling emissions, far exceeding national standards, and has received the Ministry of Environment's Corporate Environmental Award for three consecutive years. In recent years, the Hualien Plant has made tremendous efforts in circular economy and energy-saving carbon reduction, achieving remarkable results. It is the first cement plant in the world to simultaneously obtain BS 8001 circular economy maturity optimization, ISO 14067 product carbon footprint of products, and ISO 14046 water footprint certifications. In 2021, we joined the Science Based Targets initiative (SBTi), becoming the fourth cement plant globally to set targets in line with the well-below 2 ℃ scenario. At the same time, it joined the Global Cement and Concrete Association (GCCA), collaborating with leading global cement and concrete industry players to plan a path towards achieving carbon neutrality by 2050 (Fig. 1-3). In addition, the Hualien Plant has achieved remarkable results in transforming the plant area into a park. Since 2002, it has successively created native plant and butterfly ecological parks, promoting biodiversity conservation and education. Each year, tens of thousands of visitors are drawn to experience the beauty of ecology, receiving widespread recognition from various sectors of society.

ACC has built a complete industry chain that covers mining, clinker, cement manufacturing, ready-mix concrete, precast materials, and construction engineering by vertically integrating upstream, midstream, and downstream operations. This enhances the overall value of its cement business. In terms of equipment, utilizing rotary kiln waste heat recovery power generation technology effectively saves energy. In order to reduce cement transportation costs, storage and transportation facilities have been established at Keelung Port, Taichung Port, Kaohsiung Port, and Hualien Port. Cement is transported around the island via sea using bulk cement dedicated vessels operated by the invested U-Ming Marine Transport.

Asia Cement actively expands its global presence and investment scale. In addition to investing in private power plants and diversifying into the stainless steel and transportation industries, it also enhances financial management and financial investments. With the implementation of a business strategy focused on "high quality, high efficiency, high environmental protection, and low cost", its operational performance is admired by industry peers. With Taiwan as its operational headquarters, ACC coordinates resources, applies strategies flexibly, and innovates operational models. Upholding the philosophy of "rooted in Taiwan, deeply cultivating in China, and expanding globally", it strives towards the goal of sustainable operations.



Fig. 1-3 ACC's Commitment to Achieve Net-zero GHG Emissions by 2050

ACC's Inherent DNA is Environmental Protection

Asia Cement adheres to the sustainable driving force of "ACC's Inherent DNA is Environmental Protection" throughout all its mining and manufacturing processes. The Company continually strives for excellence in operations and sustainability, demonstrating its commitment and achievements in fulfilling corporate social responsibility, a commitment that extends to all its subsidiaries.

In TNFD disclosures, ACC also follows the double materiality principle outlined in the Draft European Sustainability Reporting Standards (ESRS), considering both impact materiality (from within to outside, assessing the impact of organizational activities, operations, and value chains on external stakeholders) and financial materiality (from outside to inside, evaluating the impact of sustainability issues on the organization's financial performance and prospects).

Asia Cement also follows the “Kunming-Montreal Global Biodiversity Framework” (K-M GBF) (Fig. 1-4), actively implementing related actions and plans. Committed to the principle of "Industrial development and environmental protection go hand in hand", the Company strives to reduce the ecological impact caused by development, establishing a Biodiversity Management Plan (BMP) and setting biodiversity policy goals for ACC.

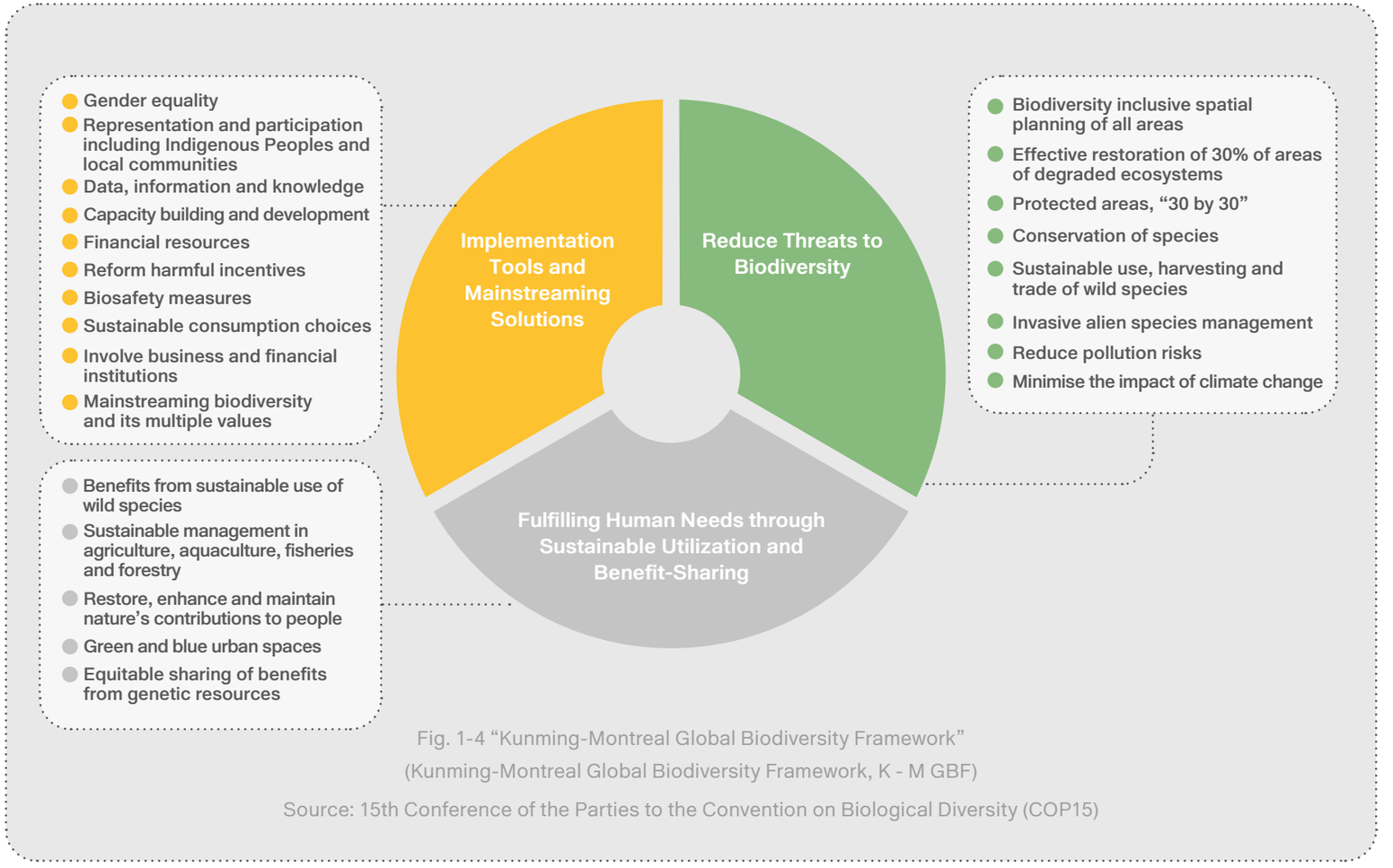


Fig. 1-4 “Kunming-Montreal Global Biodiversity Framework”
(Kunming-Montreal Global Biodiversity Framework, K - M GBF)
Source: 15th Conference of the Parties to the Convention on Biological Diversity (COP15)

ACC’ s Biodiversity Policy

ACC's biodiversity policy goal is to achieve a net positive impact on biodiversity. The scope of this policy includes limestone mining sites that are owned or under the management control of ACC. From the scope of corporate efforts, we adopt practices such as "avoid", "reduce", "restore", and "off-site compensation", collaborating with value chain partners to achieve the following commitments and guidelines.

1. Conduct environmental and social impact assessments (ESIA) before establishing new extraction sites.
2. Develop quarry environmental maintenance plans and closure plans for all extraction sites. Implement rehabilitation and disaster prevention measures on mined land after its use, in accordance with the relevant regulations.
3. Conduct biodiversity risk assessments in accordance with the Task Force on Nature-related Financial Disclosures (TNFD) initiative.
4. At extraction sites with high biodiversity value, establish biodiversity management plans and conduct ecological restoration alongside mining activities. Enhance biodiversity value through nature-based solutions, and annually disclose biodiversity information such as restoration area in accordance with GCCA guidelines.
5. Commit to zero deforestation and strictly comply with local regulations. The extraction area will be limited to the legally permitted scope, with 100% zero deforestation outside the extraction area to prevent any damage to primary forests.
6. Introduce circular economy principles in the cement production process, utilizing practices such as alternative fuels, raw materials, waste heat power generation, green energy development and carbon capture technologies to reduce natural resource consumption and minimize negative impacts on environmental ecology and biodiversity.



Comparison Table of Kunming-Montreal Global Biodiversity Framework

Kunming-Montreal Global Biodiversity Framework	Comparison Table of Chapters
01 Biodiversity inclusive spatial planning of all areas	5.1 Deepening and Implementation of TNFD
02 Effective restoration of 30% of areas of degraded ecosystems	4.1 Vegetative Greening Practices 4.2 Species Monitoring Actions 4.3 Butterfly and Phasmatodea Cultivation 4.4 Environmental Education and Citizen Scientist Promotion
03 Protected areas, “30 by 30”	5.1 Deepening and Implementation of TNFD 5.2 Biodiversity Conservation and Action Outlook
04 Sustainable consumption choices	4.2 Species Monitoring Actions 4.3 Butterfly and Phasmatodea Cultivation
05 Sustainable use, harvesting and trade of wild species	3.2 “Evaluate” The Dependence on and Impact of ACC Hualien Plant on Nature
06 Invasive alien species management	3.2 “Evaluate” The Dependence on and Impact of ACC Hualien Plant on Nature
07 Reduce pollution risks	2.3 Current Strategies and Specific Actions
08 Minimise the impact of climate change	3.4 "Prepare" ACC Hualien Plant's Response and Resource Allocation Decision
09 Benefits from sustainable use of wild species	1.2 ACC TNFD Strategy Actions
10 Sustainable management in agriculture, aquaculture, fisheries and forestry	---- Asia Cement is in the cement industry and is not significantly related to this item ------
11 Restore, enhance and maintain nature’s contributions to people	4.1 Vegetative Greening Practices 4.2 Species Monitoring Actions 4.3 Butterfly and Phasmatodea Cultivation 4.4 Environmental Education and Citizen Scientist Promotion
12 Green and blue urban spaces	4.3 Butterfly and Phasmatodea Cultivation 4.4 Environmental Education and Citizen Scientist Promotion
13 Equitable sharing of benefits from genetic resources	---- Asia Cement is in the cement industry and is not significantly related to this item ------
14 Mainstreaming biodiversity and its multiple values	1.2 ACC TNFD Strategy Actions
15 Involve businesses and financial institutions	1.2 ACC TNFD Strategy Actions
16 Sustainable consumption choices	2.2 ACC TNFD Investment Project Description 2.3 Current Strategies and Specific Actions
17 Biosafety measures	---- Asia Cement is in the cement industry and is not significantly related to this item ------
18 Reform harmful incentives	---- Asia Cement is in the cement industry and is not significantly related to this item ------
19 Financial resources	2.2 ACC TNFD Investment Project Description
20 Capacity building and development	5.1 Deepening and Implementation of TNFD
21 Data, information and knowledge	2.2 ACC TNFD Investment Project Description 3.4 "Prepare" ACC Hualien Plant's Response and Resource Allocation Decision
22 Representation and participation including Indigenous Peoples and local communities	1.3 Stakeholders’ Engagement
23 Gender equity	1.3 This report does not present the information. For details, please refer to ACC’s 2023 Sustainability Report.

Major Milestones in Natural and Climate Action

ACC deeply understands the importance of global climate change and biodiversity conservation. As early as 1992,when the United Nations issued the three major conventions at the Earth Summit, it actively responded to international trends. ACC began implementing mine area greening and phytoremediation work in 1980, demonstrating the Company's forward-looking vision and commitment to environmental conservation. In recent years,biodiversity conservation and issues related to climate change mitigation and adaptation have gained significant attention both domestically and internationally. ACC has also continued to enhance its efforts in natural conservation and climate action.

In terms of biodiversity conservation, ACC established the Native Plant Garden in 2002, Butterfly Ecological Park in 2004, and Phasmatodea Park in 2013, dedicating efforts to species cultivation and developing a biodiversity off-site compensation mechanism. In 2021, established a comprehensive self-managed biodiversity monitoring system and conducted regular monitoring. In recent years,ACC has expanded beyond the park, assisting communities and schools in creating butterfly habitats, successfully establishing 34 small butterfly gardens. Not only providing habitat protection, but also integrating environmental education functions, deepening community connections, and demonstrating ACC's commitment and actions in biodiversity conservation.

In terms of climate action, ACC actively responds to the global net-zero emissions goal. In 2016, it took the lead in introducing low-carbon manufacturing technology, developed masonry cement, and has continued to invest in related research and development and equipment upgrades. This includes optimizing production processes and increasing the use of alternative raw materials to reduce carbon emissions. Demonstrating the Company's proactive actions in addressing climate change issues. These efforts not only align with international sustainable development trends but also showcase the Company's leadership in environmental protection and climate action.

ACC continues to surpass industry standards and regulatory requirements in its achievements in natural conservation and climate action, demonstrating the Company's determination and practical commitment to the path of sustainable development. These achievements have not only earned multiple certifications and recognition both domestically and internationally, but also set a model for sustainable development. In the future, we will continue to invest various resources, driving relevant industries to actively engage in the practice of natural conservation and climate adaptation actions.

International Development

- **1992** The United Nations Rio Earth Summit signed three major conventions:
  - United Nations Framework Convention on Climate Change (UNFCCC)
  - Convention on Biological Diversity (CBD)
  - United Nations Convention to Combat Desertification (UNCCD)
- **2010** CBD COP10 “Aichi Biodiversity Targets”
- **2015** COP21 UNEP adopted the Paris Agreement The United Nations issued 17 Sustainable Development Goals (SDGs)
- **2021**
  - COP26 UNEP
  - Strictly adhere to the 1.5° C critical threshold, set net-zero targets, eliminate fossil fuels, and uphold agreements and commitments to halt deforestation. By 2030, end land overexploitation and land degradation issues.

ACC Actions

Mine

- **1978** In 1978, partnered with Japan's Onoda Cement to complete the first vertical shaft rapid conveyor system in Taiwan's mining history.
- **1980** Conduct phytoremediation work in the mining areas
- **2015** Utilize the terrain elevation difference by adopting a closed downhill conveyor belt, effectively reducing noise during the transportation process and preventing dust leakage.

Plant

- **2016** The Hualien plant obtained the ISO 50001: 2011 Energy Management System certification, and the Xinchengshan Mine is also the first mine in the country to pass verification.
- **2017** Developed low-carbon masonry cement, reducing CO_2e emissions by 366 tons annually.
- **2019**
  - Promoted the introduction of circular economy in cement rotary kilns, gradually increasing the utilization rate of alternative raw materials and fuels each year.
  - In 2019, promoted the introduction of circular economy, assisting government agencies and private enterprises in the disposal of waste and by-products.

Park

- **2002** Utilized mining vegetation greening technology to plan a static beauty "Native Plant Garden" for relocation conservation.
- **2004** Utilized the existing green beautification environment of the Hualien Plant to create a "Butterfly Ecological Park".
- **2013** Deepened environmental education in the park and created a "Phasmatodea Park".

Initiative Awards

- **2020**
  - Committed to the "2050 Climate Vision" along with all member companies of the Global Cement and Concrete Association (GCCA), pledging to achieve net-zero emissions in cement and concrete by 2050.
  - In accordance with the Global Cement and Concrete Association (GCCA) Sustainable Guidelines for Mine Rehabilitation and Biodiversity Management, 9 biodiversity indicator targets were established.
  - For two consecutive years, the Hualien Plant received the Gold Award for first place in the corporate category of Hualien County's "Garden City, Hundred Sceneries, Open Green Beautification" initiative.
- **2021**
  - ACC has achieved outstanding performance in implementing the circular economy and was awarded the highest honor, the Two-Star Award, by the Ministry of Environment.
  - The 8th National Environmental Education Award, Special Excellence Award in the Hualien County Private Sector Category.

International Development		2022	COP27 UNEP ● Stating that protecting biodiversity is protecting the Paris Agreement. CBD COP15 ● The United Nations and G20 jointly initiated the Taskforce on Nature-related Financial Disclosures (TNFD). ● The adoption of the Kunming-Montreal Global Biodiversity Framework (KMGBF) established the 30 by 30 target and promoted Other Effective Area-based Conservation Measures (OECMs).	2023 2024	COP28 UNEP ● The official version of the TNFD framework was released. ● The ISSB's IFRS Sustainability Disclosure Standards S1 and S2 came into effect. ● CBD COP16 was held in Colombia.
ACC Actions	Mine	2016 2018 2022	● Completely withdrew from Taroko National Park, with ongoing phytoremediation in the previously overlapping areas. Established an ACC Service Center in tribal residences to provide face-to-face communication and serve residents. ● Applied the highest domestic technology using LiDAR technology to capture images of the mining area, producing the most accurate topographic maps of the mining area. ● Actively conducted tribal consultation and consent procedures in accordance with Article 21 of the Indigenous ● Peoples Basic Law. The alang Bsngan Tribe's meeting passed the consultation consent, with 83% of tribal households supporting ACC's continued mining operations in the area.	2023	● Hired drainage experts to conduct a review and planning of the drainage system for the alang Bsngan Tribe, integrating feedback from various public sectors and tracking 28 improvement projects to completion, establishing it as a national model for drainage safety in a single tribe. ● As of 2023, ACC's Hualien Xinchengshan Mine has completed the greening of 71.9 hectares, with a greening ratio of 80.9%.
	Plant	2020 2021	● Hualien Plant has passed SGS certification and obtained international standard verifications, including ISO Product Carbon Footprint, Product Water Footprint standards, and the Optimizing level for Circular Economy Business Model Maturity. ● Hualien Plant's laboratory quality management system, ISO 17025, proactively reduced the use of toxic and harmful substances in the traditional CNS 1078 hydraulic cement chemical analysis method, replacing them with instrumental analysis methods to reduce chemical pollution to the environment.	2023	● The new solar photovoltaic projects at the Hsinchu and Hualien Plants have been completed, with an installed capacity of 3.7MW. The office areas now use 20% renewable energy. ● The dust control equipment for raw material mill #3 (rotary kiln/preheater) has been upgraded from the original electrostatic precipitator to a new type of baghouse filter, which more effectively reduces the emission of particulate matter. ● For processes #1 to #3, a selective non-catalytic reduction (SNCR) system was installed to denitrify and reduce NOx emissions.
	Park	2020 2021	● Since August 2020, monthly surveys and collections of Phasmatodea have been conducted in the low-altitude mountain areas of Hualien. A new species of native Phasmatodea was discovered and is currently being identified and named in collaboration with the Department of Entomology at National Taiwan University. ● Since April 2021, ACC has been conducting monthly biodiversity surveys in the restoration area of the Xinchengshan Mine. ● Promote the Magellan Birdwing Conservation Program, with the Asia Cement Ecological Park serving as the environmental education base for the Taiwan Precious Species Project.	2023	● Assisting communities and schools in creating butterfly habitats across Taipei, Hsinchu, Tainan, Kaohsiung, Hualien, and Taitung, forming a nationwide butterfly corridor. A total of 34 small butterfly gardens have been successfully established.
Initiative Awards		2022	● Hualien Plant was awarded the "2022 Clean Air Quality Area Adoption - Service Model Award" from the Ministry of Environment of the Executive Yuan ● International Cement Review magazine has recognized Xinchengshan Mine as a benchmark for best practices in mine operations and ecosystem management. ● Hualien Plant was awarded the 3rd “Taiwan Circular Economy Award: Outstanding Product” by Chung-Hua Institution for Economic Research ● The Company has been awarded the Executive Yuan's "National Sustainable Development Award", making it the only cement company to receive this recognition. ● The Company has been participating in the "Taiwan Alliance for Net Zero Emission (TANZE)" since 2022 and has joined Net Zero X 2030 / 2050 Initiatives ● ACC has signed the environmental green energy and carbon reduction initiative launched by National Central University, committing to the development of net-zero technologies, sharing green resources, and driving industrial transformation.	2023	● The only one in the cement industry to be selected in the S&P's Global Sustainability Yearbook 2024. ● ACC has established a biodiversity policy to achieve positive net benefits for biodiversity. ● The Company has won the AREA Asia Corporate Social Responsibility Award six times. ACC has received the "Green Leadership Category”, making it the cement company with the most awards. ● Named as the 2023 Asia-Pacific Climate Leader by the Financial Times of UK and the international research institution Statista, being the only cement company selected from Taiwan. ● Awarded the 2024 20th Global Views ESG Corporate Sustainability Award for Comprehensive Performance - Traditional Industries - Model Award and Environmentally Friendly Category - Model Award.

TNFD-related Awards and Recognition

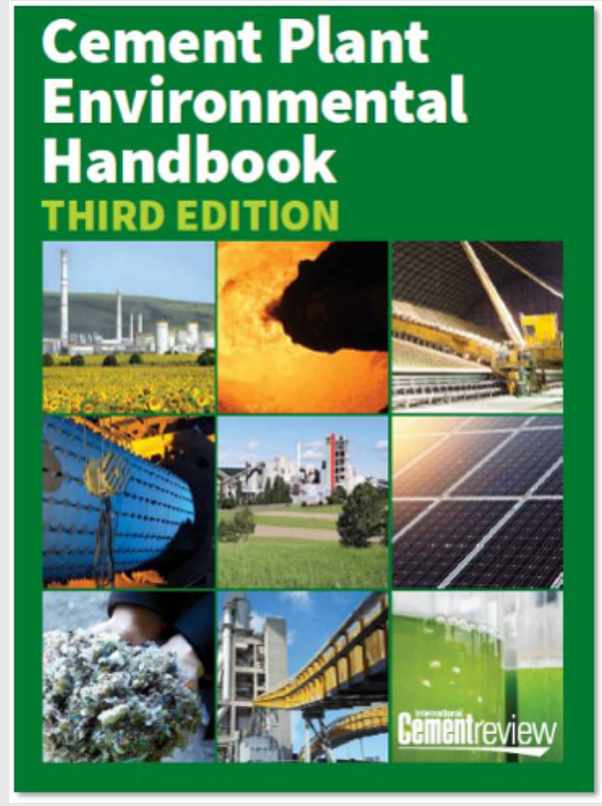
The 2023 TSAA Sustainability Action Awards
"Light Up the Tribe with Warmth and Care" won the highest honor with the “Gold Award”.

ACC is committed to addressing the land, historical, and housing safety issues of indigenous communities through proactive and innovative approaches. The program not only establishes a three-party communication platform to facilitate conversation among stakeholders, but also goes beyond legal requirements by proactively conducting tribal consultations, demonstrating the Company's commitment to community partnerships. The establishment of a 24/7 underground service center, the implementation of 21 benefit-sharing mechanisms, and the recognition of education as the key to transforming the lives of indigenous peoples fully embody a balanced strategy for stable industrial development and social co-prosperity. This sets a new benchmark for the sustainable development of the national cement industry.



“International Cement Review Magazine”

In 2022, the Xincheng mountain Quarry was listed as a best practice model in mining operations and ecosystems within the cement industry.



1

Governance and Strategy of Taskforce on Nature-related Financial Disclosures (TNFD)

1 . 1 ACC TNFD Governance Model

1 . 2 ACC TNFD Strategy Actions

1 . 3 Stakeholders' Engagement



Governance and Strategy of Taskforce on Nature-related Financial Disclosures (TNFD)

Adhering to the principles of sustainability, ACC invested significant human and material resources from the outset of the Hualien Plant's establishment. It set up a greenhouse seedling system at the mine, greened the land impacted by excavation, and established a strict environmental management system, which far exceeds national standards and has received multiple environmental awards in recognition. In recent years, ACC has also invested in the circular economy and carbon reduction initiatives, becoming the first cement plant to obtain BS 8001, ISO 14067, and ISO 14046 certifications simultaneously. In terms of biodiversity conservation, ACC promotes the park-like development of its plant areas, phytoremediation, and has established an ecological park to carry out environmental education, achieving remarkable results. Furthermore, ACC has referenced the Taskforce on Nature-related Financial Disclosures (TNFD) assessment framework to integrate governance models and strategic planning. We have adopted stakeholder suggestions and incorporated natural capital and ecosystem services into corporate governance and strategy formulation, building a comprehensive biodiversity management framework. This chapter will detail how ACC has established a biodiversity management mechanism at the corporate governance level and how the principles of TNFD have been integrated into corporate strategy.

1.1 ACC TNFD Governance Model

In ACC's practice of TNFD governance, a comprehensive multi-level governance structure has been established (Fig. 1-5), demonstrating a high level of commitment to biodiversity conservation. The Board of Directors serves as the highest governance body, with the Corporate Sustainability Committee as the core decision-making unit, responsible for coordinating the formulation and supervision of biodiversity-related strategies and policies. The Corporate Sustainability Implementation Committee then takes on the responsibility of implementing decisions, assessing risks and opportunities, and driving concrete action plans. At the execution level, ACC has planned an ESG team and established ten sub-teams responsible for the three major aspects of Environment, Social, and Governance. In TNFD governance, the Biodiversity Team oversees the integration of interdisciplinary expertise, including collaboration with expert teams from relevant academic institutions, to implement and monitor biodiversity conservation practices, vegetation greening, and the application of the TNFD framework.

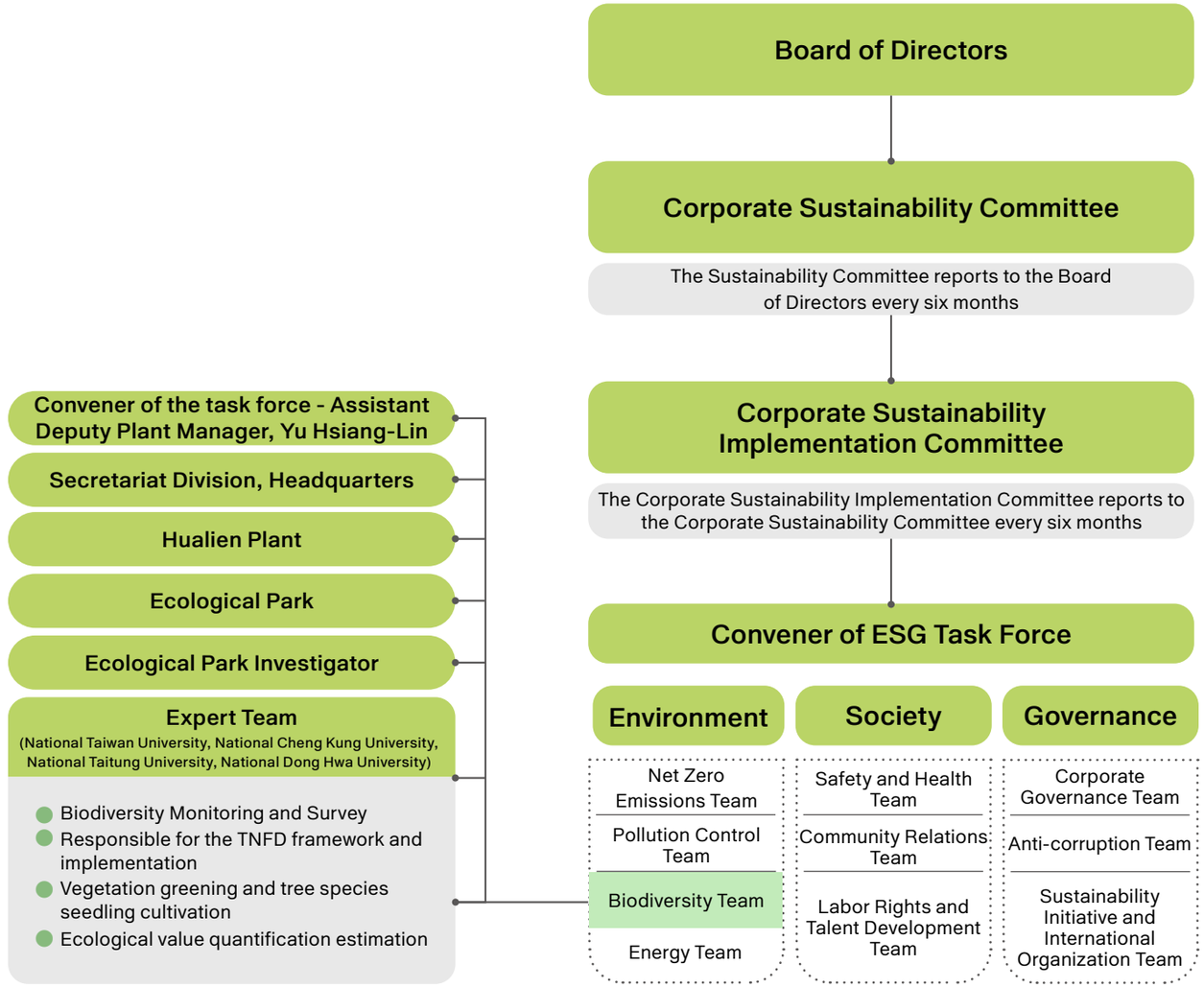


Fig. 1-5 ACC's TNFD Governance Organizational Structure

With global environmental change, ACC faces natural-related risks such as systemic risks, physical risks, and transition risks. These risks have a significant impact on key areas such as the Company's operational strategy and asset and liability management. Therefore, ACC actively identifies and addresses natural-related risks through governance and related strategic models, systematically transforming these risks into opportunities to achieve various sustainable development benefits (Fig. 1-6).

Based on risk identification, ACC has also developed a risk management plan to fully seize natural-related opportunities, enhancing operational efficiency and market competitiveness. On the other hand, through ACC's biodiversity policy, risk control measures are implemented, and financial resilience is strengthened through investments related to nature and climate.

In establishing a comprehensive risk management system, it covers all aspects of risk identification, assessment, response, and monitoring. The system actively incorporates the opinions of external stakeholders and closely collaborates with the government and various sectors of society. For example, sharing best practice experiences with industry partners and collaborating with local communities to protect the ecological environment. Facing increasingly severe nature-related risks, ACC has established a systematic and comprehensive management framework through a well-designed governance structure, thereby achieving its sustainable development goals. This demonstrates ACC's commitment to managing natural risks. Through internal practices and external collaborations, the framework is continuously refined. By leveraging positive natural impacts, the Company enhances its reputation and financial performance, moving towards the goal of becoming a sustainability benchmark.

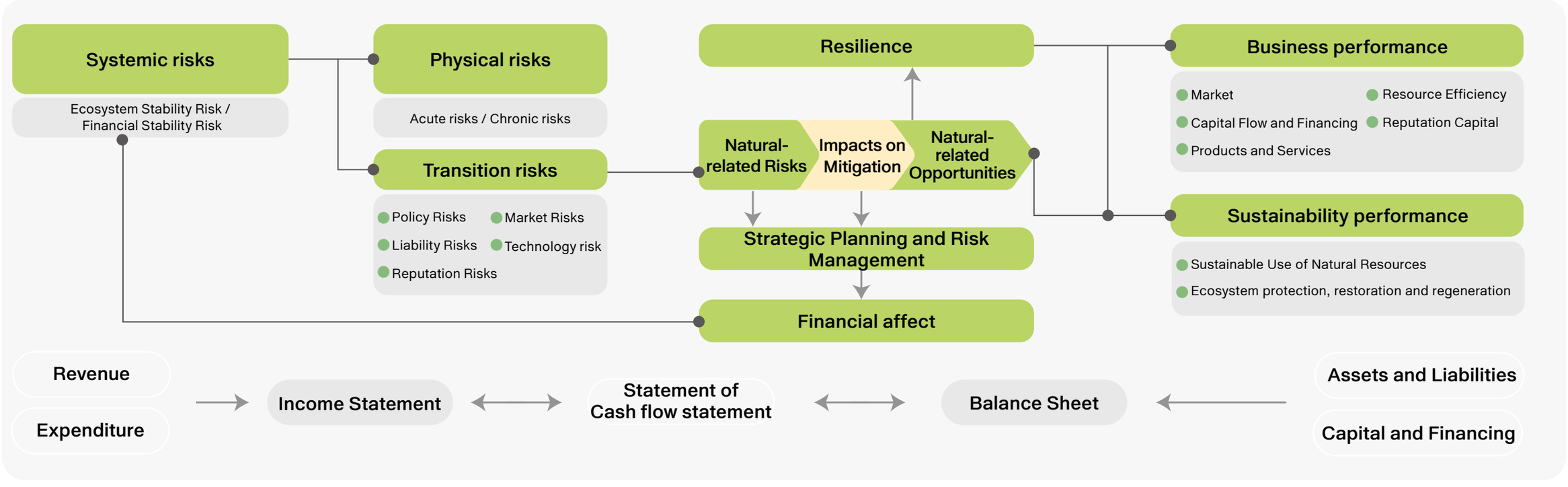


Fig. 1-6 From TNFD to Corporate Governance Model: The Link between Nature-related Risks and Business Performance, and Their Impact on Organizational and Financial Outcomes

Source: This report references TNFD (2023). “Suggestion for TNFD Operations” (Fig. 18) drawn

1.2 ACC TNFD Strategy Actions

Natural-related issues may have significant financial impacts on an organization in the short-, mid-, or long-term. In the strategy aspect of TNFD, ACC will follow the LEAP process of TNFD to identify and assess the likelihood of natural-related transition, physical risks, and opportunities, as well as their financial impacts. Its core is the conservation of biodiversity and ecosystem services, assessing the impact of activities, and implementing conservation and restoration measures to reduce impacts and ensure operational sustainability, with the goal of delivering a net positive impact on biodiversity. By integrating the TNFD framework into investment decision-making and risk management processes, ACC not only effectively controls and restores nature-related risks associated with land use after limestone extraction but also seizes new opportunities brought by the green transition. This lays a solid foundation for the Company's long-term sustainable development and sets a benchmark for the cement industry in nature conservation investment and sustainable growth.

Actions based on ACC's Biodiversity Policy align with the SBTN AR3T Action Framework and comply with international standards (Fig. 1-7).

During and after the completion of extraction activities, a Biodiversity Management Plan is formulated to implement continuous actions necessary for protecting and enhancing natural biodiversity value and ecosystem services. This includes compiling biodiversity background data, conducting field surveys to establish baselines, setting target indicators, developing and implementing action plans (such as sustainable mining, nature-mimicking afforestation, and habitat restoration), monitoring and measurement, and executing the allocated budget. The scope of the 2023 Biodiversity Management Plan includes manufacturing plant areas, the Xincheng mountain Quarry, and the ecological park, achieving 100% coverage of operational impact sites.

ACC's Biodiversity Policy aligns with the SBTN.

Science Based Targets for Nature, SBTN AR3T Guidelines (Avoid, Reduce, Restore & Regenerate, Transform)

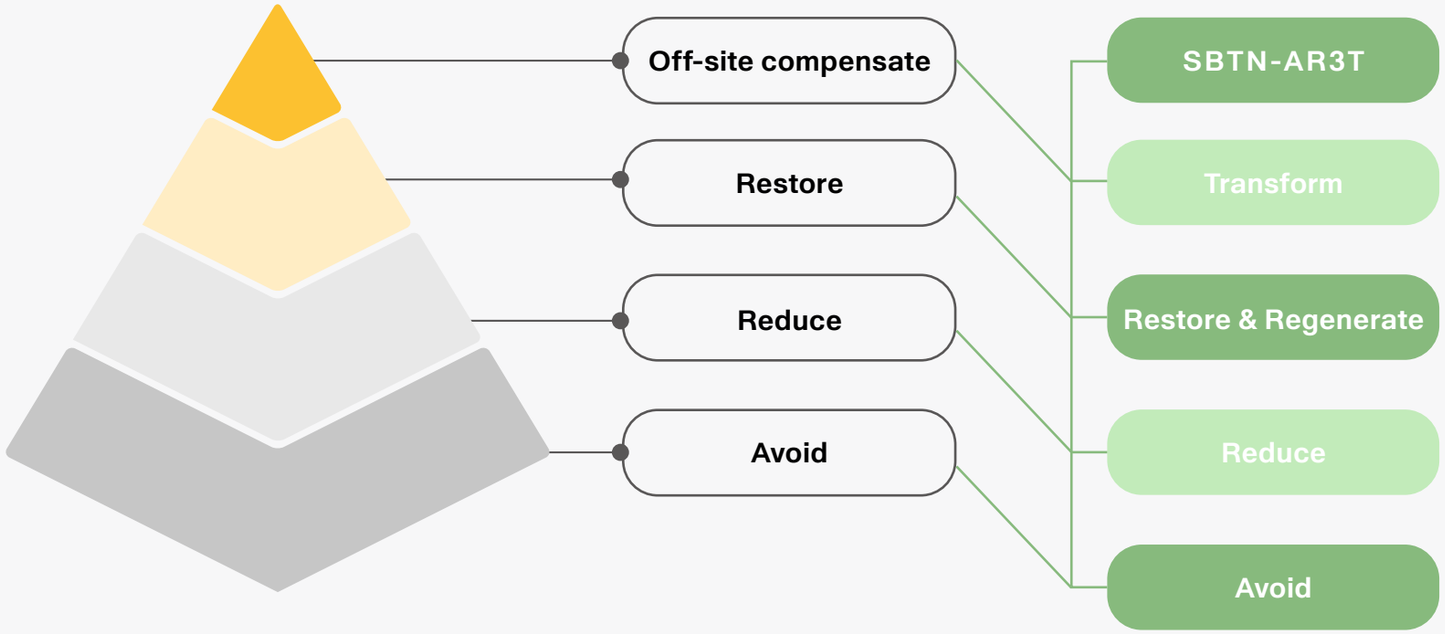
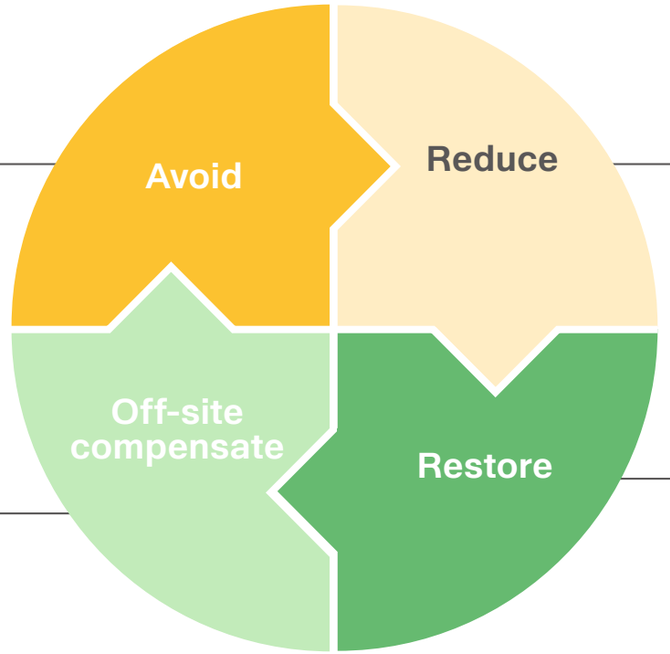


Fig. 1-7 Comparison of Asia Cement's Biodiversity Policy with the SBTN AR3T Action Framework
Source: This report references TNFD (2023). "Suggestion for TNFD Operations" (Fig. 17) drawn

ACC' s Biodiversity Policy

- **Avoid:** Refrain from conducting mining or exploration activities in World Heritage Sites, International Union for Conservation of Nature (IUCN) Category I-IV protected areas, and Key Biodiversity Areas (KBAs).
- **Reduce:** Employ the bench mining method and naturalistic reforestation techniques to minimize environmental impact. Control blasting vibrations during extraction to reduce the effects on biodiversity.
- **Restore:** Implement ecological rehabilitation at all extraction sites, achieving 100% reforestation. Restore mined areas by protecting habitats and planting native vegetation.
- **Off-site compensate:** Undertake rehabilitation actions through off-site compensation by establishing the Asia Cement Ecological Park and developing biodiversity survey and monitoring data. Assist domestic institutions and schools in creating butterfly habitats, promoting ecological education, and fostering a green and sustainable environment.

- New developments at new sites must undergo an Environmental and Social Impact Assessment (ESIA) in accordance with regulations, and development can only proceed once the assessment is approved.
- Activities are avoided in World Heritage areas, International Union for Conservation of Nature (IUCN) I-IV category protected areas, and Key Biodiversity Areas (KBA), as well as procurement from these specific regions.



- The stage mining method and nature-mimicking afforestation techniques are simultaneously applied, minimizing the ecological impact caused by the extraction area and its scale.
- Control blasting vibrations to reduce the impact of the mining process on biodiversity.

- Implement off-site compensation actions by establishing the ACC Native Plant Garden, Butterfly Ecological Park, and Phasmatodea Park to restore ecological diversity and provide environmental education spaces.
- Establish biodiversity survey and monitoring data.
- Assist domestic agencies and schools in establishing green villages or small butterfly gardens, replicating successful butterfly ecological restoration experiences across Taiwan, with the goal of creating butterfly corridors, promoting ecological conservation knowledge, and fostering a green and sustainable community.

- Implement off-site restoration actions by establishing the Chongyo Native Plant Garden, Butterfly Ecological Park, and Phasmatodea Park to restore ecological diversity and provide environmental education spaces.
- Translocate and conserve native tree species from limestone terrain, preserve healthy parent trees in the native plant garden, and cultivate native tree species in greenhouses. These trees must be grown for at least two years and reach a height of 1.5 meters or more before being transplanted for field afforestation.
- Reforest the cleared land with a planting density 10 times that of the original forest.

1.3 Stakeholders' Engagement

Collaboration with Various Stakeholders

The development and operations of ACC Hualien Plant involve negotiations and actions with multiple stakeholders, including employees at the mine site, investors, local community residents, environmental protection groups, educational institutions, academic organizations, and the media. The collaborative participation of these stakeholders has become an indispensable part of ACC's efforts in environmental sustainability and natural-related practices (Fig. 1-8). Through the establishment of effective communication mechanisms, resource investment, and sharing, we aim to fulfill our social responsibility mission of becoming the "preferred partner in creating a sustainable green home".

I. Promotion and communication of biodiversity in multiple aspects - Promoting the creation of butterfly habitats outside the park

1. In 2021, the mayor of Guanshan Township and senior officials visited the Asia Cement Ecological Park for observation, with the intention of establishing a butterfly ecological area at the Qingshui Park in Guanshan Township. ACC assisted with local butterfly surveys, site planning, the restoration of butterfly species, as well as the planting and management techniques for host plants.
2. In 2021, the Tainan Historical Museum Kaleidoscope Park: Butterfly Breeding and Maintenance of Host Plants.
3. In 2021, at the Mataian Leisure Agricultural Park, the "Butterfly Dance Project" was implemented. ACC conducted butterfly ecology courses and assisted in the creation of butterfly habitats.
4. As of the end of 2023, ACC has assisted in the creation of butterfly habitats in 34 locations across communities and schools at various levels (Fig. 1-9).



Fig. 1- 9 The Creation of a Butterfly Habitat at Dadu Elementary School in Hsinchu County

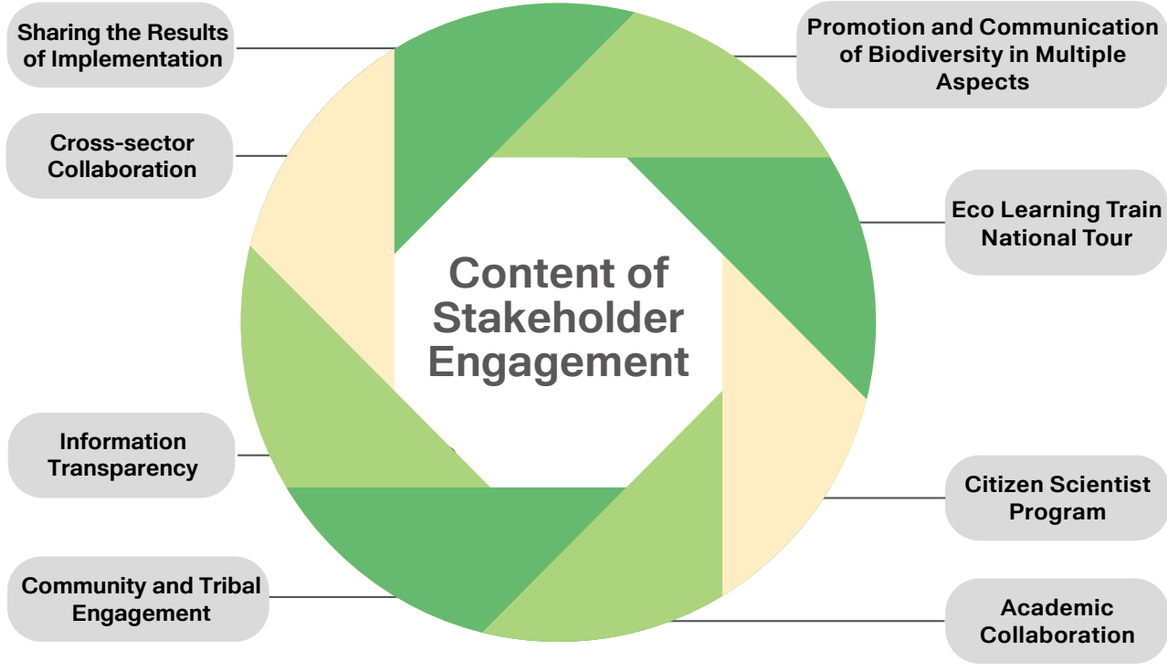


Fig. 1- 8 Content of Stakeholder Engagement

II. Eco Learning Train National Tour

The Phasmatodea Ecology Train toured nationwide in 2018, 2019, 2020, and 2023 for educational purposes. The Phasmatodea Environmental Education Train exhibition spanned multiple counties and cities, and by 2023, it had been displayed for a total of 454 days, attracting hundreds of thousands of people for interactive learning, promoting the importance of biodiversity.

III. Cross-sector Collaboration:

(I). Collaboration with NGOs

1. In 2020, 2021, and 2023, participated in the Wild Bird Society of Hualien's "Autumn Feast" to promote biodiversity activities (Fig. 1-10).
2. In 2022 and 2023, participated in the Society of Wilderness of Hualien's outdoor butterfly ecology courses, promoting butterflies along the Zuocang Trail.

(II). Cooperation with public sectors

1. In 2021, participated in the Hualien County Government's "Huilan Natural History - Exploring Hualien's Biodiversity" Lepidoptera field butterfly identification.
2. From 2021 to 2022, participated in the Hualien County Government's "Biodiversity Carnival" to promote Hualien's butterfly ecology.
3. In 2023, participated in the Hualien City Government's "Ocean is Life Festival" to promote the butterfly ecology of the Chichi Highland.

IV. Citizen Scientist Program

Since 2021, efforts have continued to mobilize factory employees, their families, local community residents, and ecological educators to form citizen scientists (Fig. 1-11).

V. Information Communication

The “Asia Cement Ecological Park Official Website” is rich in information, regularly updated, and serves as the best platform for the public to learn about plants, butterflies, and Phasmatodea. From 2018 to 2023, the website has accumulated 2.3 million page views.

The “Asia Cement Ecological Park YouTube channel”, created by caretakers, ecological volunteers, and video volunteers, features lively and educational videos on ecology. It is the channel with the most episodes dedicated to butterfly and bamboo stick insect ecology in the country. In 2023, 60 new episodes were released, bringing the total to 264 episodes.In 2023, the viewing count reached over 56,000 times .(Fig. 1-12).



Fig. 1-12: Asia Cement Ecological Park YouTube Channel



Fig. 1-10: Hualien Wild Bird Society of Hualien Promotional Activity



Fig. 1-11: Citizen Scientist Program - Survey Education and Training

VI. Academic and Inter-School Collaboration

1. Since 2019, participated annually in the science popularization train activities organized by the National Science and Technology Council and National Dong Hwa University (Fig. 1-13).
2. In 2020, signed a memorandum of cooperation on environmental education with the Bureau of Mines, Ministry of Economic Affairs.
3. Asia Cement Ecological Park successfully rehabilitated the third-level protected Golden Birdwing. In 2021, Professor Wayne Li from National Taitung University invited Asia Cement Ecological Park to join the conservation project for the Magellan Birdwing (Fig. 1-14), promoting the protection of the Magellan Birdwing in Orchid Island.
4. From 2021 to 2025, signed an agreement with the College of Environmental Studies and Oceanography at National Dong Hwa University, for off-campus service learning and internship placements for students of the Department of Natural Resources and Environmental Studies.
5. The Native Plant Garden serves as a plant identification learning field for students of the National Hualien Agricultural Senior High School. The students consistently achieve excellent results in the annual plant identification exams.
6. Collaborated with the Department of Entomology at National Taiwan University to identify a new species of Phasmatodea.

VII. Environmental Education and Sharing of Practical Results in the Science Park

1. **Visit to the Park**

   The park attracts thousands of visitors annually for environmental education. This includes students and teachers from all levels of schools, public sectors, NGOs, environmental educators, and the general public (Fig. 1-15). In 2023, English-language guided tours were added to promote the ecological education of the Asia Cement Ecological Park to foreign friends.

2. **Campus Promotion**

   Bringing the ecological expertise and practical experience of the Asia Cement Ecological Park into schools, helping students gain a deeper understanding of the concept, importance, and protection methods of biodiversity. At the same time, through field activities (such as ecological observation, planting activities, etc.) or interactive courses, it stimulates students' interest in nature and cultivates values of environmental protection. Through campus outreach activities, future environmental advocates are nurtured. Students may become champions of ecological protection, extending their influence to families and communities, helping to establish a broader network of environmental action and promoting sustainable development goals.



Fig. 1-13 Science Popularization Train Activities



Fig. 1-14: General Affairs Section Chief, Lan Chen-Feng, showcasing the collaboration between ACC's Butterfly Park and National Taitung University, which has become the Hualien base for the Taiwan Precious Species Project.



Fig. 1-15: National Dong Hwa University entering the park for environmental education.

Community and Tribal Stakeholders' Engagement

Set up the ACC Service Center to Build Community Communication and Grievance Channels

Community Engagement Plan (CEP)

ACC values the rights and livelihoods of Indigenous peoples, ensuring mine safety to prevent any potential or actual negative impact on local communities. The Company engages in consultations with local communities, completes tribal consultation procedures, and implements benefit-sharing mechanisms to foster close and harmonious relationships (Fig. 1-16). ACC has established a community feedback channel for local residents. The Asia Cement Service Center and relevant responsible units institutionalize the reception of feedback and communication, fostering coexistence and mutual prosperity with the local communities (Fig. 1-17).

- Electricity bill subsidies for households in Fushi Village ranged from NTD 750 to 1,000 per month, provided from 2017 until the end of 2021.
- Electricity bill subsidies for households in Fushi Village have been NTD 1,000 per month since 2022.
- Elderly birthday gifts, marriage and childbirth gifts, funeral condolence money, and holiday vouchers.
- Sponsorship for education, sports, church, cultural heritage, and festival activities
- Student scholarships
- Added annual attendance bonus

- After-school assistance class
- School transportation
- Fully participate in interactive sessions to enhance employment counseling
- Local revitalization:
- Markets, cultural arts and crafts, etc.
- Provide internship and summer work opportunities for relevant departments

- House repair and quality warranty
- Iron sheet house repair
- Pre-storm dredging and post-storm cleanup
- Provide emergency assistance
- Resolve the rockfall issue in Shangfushi (Neighborhood 10).

Fig. 1-16 ACC's "10 + 11" Benefit-Sharing Mechanism

Open the mining site for visits to strengthen external communication, regularly invite residents, and allow various parties to apply for on-site inspections to establish mutual trust. Report on soil and water conservation, vegetation greening, and mining safety measures. Through on-site visits, the public can gain understanding and ask questions to dispel concerns.

In 2023, a total of 25 visits were organized, with 510 participants visiting the mine.

Categories of Participation for Mine Visits and Briefing Sessions	Number of Sessions	Number of Participants
General Public	11	113
Environmental Education Learners	13	327
Tribal Community Residents	01	50
Total	**25**	**510**



A slope monitoring team at the Xinchengshan Mine was put together to hold regular meetings and its "geological safety monitoring results" are reported to the participating experts and tribal representatives.

Assign personnel to regularly attend village, neighborhood, and tribal affairs meetings to report on mining site safety, disaster prevention measures, and community welfare initiatives. Provide updates and follow up on issues of concern to villagers.

Establish the "ACC Xinchengshan Mine Information Disclosure Website" to ensure full transparency by publicly sharing real-time information on mining site safety, monitoring data, drainage system surveillance, and matters of concern to villagers.

In 2023, a total of 1 session was held, with 50 participants.

Regularly conduct "Mine Safety" briefing sessions in various neighborhoods of Fushi Village, providing face-to-face explanations to residents on mine safety measures, vegetation restoration, and related initiatives.

The ACC Service Center in Fushi Village has been established to provide real-time information on the mine, implement 21 benefit-sharing mechanisms including electricity subsidies, housing repairs, emergency assistance, and community services, while engaging in direct two-way communication with villagers. The official FB and LINE groups have been established (with 301 members) to provide real-time information about the mine and clarify any misinformation, ensuring that accurate information about the ACC Xinchengshan Mine is communicated to the public.

Fig. 1-17 Communication and Negotiation with Stakeholders



ACC Assists in Post-disaster Recovery Efforts



ACC Assists in house repairs



ACC Sponsors After-school Tutoring Programs



ACC Service Center Provides Disinfectant Water for Joint Epidemic Prevention

Community Engagement and Development

Through the "ACC Service Center" and the "Hualien County Asia Cement Bodhi Charity Association," community participation and development are promoted, and local issues are addressed through community development projects.

Creating a Green Environment for Tribes

Local residents are hired to manage soil and water conservation and seedling management, training them to become technical personnel in seedling cultivation. In addition to acquiring a specialized skill, this also creates local employment opportunities, allowing indigenous friends to live locally while balancing family life. Free saplings are provided for teaching, afforestation, and community bonding. Asia Cement also continues to assist communities and schools in planning and investigating nectar plants to create butterfly habitats.

Improving Community Drainage with Water Conservation Expertise

Since 2015, adopting the "Unnamed Creek Channel" beneath the Xinchengshan Mine and regularly dredging it to ensure stability and unobstructed flow. In 2019, ACC provided a drainage system assessment report for communities near the mining area, proposing a total of 28 improvement projects. Through a platform meeting organized by the Geological Survey and Mining Management Agency, coordination was carried out with the Hualien Branch of the Agency of Rural Development and Soil and Water Conservation, the Highway Bureau, and township offices to jointly implement the projects, ensuring environmental safety for local residents.

Providing Spring Water to the Zhongfushi Community

The Zhongfushi community customarily uses spring water for garden irrigation and cleaning. Leveraging its engineering expertise, ACC proactively installed a five-ton spring water tank and laid two kilometers of piping to each household. In addition to providing scheduled water supply, the Company also conducts water level monitoring, maintenance, and upkeep.

House Repair and Quality Warranty

If tribal residents require repairs for cracks in concrete houses, they can submit a request, and ACC Hualien Plant will dispatch a professional engineering team to provide free repair services. These services include waterproofing for balconies, roofs, and exterior walls, as well as repairing spalling concrete on ceilings. Upon completion, a warranty is provided. After heavy rainfall, the team visits homes to assess the effectiveness of the repairs and collects feedback through satisfaction surveys to enhance service quality.

Promoting Tribal Education

ACC places great importance on the education of indigenous children. Since 2015, it has continuously sponsored the establishment of after-school tutoring programs, providing students with a safe learning environment after school.

Stakeholders' Feedback

The natural environment and business operations are inseparable. The impact of corporate activities on the natural environment, whether positive or negative, will affect the interests of various stakeholders. Therefore, carefully assessing these impacts has become a key task for the sustainable development of enterprises. As a leader in the cement industry in the Hualien-Taitung region, ACC has long established strong connections with local indigenous communities and views local talent as a key asset of the Company. In order to systematically manage nature-related issues, ACC has implemented a comprehensive stakeholder mapping plan.

This 2023 ACC TNFD stakeholder questionnaire was designed by the team from National Dong Hwa University. According to the survey results, stakeholders are generally well-informed about ACC's environmental impact assessment (Fig. 1-18) and matters related to nature conservation (Fig. 1-19). Nearly 70% of the respondents expressed that ACC has fully considered the opinions of stakeholders in decision-making related to natural issues (Fig. 1-20). Approximately 70% also affirmed that ACC has achieved a balanced development between business growth and nature conservation (Fig. 1-21).

In addition to their views on ACC's actions in natural resource conservation, stakeholders also provided several suggestions for areas where ACC can make efforts or potential improvements. Stakeholders generally believe that the current natural-related risks include the increasing difficulty in obtaining raw materials and the growing strictness of carbon emission regulations. At the same time, the main challenges in preparing for TNFD and ESG are the lack of relevant assessment data and resource preparation gaps (Fig. 1-23). In addition to the items that need preparation and response, stakeholders are also very clear about ACC's investment in natural risk mitigation measures for ecological conservation projects and the promotion of a circular economy (Fig. 1-24). These survey results will help ACC assess the direction for communication negotiations and strategic improvements.

Fig. 1-18 Do you know whether ACC conducts environmental impact assessments for mining activities and facility areas?

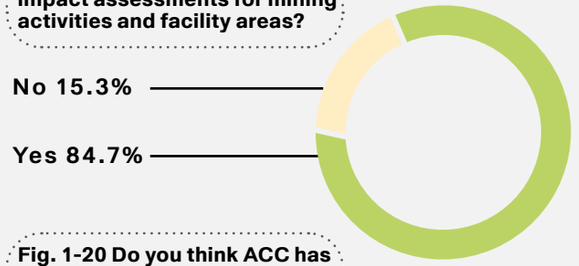


Fig. 1-19 Do you know if ACC has established a dedicated committee to handle natural

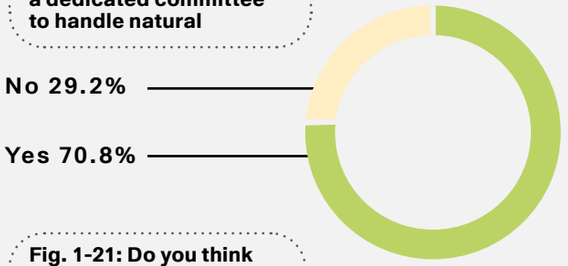


Fig. 1-20 Do you think ACC has fully considered the opinions of stakeholders in natural-related decisions?

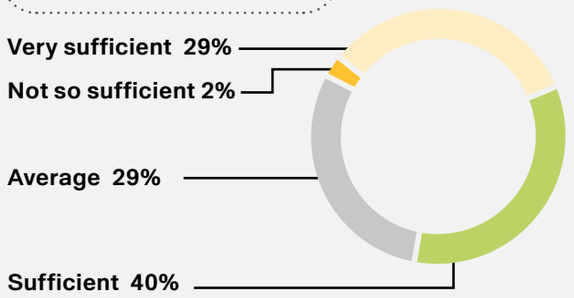


Fig. 1-21: Do you think ACC balances business development and natural conservation?

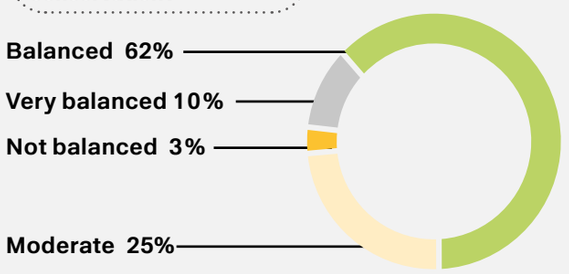


Fig. 1-22 Natural-related risks faced by ACC

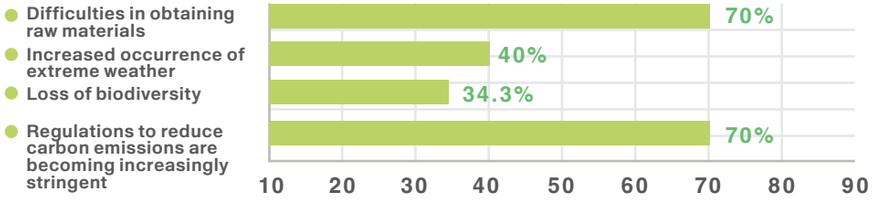


Fig. 1-23 Main Challenges for ACC in Preparing for TNFD and ESG

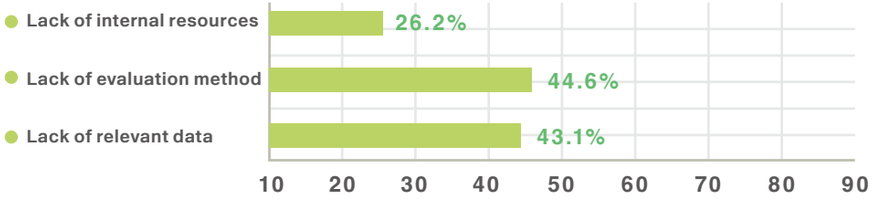
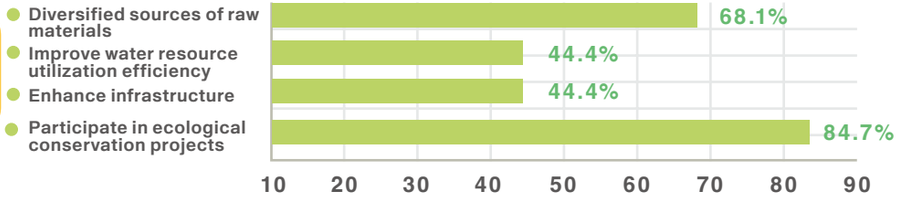
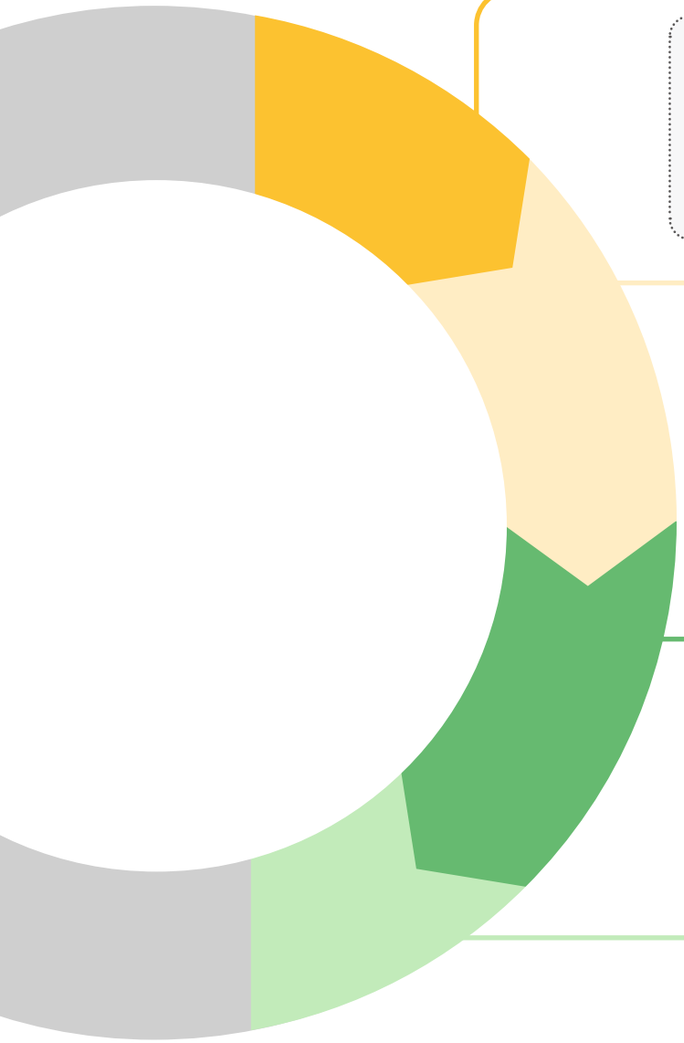


Fig. 1-24 Do you know what natural risk mitigation measures ACC has implemented?



Stakeholders' Comment



Mine-related

- Continuously invest in ecological compensation and environmental protection measures
- The visit experience was impressive, sparking a willingness to revisit
- Continuously improve environmental protection and greening projects in the mining area

Related to the plant area and operations

- Comply with corporate regulations and establish a trustworthy brand image
- Lead the industry chain's low-carbon transformation and exert influence
- Demonstrate corporate responsibility in the ESG aspects
- Plan a comprehensive carbon reduction strategy to respond to the net-zero transformation
- Implement a circular economy and demonstrate sustainable management thinking
- Promote sustainable products, balancing market demand with environmental protection
- Establish a win-win cooperative relationship with suppliers

Stakeholders-related

- Have a professional and respected operations team
- Adhere to a people-oriented approach and value employee rights and interests
- Prioritize local talent employment, balancing development with local welfare
- Provide opportunities for indigenous people to advance to management positions, demonstrating the Company's commitment to diversity and inclusion
- Demonstrate corporate transparency and social engagement
- Actively engage in conversation with stakeholders and maintain an open attitude
- Proactively disclose sustainability information and maintain transparency

Ecological park-related

- Provide a comprehensive introduction to the ecology of butterflies and Phasmatodea, with content that is lively and engaging
- The environmental maintenance is excellent, and the natural landscape is beautiful
- Continuously promote ecological conservation programs and maintain biodiversity
- A high-quality educational venue that sparks tourists' interest in natural ecology
- A variety of activities that combine education and entertainment, making it an excellent destination for family outings
- The tour guides provide professional and detailed explanations, making it suitable for both children and adults to learn
- The park is dedicated to promoting natural ecology education, and its performance is commendable

2

Risk Management Assessment Indicator Construction for TNFD

2．1 LEAP Assessment Process

Locate
Evaluate
Assess
Prepare

2．2 ACC TNFD Investment Project Description

2．3 Current Strategies and Specific Actions



2.1 Leap Assessment Process

LEAP is a voluntary guideline that, after defining the evaluation scope, provides enterprises and financial institutions with an assessment through four stages: Locate, Evaluate, Assess, and Prepare.

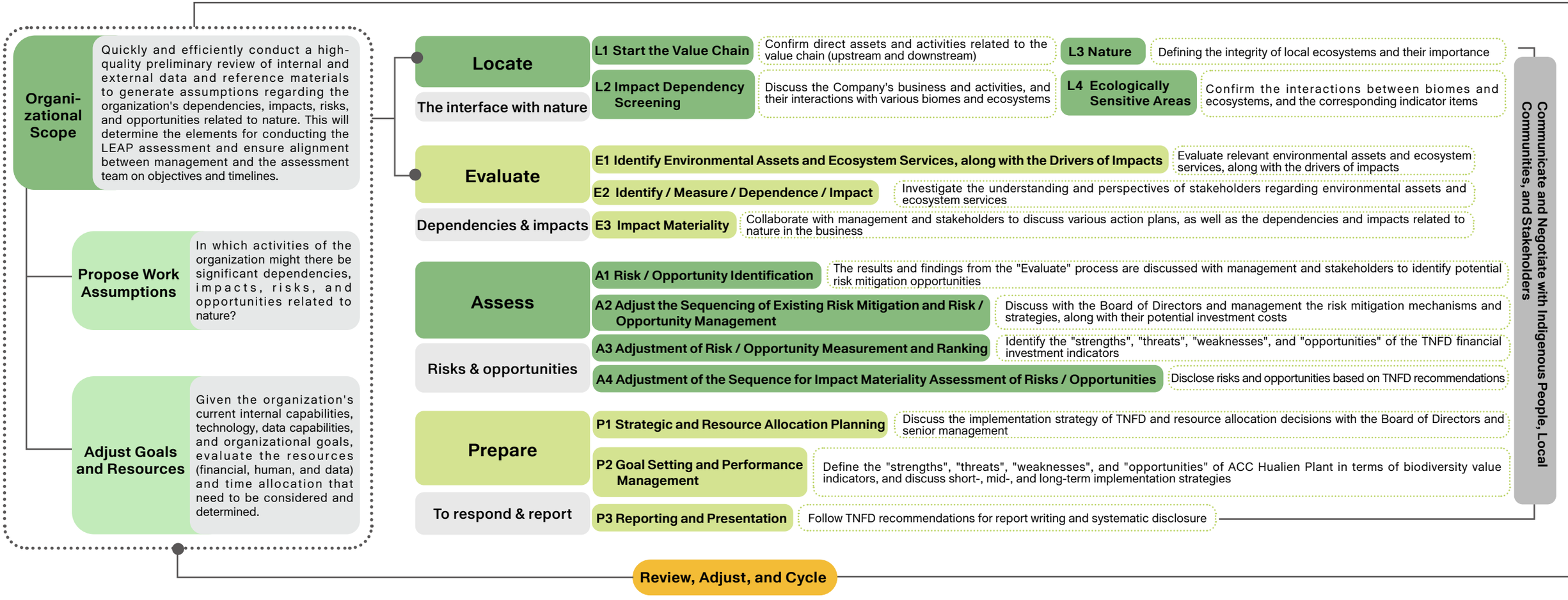


Fig 2-1 ACC' s TNFD Source: This report was amended from TNFD (2023). "Suggestion for TNFD

Based on the TNFD framework, ACC defines the scope of the organization and adjusts goals and resources. In the LEAP process, each item is reviewed step by step, and through negotiations and communication with various stakeholders, a TNFD framework tailored to ACC's needs and characteristics is constructed, covering governance, strategy, risk and impact management, as well as indicators and goals.

Scenario Analysis

		Disclosure Item
Governance	**Disclose the organisation' s governance of nature-related dependencies, impacts, risks and opportunities.**	A Describe the board's oversight of nature-related dependencies, impacts, risks and opportunities. B Describe management's role in assessing and managing nature-related dependencies, impacts, risks and opportunities . C Describe the organisation's human rights policies and engagement activities, and oversight by the board and management, with respect to Indigenous Peoples, Local Communities, affected and other stakeholders, in the organisation's assessment of, and response to, nature-related dependencies, impacts, risks and opportunities.
Strategy	**Disclose the effects of nature-related dependencies,impacts, risks and opportunities on the organisation' s business model, strategy and financial planning where such information is material.**	A Describe the nature-related dependencies, impacts,risks and opportunities the organisation has identified over the short, medium and long term . B Describe the effect nature-related dependencies, impacts, risks and opportunities have had on the organisation's business model, value chain, strategy and financial planning, as well as any transition plans or analysis in place. C Describe the resilience of the organisation's strategy to nature-related risks and opportunities, taking into consideration different scenarios . D Disclose the locations of assets and/or activities in the organisation's direct operations and, where possible, upstream and downstream value chain(s) that meet the criteria for priority locations.
Risk and Impact Management	**Describe the processes used by the organisation to identify, assess, prioritise and monitor nature-related dependencies, impacts, risks and opportunities.**	A-1 Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its direct operations. A-2 Describe the organisation's processes for identifying, assessing and prioritising nature-related dependencies, impacts, risks and opportunities in its upstream and downstream value chain(s) . B Describe the organisation's processes for managing nature-related dependencies, impacts, risks and opportunities . Describe how processes for identifying, assessing, prioritising and monitoring nature-related risks are integrated into and inform the organisation's overall risk management processes.
Indicators and Goals	**Disclose the metrics and targets used to assess and manage material nature-related dependencies, impacts, risks and opportunities.**	A Disclose the metrics used by the organisation to assess and manage material nature-related risks and opportunities in line with its strategy and risk management process . B Disclose the metrics used by the organisation to assess and manage dependencies and impacts on nature. C Describe the targets and goals used by the organisation to manage nature-related dependencies, impacts, risks and opportunities and its performance against these.

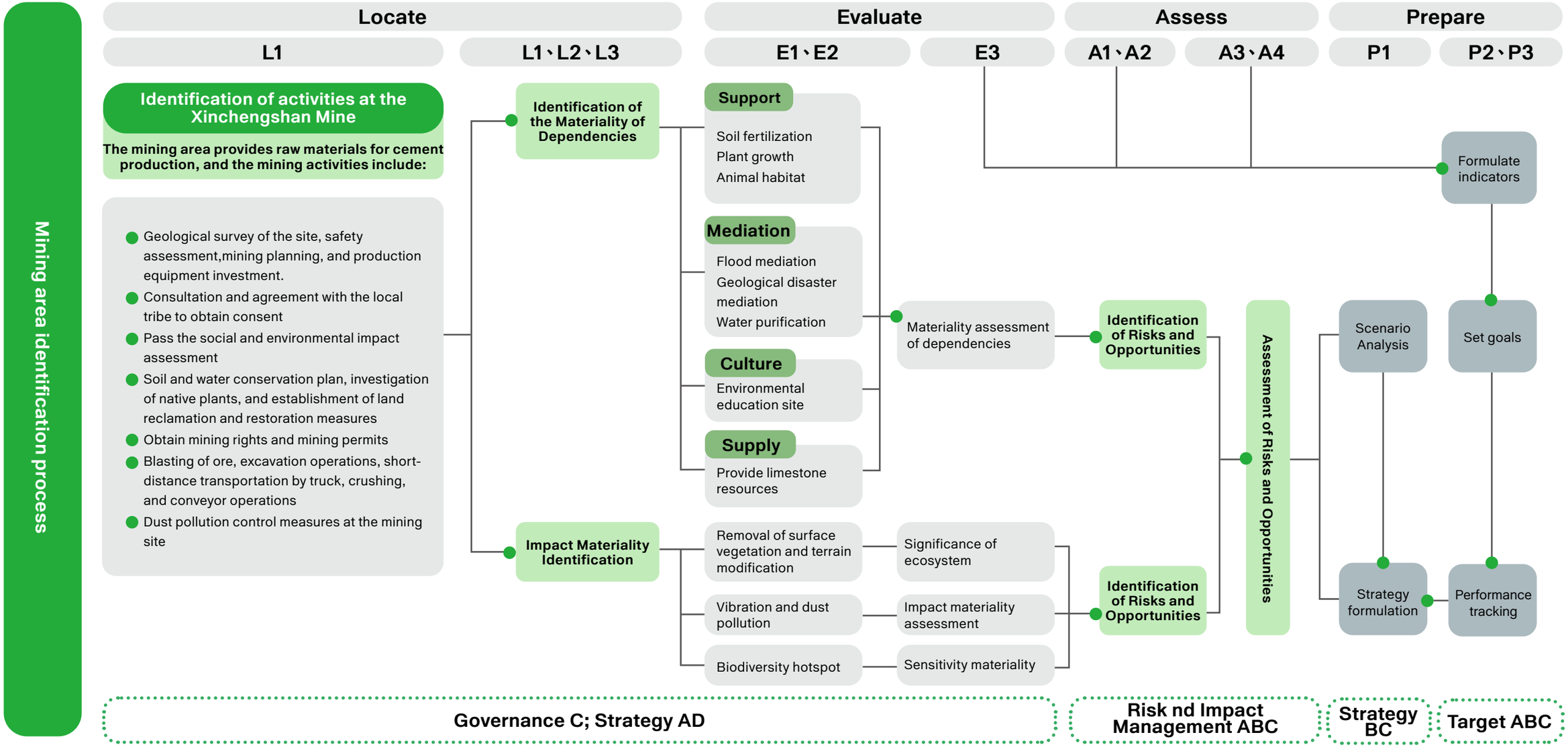


Fig. 2-2 LEAP Identification Process of ACC Xinchengshan Mine

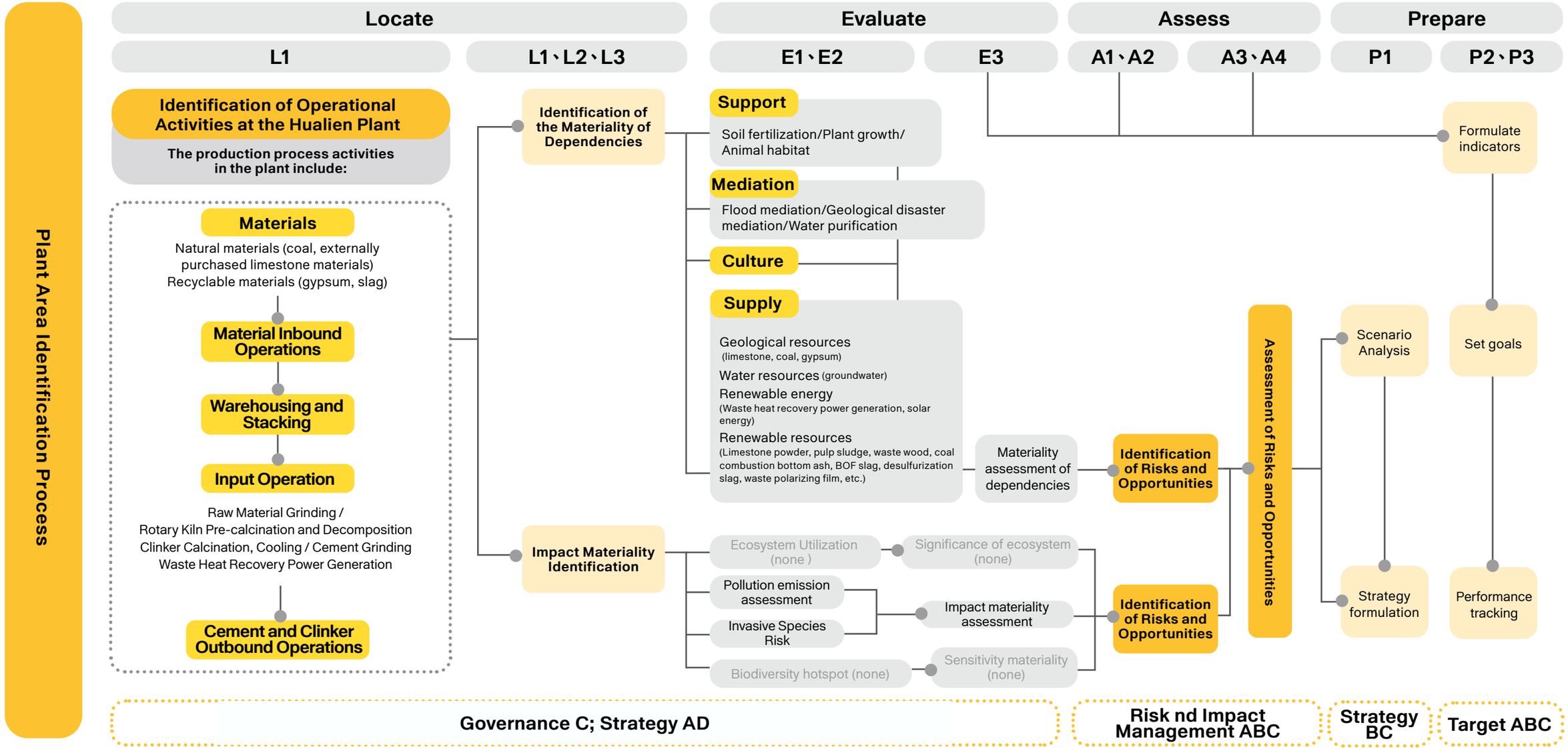


Fig. 2-3 ACC Manufacturing Plant LEAP Identification Process

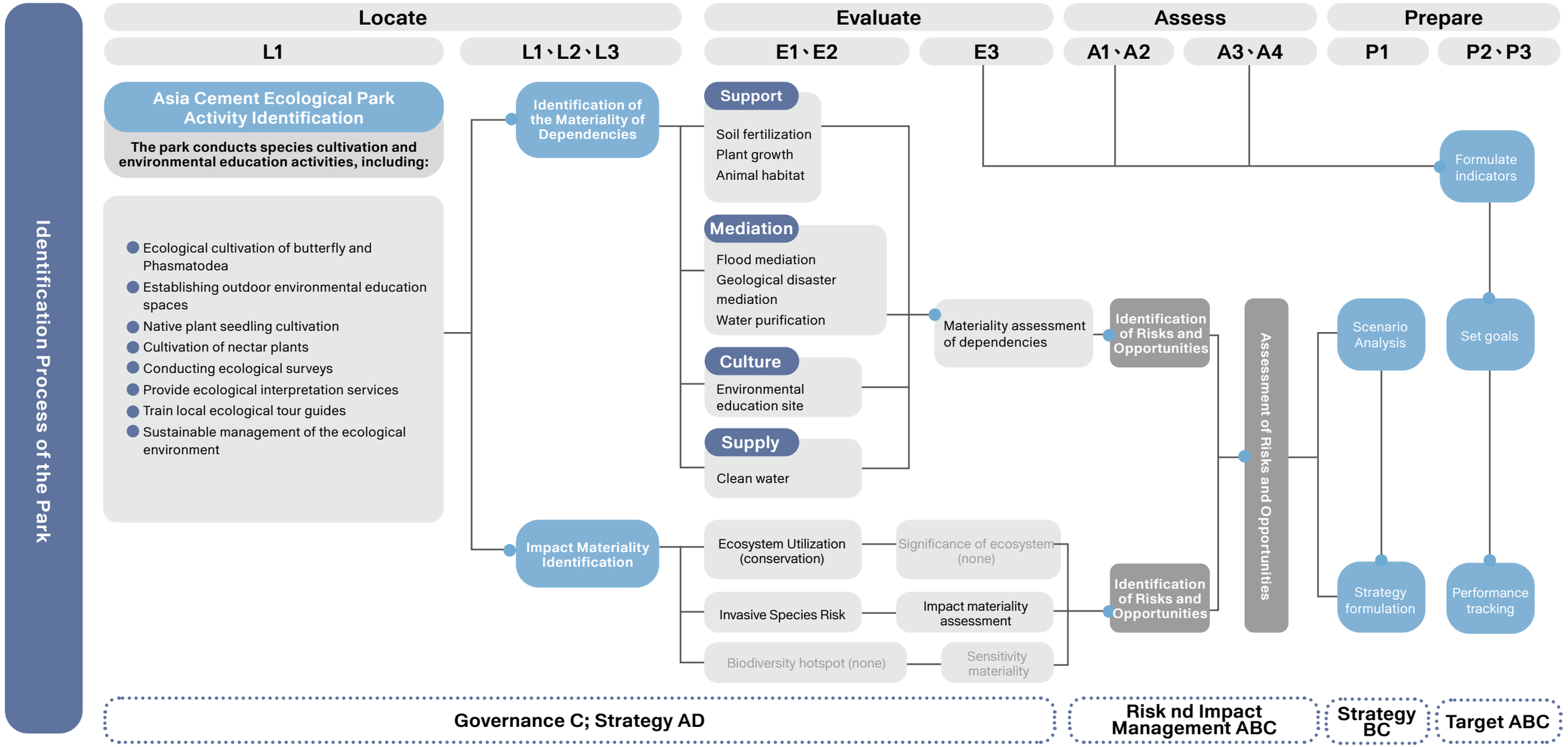


Fig. 2-4 LEAP Identification Process

2.2 ACC TNFD Investment Project Description

In order to effectively restore land use after limestone extraction, ACC adheres to its biodiversity policy and the four principles of avoidance, reduction, mitigation, and off-site compensation. The Company has invested substantial funds and resources to implement 12 nature-related practice strategies, aiming to achieve a net positive impact on biodiversity.

Nature-related Practice Strategies	Item Description	Relevant Costs and Expenditures	Relevant Benefits and Positive Impacts on Nature
1 **Establish biodiversity conservation-related facilities**	Asia Cement Ecological Park's Butterfly Garden, Phasmatodea ecological restoration projects and investments, and the promotion of butterfly habitat creation across Taiwan	The establishment of ACC's native plant garden, butterfly ecological park, Phasmatodea museum, large butterfly and stick insect rehabilitation greenhouse, with a total investment of approximately NTD 20,292,000.	● As of the end of 2023, the total number of visitors to the park reached 191,514. According to the evaluation results in 2022, the social return on investment generated an effectiveness of 13.97 times. ● A total of 34 butterfly habitats have been established across Taiwan. ● Award records. (1) In 2019 and 2020, for two consecutive years, the Company was honored with the Enterprise Category Gold Award in Hualien's "Building a Garden City, Hundred-Scenic Garden Greening" (2) In 2021, the Company was awarded the Hualien County Excellence Award at the 8th National Environmental Education Awards ● Promote the restoration of the Magellan Birdwing, becoming the base for the Precious Species Project.

Nature-related Practice Strategies	Item Description	Relevant Costs and Expenditures	Relevant Benefits and Positive Impacts on Nature
2 **Promoting Environmental Education and Citizen Scientists**	Operations of the Ecological Park, organizing visit activities, promoting the Park's ecology to schools, communities, and tribes, and establishing online learning resources.	Ecological park maintenance, volunteer interpretation, touring promotion, and related expenses: Approximately NTD 5,769 thousand in 2023 Approximately NTD 6,380 thousand in 2022 Approximately NTD 6,115 thousand in 2021	● The Asia Cement Ecological Park demonstrated remarkable environmental education achievements in 2023. Throughout the year, 1,022 guided activities were held, accumulating 16,160 hours of learning time. Through sensory experiences, the public was led to a deeper understanding of the natural environment. In terms of exhibition promotion, from 2019 to 2023, the Phasmatodea Environmental Education Train Exhibition toured multiple counties and cities, showcasing for 454 days and attracting hundreds of thousands of people for interactive learning. ● In the field of ecological research, since April 2021, continuous vegetation greening monitoring has been conducted at the mining site. A total of 38 surveys have been completed, providing scientific basis for phytoremediation. Between 2020 and 2023, the organization of citizen scientists conducted the Hualien Phasmatodea survey, with a total of 48 surveys, 202 participants, and 256 hours of field investigations. Eleven species of native Phasmatodea were discovered across 27 trails. What's even more noteworthy is that a new species was discovered during routine surveys, and it is currently being identified in collaboration with the Department of Entomology at National Taiwan University. ● The park actively establishes collaborations with various sectors, including partnering with local NGOs to organize biodiversity events and butterfly ecology courses. In terms of academic collaboration, partnerships have been established with multiple universities, including participation in the Science Popularization Train activities, signing memorandums of environmental education cooperation, contributing to the Magellan Birdwing conservation project, and becoming an internship field for students from the College of Environmental Studies and Oceanography at National Dong Hwa University. In addition, it also serves as a botanical learning base for students from National Hualien Agricultural Senior High School. ● At the public sector cooperation level, the park actively participates in biodiversity activities organized by the Hualien County Government, including butterfly identification courses and carnivals. Every year, five campus tour lectures are regularly held to bring environmental education into schools. Since 2018, the park has established an online learning platform, and its YouTube channel has accumulated 264 videos with a total of over 56,000 views, successfully using digital media to expand the impact of environmental education.

Nature-related Practice Strategies	Item Description	Relevant Costs and Expenditures	Relevant Benefits and Positive Impacts on Nature
3 **Developing Ecological Restoration and Landscape Conservation in Mining Areas**	Greening and ecological restoration of mining areas, establishing a mining area ecological recovery assessment system	Vegetation greening in mining areas, soil and water conservation, environmental monitoring, slope stability, and blasting vibration monitoring in mines Security expenses: Approximately NTD 15,029 thousand in 2023 Approximately NTD 21,280 thousand in 2022 Approximately NTD 39,260 thousand in 2021	● The mining area covers approximately 400 hectares. By implementing strategies to avoid, reduce, and mitigate impacts on the natural environment, the dynamic mining area is maintained at under 17.1 hectares. Mined land is restored to forest using the ACC Afforestation Method, with a total of 69.6 hectares rehabilitated to date, while the remaining 313.3 hectares continue to be preserved as natural forest. ● The ecological restoration and conservation efforts in the mining area demonstrate benefits and service values such as carbon sequestration, prevention of soil erosion, air purification, water conservation, and biodiversity habitat preservation. The total benefits rely on referencing relevant literature studies to facilitate the quantification of overall effectiveness (see Chapter 5: Future Expectations).
4 **Establishing Biodiversity Monitoring, Survey Data, and Management**	Greening and ecological restoration of mining areas, establishing a mining area ecological recovery assessment system		
5 **Develop Monitoring of Environmental Geological Potential Zones in Mining Areas**	LiDAR, GIS, and remote sensing technology		
6 **Implement Water Resource Management**	Water conservation, improving water resource recycling efficiency, and developing alternative water sources	The expenses invested in a sustainable green environment include environmental treatment and testing costs, equipment maintenance or replacement costs, and costs related to prevention and environmental management. 2023 NTD 268,892 thousand, 2022 NTD 254,750 thousand, Approximately NTD 67,426 thousand in 2021	● In 2024, the ISO 46001 water resource efficiency management system will be established, with a set target of 0.86 (m3/ton) for water efficiency per unit of cementitious material, and the base year for the indicator will be 2024. The current water usage performance meets the target value, with the goal of reducing water usage by 6% by 2030. ● In accordance with the requirements of the water resource efficiency management system, the entire plant's water balance diagram has been established, and 10 new flow meters have been installed to effectively measure the water consumption of various water-using equipment (facilities). These data serve as the basis for calculating water performance, allowing for the identification of significant water-using equipment/activities at the plant. Improvement measures are then implemented to reduce water consumption and wastage.
7 **Promotion of Circular Economy and Resource Management**	Actively use alternative raw materials and fuels to reduce the extraction and consumption of natural raw materials and fuels.		
8 **Control of Pollutants and Air Pollution Emissions**	Investment in measures to reduce pollutants and air pollution emissions		● Energy and Fuel Procurement Cost Savings: Approximately NTD 220,000 thousand in 2023, NTD 150,000 thousand in 2022, and NTD 70,000 thousand in 2021.

Nature-related Practice Strategies	Item Description	Relevant Costs and Expenditures	Relevant Benefits and Positive Impacts on Nature
8 **Control of Pollutant and Air Pollution Emissions**	Investment in measures to reduce pollutants and air pollution emissions		● The improvement project of replacing the electrostatic precipitator with a baghouse dust collector resulted in a reduction of the average particulate emission concentration from 22 (mg/Nm³) to below 9 (mg/Nm³). ● The installation of the Selective Non-Catalytic Reduction (SNCR) system for air pollution control reduced the average nitrogen oxide (NOx) emission concentration from 310 ppm to below 180 ppm.
9 **Improving Production Technology**	R&D low-carbon cement and improve energy efficiency.	The production of low-carbon cement involves increasing the types and quantities of materials such as limestone and blast furnace slag used in the cement, as well as expanding the storage facilities for blast furnace slag and gypsum. The budget for this initiative is NTD 127,000 thousand, and by the end of 2023, approximately NTD 6,918 thousand has been invested.	● The estimated annual benefit is NTD 90,368 thousand.
10 **Promoting Amendments to Relevant Regulations**	Amending CNS National Standards and Environmental Protection Regulations		
11 **Enhancing Resilience to Extreme Climate Events**	Enhancing plant disaster prevention, implementing related response measures for both software and hardware, and conducting personnel training.		
12 **Implementing Cross-Sector Collaboration**	Developing internship programs, implementing conservation projects, and investing in stakeholder conversation platforms.		

In the past three years, ACC has actively invested in and participated in various aspects such as nature and climate action, ecological environmental education, conservation environmental monitoring, environmental management, and technological improvements.

- Establishing facilities related to biodiversity conservation and biodiversity compensation programs, promoting environmental education and citizen scientists, and developing and maintaining the ACC native plant park, butterfly ecological park, and stick insect park, including volunteer interpretation and mobile promotion, with a total investment of approximately NTD 40 million.
- Developing mining area ecosystem restoration and landscape conservation, biodiversity monitoring, mining area vegetation restoration, and geological potential zone projects, with a total investment of approximately NTD 76 million.
- Investing in sustainable green environmental initiatives, including water resource management, pollutant control, and circular economy, with a total investment of approximately NTD 600 million.
- In terms of production technology improvement, the Company has increased the types and amounts of limestone, slag, and other materials blended into cement for the production of low-carbon cement, with a total investment of nearly NTD 7 million by 2023.

These investments clearly demonstrate ACC's active commitment and participation in natural and climate action, as well as its dedication to implementation.

ACC TNFD Investment Project Description and Nature-positive Impact Value

In today's world, where global environmental awareness is increasingly growing, how businesses can pursue economic development while fulfilling their corporate social responsibility and balancing environmental sustainability has become an important issue. ACC has achieved results in various aspects such as ecological conservation, environmental management, and cross-sector collaboration through its biodiversity policies and related practical strategies.

I. Systematic Promotion of Ecological Conservation

ACC has adopted a comprehensive strategic layout in ecological conservation, establishing a complete conservation system from habitat creation to educational promotion. Firstly, in terms of habitat creation, ecological parks have been established, native tree species have been cultivated, and habitats for butterflies and Phasmatodea have been developed, providing a good living environment for wildlife and becoming an important venue for environmental education. As of the end of 2023, the total number of visitors to the park has reached 191,514, and through the evaluation of social return on investment, it has generated a social benefit of 13.97 times, demonstrating the outstanding results of its investment in ecological conservation.

In addition, ACC has further promoted the creation of butterfly habitats outside the park, having completed the establishment of 34 habitats, demonstrating the Company's expanding influence in ecological conservation. These efforts have also received substantial recognition, including the Gold Medal Award in the "Building a Garden City, Hundred-Scenic Garden Greening" category for two consecutive years from Hualien County, as well as the 2021 Hualien County Excellence Award at the 8th National Environmental Education Awards.

II. Scientific Environmental Management

In terms of environmental management, ACC adopts a data-driven management approach based on scientific data. The restoration work in the mining area is particularly noteworthy. In the approximately 400-hectare mining area, ACC has adopted four key commitments to systematically reduce the impact on the natural environment. Through continuous monitoring of mining vegetation greening, 38 professional surveys have been completed. At the same time, in terms of plant and animal exploration, the survey area covers 17.1 hectares, providing important scientific evidence for ecological restoration.

Air Pollution Emission Item Management Measures

Item	Planning Schedule	Efficiency	Investment expenses (NTD thousands)
Continuous automatic monitoring system of dust (OP)	Completed in 2023	Monitoring dust data	4,950
NOx emission improvement project for the calcination system	Completed in 2023	Reduce NOx emission concentration to 220 ppm	37,500
Improvement of dust collector in kiln #3	Completed in 2023	Reduce PM emission concentration to 9 mg/Nm^3	162,000
Improvement of dust collector in kiln #1	Scheduled for completion in 2024	Reduce PM emission concentration to 8 mg/Nm^3	154,360

Figure 2-5 Air Pollution Emission Control Measures

In pollution control, ACC has invested substantial resources in upgrading equipment, with significant results (Fig. 2-5). For example, by installing a Selective Non-Catalytic Reduction (SNCR) system and implementing process controls, the average emission concentration of nitrogen oxides (NOx) has been successfully reduced from 310 ppm to below 220 ppm; and by optimizing the dust collection system, the PM emission concentration has been lowered from 22 mg/Nm^3 to below 9 mg/Nm^3, significantly improving air quality.

Water resource management also demonstrates the Company's innovative efforts. ACC has passed the ISO 46001 Water Efficiency Management System in 2024, effectively achieving precise management of water resources.

III. Deepening Social Participation and Cross-sector Collaboration

ACC understands that environmental sustainability must be built on a foundation of broad social participation. In terms of environmental education promotion, ACC organized the Phasmatodea Environmental Education Train Exhibition from 2019 to 2023, covering multiple counties and cities, with the exhibition lasting for 454 days. Throughout the year, 1,022 interpretive activities were held, accumulating 16,160 hours of environmental education, demonstrating the Company's deep commitment to environmental education.

In terms of industry-academia collaboration, ACC has established close partnerships with various sectors, including collaborating with local NGOs to organize biodiversity activities and butterfly ecology courses. In terms of academic collaboration, partnerships have been established with multiple universities, including participation in the Science Popularization Train activities, signing memorandums of environmental education cooperation, contributing to the Magellan Birdwing conservation project, and becoming an internship field for students from the College of Environmental Studies and Oceanography at National Dong Hwa University. In addition, it also serves as a botanical learning base for students from National Hualien Agricultural Senior High School.

ACC not only provides venues and spaces for environmental education but also established an online learning platform, accumulating 56,000 video views, effectively expanding the influence of environmental education.

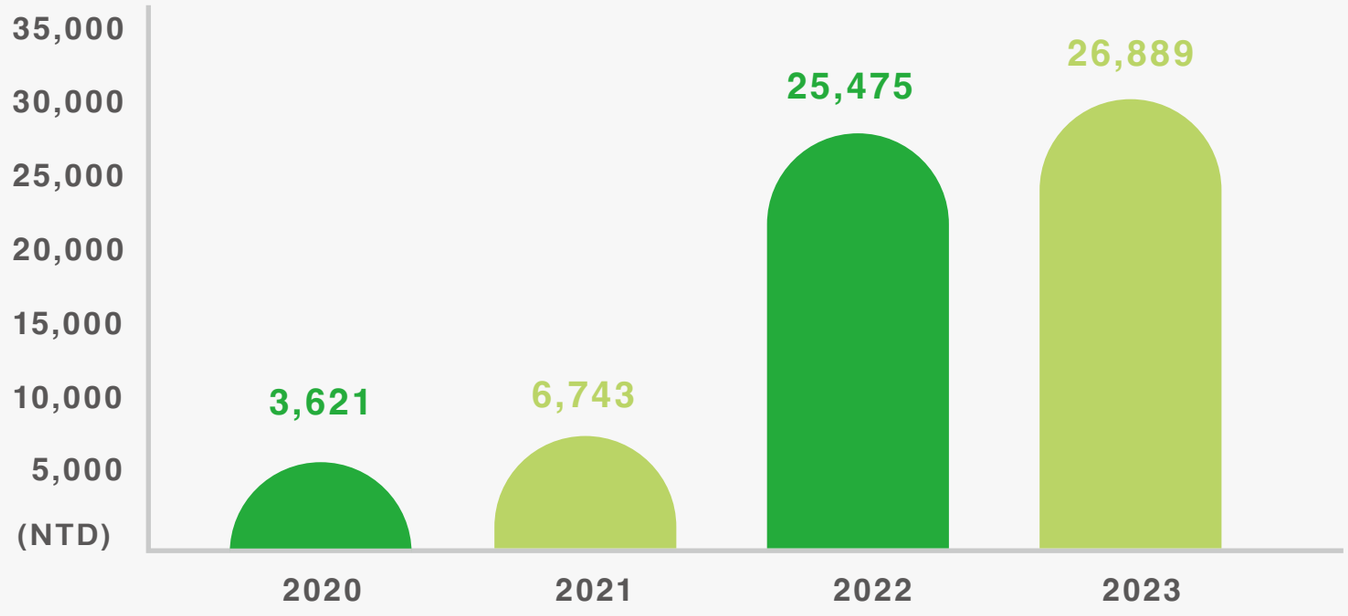


Fig. 2-6 Annual Sustainable Green Environment Expenditure of ACC Hualien Plant

ACC's actions in environmental sustainability and the related financial investments (Fig. 2-6) demonstrate the Company's ability to effectively implement environmental protection while pursuing economic develop ment. Through systematic ecological conservation, scientific environmental management, and in-depth social participation, ACC has not only fulfilled its corporate environmental responsibility but also set a positive example for the industry. These efforts and achievements undoubtedly provide important reference value for the environmental sustainable development of businesses in Taiwan.

In the future, as environmental conservation requirements continue to rise, how businesses can strike a better balance between operational development and environmental protection will remain an important issue. ACC's experience demonstrates that through scientific management methods, innovative technological applications, and continuous social engagement, businesses can indeed make tangible contributions to environmental sustainability while pursuing development, thereby creating positive natural impact value.

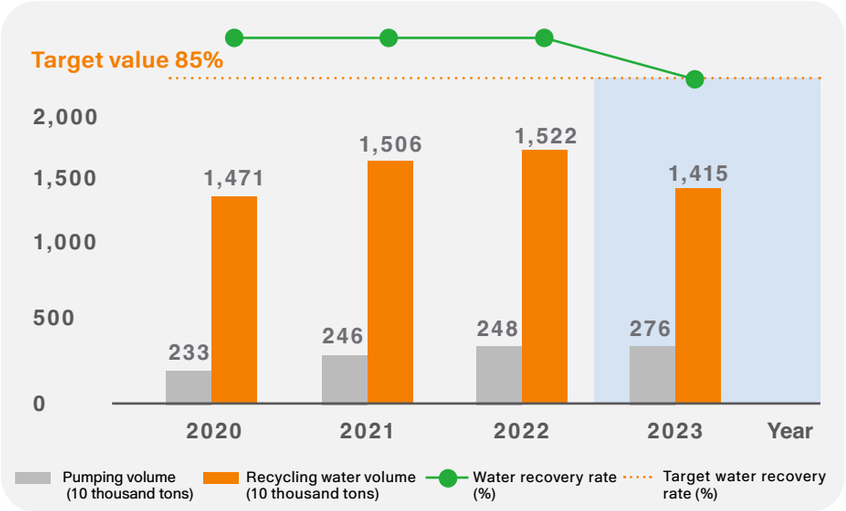
2.3 Current Strategies and Specific Actions

ACC is dedicated to nature-related investments and implements measures to mitigate the potential impact on biodiversity, primarily focusing on reducing the negative impacts caused by its operations. ACC has established relevant indicators and targets for six key areas, including "water use and wastewater discharge", "mineral extraction", "GHG emissions", "air pollutants", "solid waste", and "energy". The Company has formulated related strategies and action plans, which are reviewed and self-assessed annually.

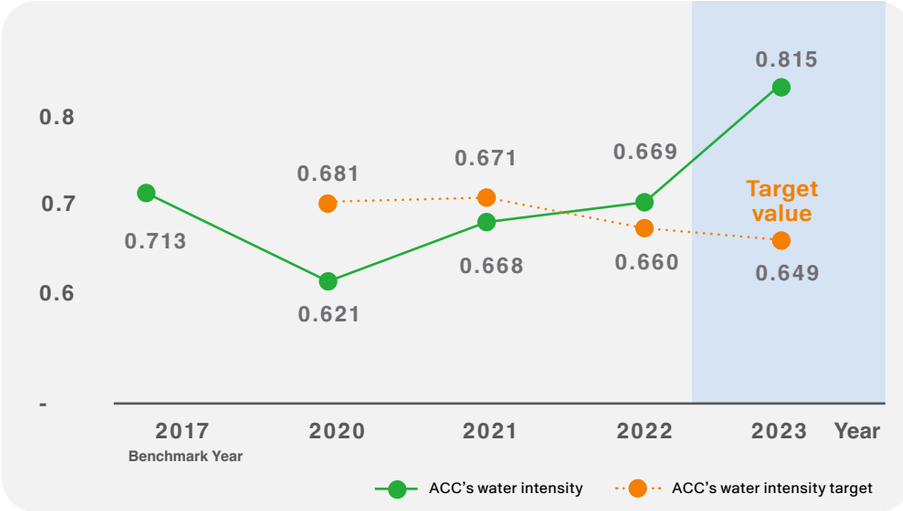
Water consumption and wastewater discharge

To achieve more effective water risk management, ACC has set four water usage indicators and goals. In 2023, ACC began implementing the ISO 46001: 2019 Water Resource Efficiency Management System at its Hualien Plant. By 2024, the system passed verification. Water meters have been installed across various water units in the plant to monitor and track water usage. Additionally, old pipelines are being replaced with transparent ones, and various water-saving measures are being executed, aiming to effectively manage water resources and meet the set goals.

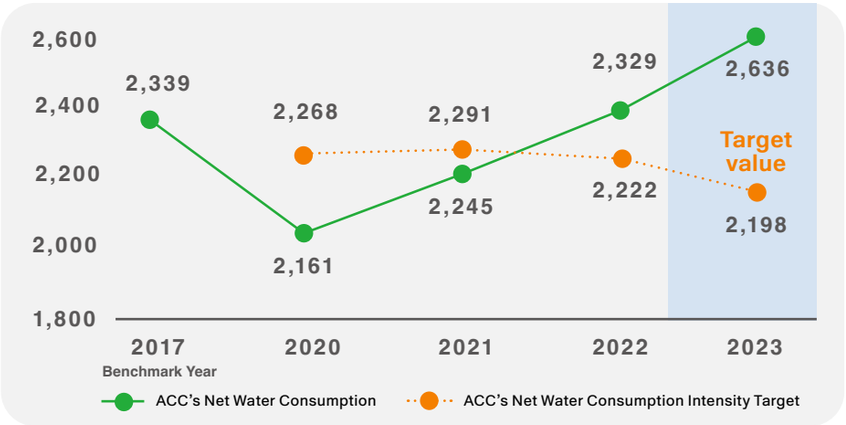
Water Recycling Use Performance of water intake, recycling volume, and recovery ratio at Asia Cement



Improvement in water efficiency (reduction in intensity) Asia Cement water intensity (tons of water intake / tons of cementitious materials)



Net Freshwater Consumption ACC's net freshwater consumption (thousand tons, ML)



Wastewater Discharge Target ACC's wastewater discharge (thousand tons, ML)

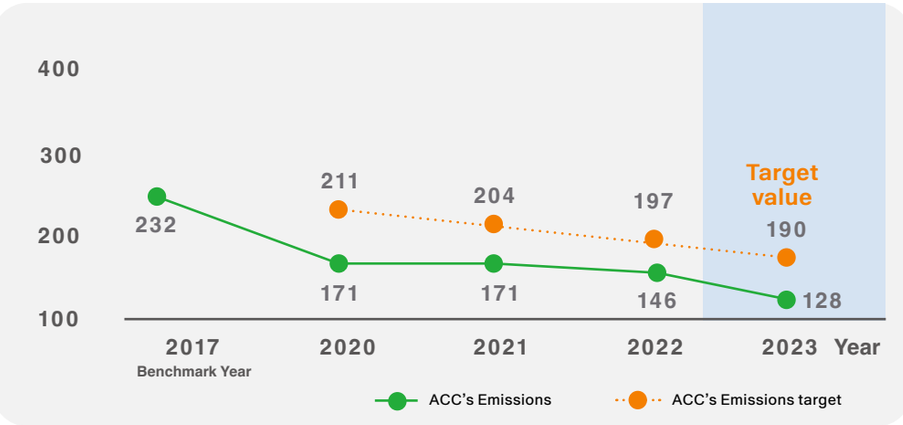


Fig. 2-7 Recent Water Usage Indicators and Data of ACC

Mineral Extraction Volume

ACC's main goal in promoting circular economy is to integrate the industry dynamically and statically, promoting circular integration, reduce resource consumption, turning waste into resources, and creating a triple-win situation for the economy, environment, and society, thus achieving a resource-circulating society. Under ACC's active implementation of the circular economy, the Company has reduced the extraction and consumption of millions of tons of natural raw materials and fuels each year. For example, in 2023, approximately 357,000 tons of limestone and iron sand, as well as 21,000 tons of coal and 57,000 tons of gypsum, were reduced in the extraction and use of natural raw materials and fuels. ACC continues to actively pursue a sustainable circular production model, seeking better resource allocation efficiency.

GHG emissions

ACC Hualien Plant continues to improve management and operations, reducing the unit clinker heat consumption and significantly decreasing coal usage. Based on the reduction in GHG emission intensity, the annual carbon reduction is estimated to be approximately 42,000 tons of CO2e. In addition, ACC is actively involved in Carbon Capture and Utilization (CCU) technology, collaborating with academic research institutions such as the ITRI to develop carbon-negative technologies. Unlike traditional carbon capture methods, ACC combines waste materials with carbon dioxide and supplies them as carbon-negative material aggregates to ready-mixed concrete plants, addressing the three major issues of carbon emissions, waste disposal, and resource scarcity. ACC is also working on researching and evaluating the technology for the separation and reuse of waste concrete materials, producing carbon-negative recycled aggregates and supplementary cementitious materials (SCM) for use in downstream industries, thereby achieving the integration of a low-carbon value chain. ACC utilizes the most environmentally beneficial methods to properly resource and recycle waste into carbon-negative materials, while simultaneously working toward the vision of achieving net-zero emissions.

Indicators and Goals		2023 targets	Achievement	Short-term Goal	Mid-term Goal	Long-term Goal
Raw Material Substitution	Substitution Ratio (kg/ton - Cementitious Materials)	112	109	159	173	185
	Substitution Amount (ton)	416,100	370,932	534,100	583,700	622,700
Fuel Substitution	Biomass Alternative Fuel Heat Supply Ratio (%)	3.3%	2.6%	5.1%	8.1%	11.1%
	Non-Biomass Alternative Fuel Heat Supply Ratio (%)	3.8%	1.8%	6.7%	14.2%	23.8%
	Substitution Amount (ton)	56,761	36,642	78,680	144,920	189,920
Clinker Cement Ratio	Clinker / Cement	90.7%	92.02%	86.2%	79.4%	58.1%

● Use of alternative raw materials reduces the consumption of natural raw materials (limestone, iron ore, clay); update is based on the loss on ignition (LOI) of elements (SiO_2, $Al2O_3$, Fe_2O_3, CaO).

Fig. 2-8 Recent Mineral Extraction and Circular Economy Targets of ACC

Carbon Reduction Performance and Targets

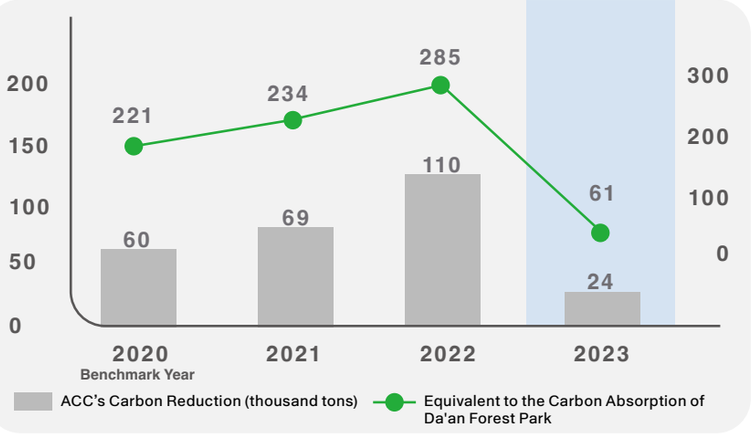


Fig. 2-9 Recent Carbon Reduction Performance and Targets of ACC

Action Plan Hualien Plant Raw Material (Clinker) Substitution
Performance Estimated reduction of 330,990 tons of limestone usage, resulting in a carbon reduction of **12,950** tons of CO_2e.

Action Plan Hualien Plant Fuel Substitution
Performance Estimated reduction of 6,067 tons of coal usage, resulting in a carbon reduction of **4,167** tons of CO_2e.

Action Plan The heat exchange efficiency of the cooling machine boiler tubes at Hualien Plant has been improved.
Performance Estimated savings of 5.54 million kWh of electricity, saving 19.9 TJ of heat value, and reducing carbon by **2,737** tons of CO_2e.

Action Plan Solar photovoltaic systems for self-use and sub-contract supply
Performance Self-generated and supplied 790,000 kWh of electricity, saving 2.8 TJ of heat value, and reducing carbon by **359** tons of CO_2e.

Air Pollutants

In the manufacturing process, cement inevitably generates air pollutants. The main air pollutants include particulate matter, nitrogen oxides (NOx), and sulfur oxides (SOx). ACC has introduced high-efficiency pollution control equipment in the cement production process to regulate emissions and reduce air pollution generation. To continuously monitor air pollution emissions, ACC conducts regular annual monitoring of various pollutants and establishes air pollution reduction targets (Fig. 2-10). For nitrogen oxides (NOx), a Continuous Emission Monitoring System (CEMS) is installed to monitor and control emission concentrations in real time. Over the years, ACC's emissions of nitrogen oxides, sulfur oxides, and particulate pollutants have consistently been below regulatory standards, showing a downward trend each year (Fig. 2-11).

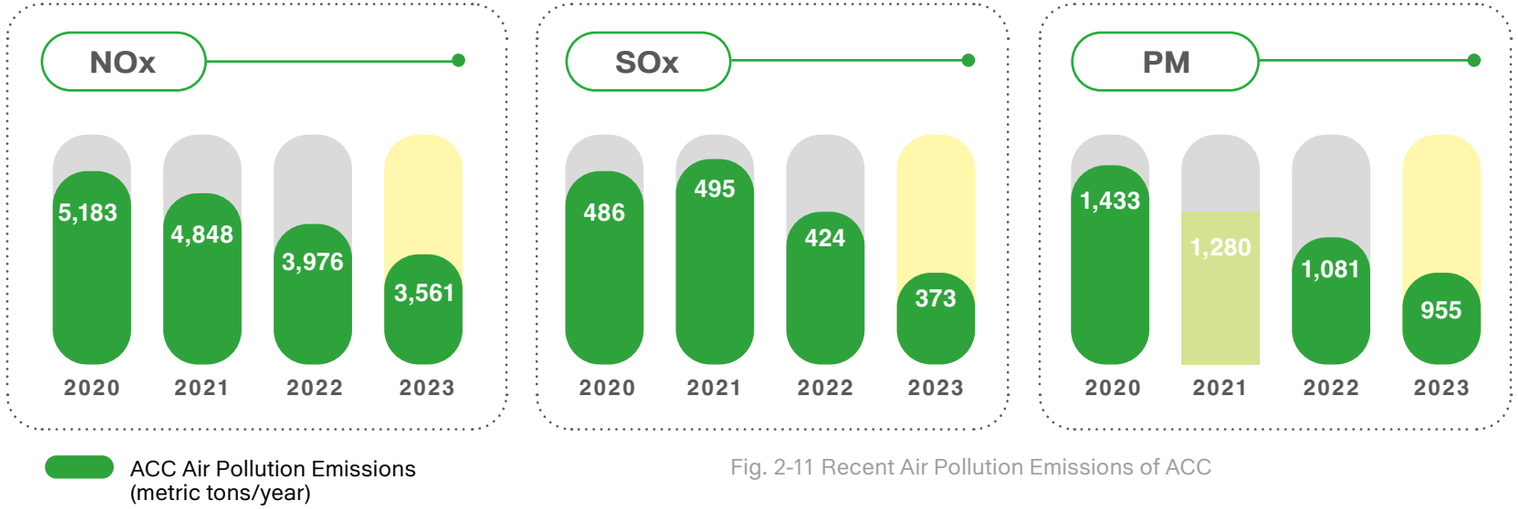


Fig. 2-11 Recent Air Pollution Emissions of ACC

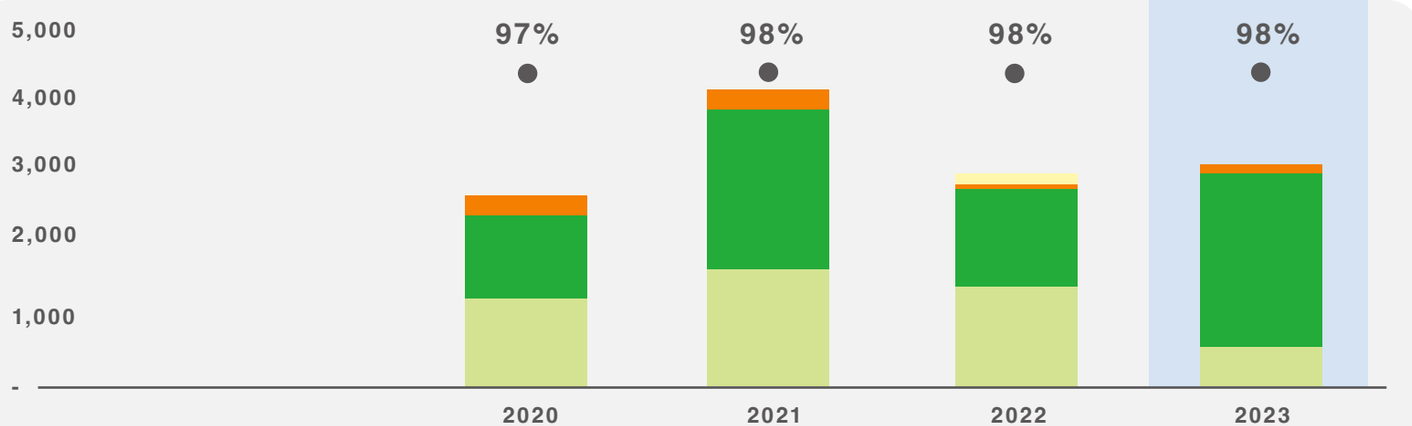
Item	Base year (2021)	2023 Target Achievement Status	Short-term goals (2025)	Mid-term goals (2030)	Long-term goals (2035)
Particulate matter	The emissions per unit of cementing material were 344 g/tons of cementitious material.	**Achieved:** Unit emissions of 279 g/tons of cementitious materials, with a 19% reduction.	The emissions per unit of cementitious material decreased by 3% annually, achieving a reduction of 12% by 2025.	The emissions per unit of cementitious material were targeted to decrease by 22% by 2030.	The emissions per unit of cementitious material were targeted to decrease by 27% by 2035.
NO_x	The emissions per unit of cementitious material were 1,325 g/tons of cementitious material.	**Achieved:** Unit emissions of 1,063 g/tons of cementitious materials, with a 20% reduction.	The emissions per unit of cementitious material decreased by 6% annually, achieving a reduction of 24% by 2025.	The emissions per unit of cementitious material were targeted to decrease by 39% by 2030.	The emissions per unit of cementitious material were targeted to decrease by 44% by 2035.
SO_x	The emissions per unit of cementitious material were 135 g/tons of cementitious material.	**Achieved:** Unit emissions of 111 g/tons of cementitious materials, with an 18% reduction.	The emissions per unit of cementitious material decreased by 2% annually, achieving a reduction of 8% by 2025.	The emissions per unit of cementitious material were targeted to decrease by 13% by 2030.	The emissions per unit of cementitious material were targeted to decrease by 18% by 2035.
Mercury	Emissions of 0.044 (tons/year)	**Achieved:** Emissions of 0.032 tons per year, with a 27% reduction.	The emissions were targeted to decrease by 1% annually, with a reduction of 4% by 2025.	The emissions per unit of cementitious material were targeted to decrease by 9% by 2030.	The emissions were targeted to decrease by 14% by 2035.

Fig. 2-10 Recent Air Pollution Emissions of ACC

Solid waste

ACC is dedicated to waste reduction, recycling, and reuse, ensuring that no hazardous industrial waste is produced in the process (Fig. 2-12). All waste reuse, disposal, and related reporting operations are carried out in compliance with environmental regulations and the requirements of the local government where the plant is located.

In 2023, the total weight of waste at ACC was 2,772 tons, of which 817 tons were reused internally in the cement rotary kiln. A total of 1,909 tons were outsourced for recycling through approved recovery channels. The remaining 46 tons, which could not be recycled or reused, were outsourced for incineration as final disposal. The waste recycling and reuse rate exceeded 98% (Fig. 2-13). The main waste generated by ACC for recycling and reuse within the plant is waste refractory bricks from the kiln. The main waste recycled and processed off-site includes scrap rubber and iron materials, with the annual processing volume varying depending on replacement projects.



	2020	2021	2022	2023
Landfilled (off-site)	0	0	48	0
Incineration (off-site)	69	63	4	46
Recycled or reused (off-site)	1,098	2,202	1,006	1,909
Recovery or reused (on-site) (tons)	1,299	1,671	1,574	817
ACC recycling or reuse proportion	97%	98%	97%	98%

Fig. 2-13 Recent Waste Generation and Recycling/Reuse of ACC

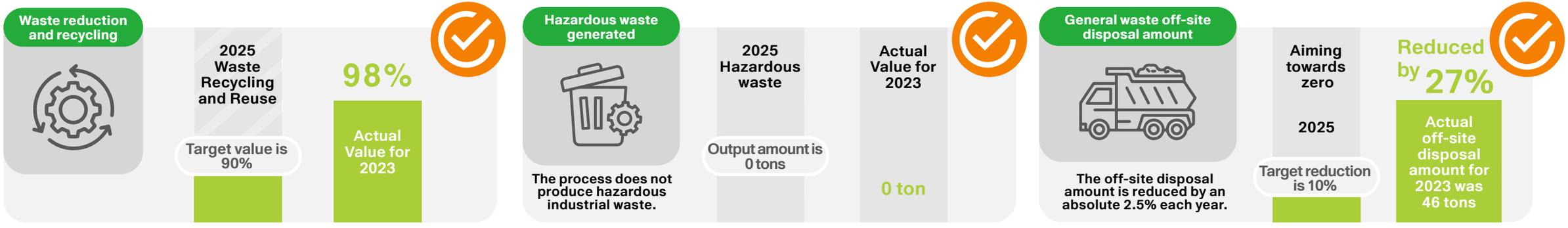


Fig. 2-12 Recent Achievements in Asia Cement's Solid Waste Treatment Targets

Energy

In line with the government's green energy policies, ACC has been installing solar power generation equipment. The installation of solar power equipment was completed in Q4 of 2023, with an installed capacity of over 3.7MWp. The renewable energy generated or transferred amounted to a total of 726 MWh. In addition, ACC Hualien Plant utilizes waste heat generated by the rotary kiln system, which is converted into high-pressure steam by the boiler to power generators, thus recovering and transforming waste heat into electricity. In 2023, the net waste heat power generation was 65,279 MWh, which is enough to supply about 15,000 households (Fig. 2-14). The waste heat power system at ACC Hualien Plant has consistently maintained a unit clinker power generation rate of over 20 kWh/tons of clinker over the years, with the plant's average in 2023 being 21 kWh/tons of clinker. Given that the waste heat power generation system has experienced a decline in efficiency due to gradual blockage of furnace tubes, ACC's energy team has planned improvements for the three rotary kiln power generation systems at Hualien Plant. After the modifications are completed in 2024, it is expected that the average power generation per ton of clinker for the entire plant will exceed 29 kWh.

In 2023, ACC's total energy consumption was 11,959 TJ (or 3,321,981 MWh). Asia Cement has established energy consumption targets, aiming for a 1% annual reduction in both energy consumption and intensity, with 2019 as the base year (Fig. 2-15).

- ACC is committed to nature and climate-related investments and implements measures to mitigate the impact on biodiversity.
- In terms of management system certification, ACC has implemented the ISO 46001: 2019 Water Efficiency Management System and will obtain certification in 2024. Additionally, its Xinchengshan Mine has become the first mine in Taiwan to pass the ISO 50001 Energy Management System certification, demonstrating its leading position in systematic management.
- In terms of mitigating environmental impact, ACC actively promotes GHG reduction programs, improving management and operational efficiency to lower unit clinker heat consumption, effectively reducing coal usage. At the same time, ACC has partnered with research institutions and actively participates in carbon capture programs led by the Industrial Development Administration and the ITRI, demonstrating its commitment to environmental innovation.
- In resource sustainability management, ACC adheres to the principles of the circular economy, striving to reduce resource consumption by transforming waste into usable resources. The Company has set a clear goal for the natural mineral substitution ratio by 2035. Additionally, water meters have been installed across various water-use units within the plant, and multiple water-saving measures have been implemented to strengthen water monitoring and management.

Hualien Plant Historical Waste Heat Electricity and Proportion

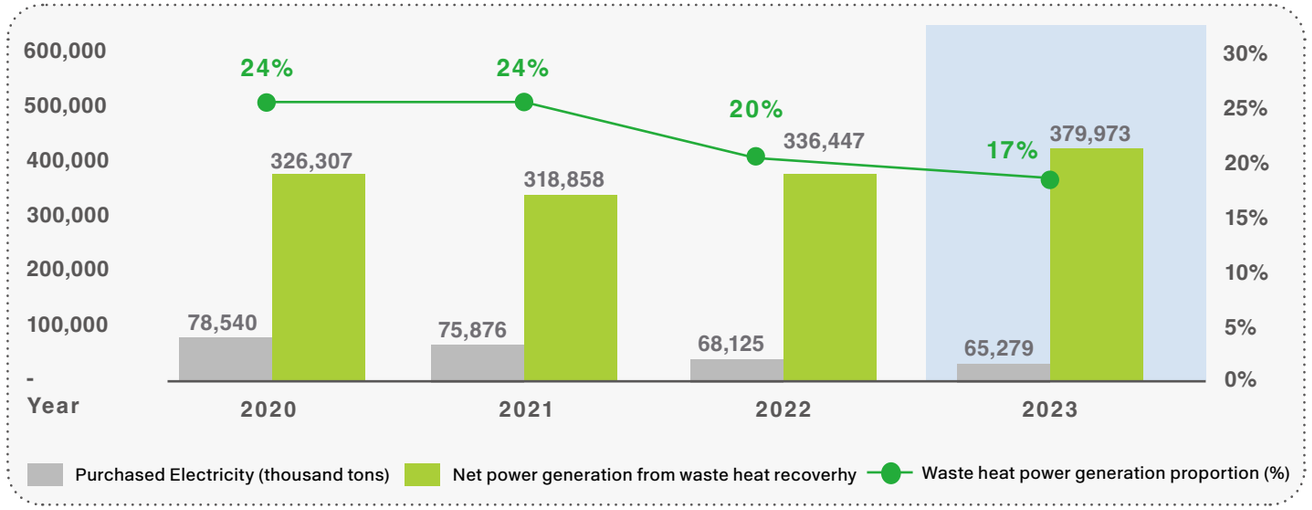


Fig. 2-14 Recent Waste Heat Power Generation and Proportion at ACC Hualien Plant

Asia Cement Energy Consumption Performance (Cement Operations)

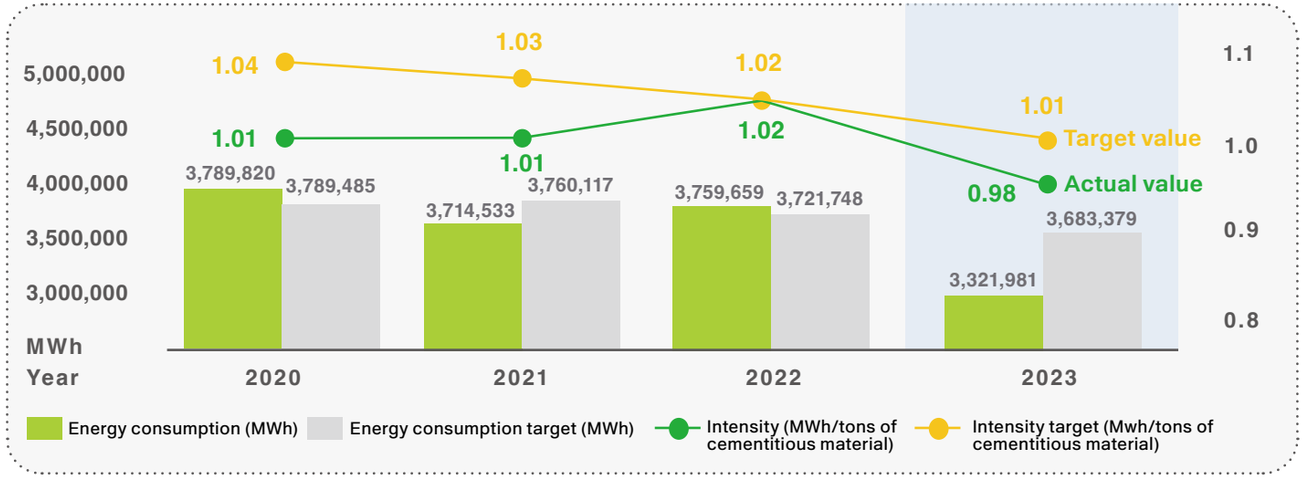


Fig. 2-15 Recent Energy Consumption Efficiency of ACC

On this natural and magnificent land in Eastern Taiwan, ACC Hualien Plant insists on protecting and cherishing the land we depend on for our survival. This report, framed within the guidelines of the Taskforce on Nature-related Financial Disclosures (TNFD), documents our ongoing efforts and achievements in ecological restoration and biodiversity, resource conservation through a circular economy, energy saving and carbon reduction towards net-zero, as well as various environmental-friendly initiatives in recent years. ACC is a company that pragmatically practices environmental protection. We understand that modern sustainability responsibilities go beyond economic development, encompassing the overall balance of society and the environment. Through the TNFD framework, we have begun exploring the best ways for businesses to coexist with nature, ensuring that every decision carries a commitment to the future.

In this report, we have detailed our specific actions, including on-site afforestation at the mining site, off-site ecological restoration, the transformation to low-carbon products, and the resource substitution that turns waste into valuable resources. Through the continuous efforts of the staff at the ACC Hualien Plant, tens of thousands of trees have been restored to land that was once mined, transforming it into a sanctuary for biodiversity and attracting numerous local species to return and inhabit.

Recently, ACC has been actively promoting carbon reduction to achieve the carbon reduction targets set by the Science-Based Targets initiative (SBTi), with a further aim to create positive ecological value. Circular economy is the core approach we use to promote sustainable resource utilization. We use waste as alternative fuel and raw materials in cement production, reducing the amount of waste sent to incinerators and landfills, while also decreasing the demand for natural resources in cement production. We have strengthened our collaboration with the community for many years, opening up our ecological park to allow more people to witness the vitality of ecological restoration.

As a member of ACC, I deeply understand the Company's responsibility towards ecological protection and have witnessed ACC's long-standing commitment to environmental care and practice. We will continue to collaborate closely with the team and take practical actions to promote environmental sustainability, dedicated to deepening the relationship of harmonious coexistence between the Company and nature.

The TNFD framework helps us better understand natural risks, reduce negative environmental impacts, and explore more positive effects. We are grateful for the support of Professor Li Chun-Hung and his team from Dong hwa University, which enabled the successful completion of ACC's first TNFD report for 2023 by the end of 2024. This is a lasting commitment. We will continue to deepen our efforts and move forward on the path of sustainability.



Chief Deputy Plant Director, ACC Hualien Plant, Asia Cement Corporation

Chen Chih-Hsien, Walker Chen

3

Construction and Implementation of LEAP Methodology

3.1 “Locate” The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature

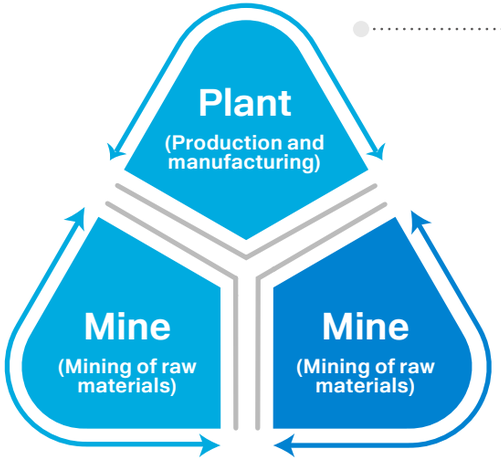
3.2 “Evaluate” Nature Dependency and Impact of ACC Hualien Plant

3.3 “Assess” Nature-Related Risks and Opportunities of ACC Hualien Plant

3.4 “Prepare” Response and Resource Allocation Decisions of ACC Hualien Plant



3.1 "Locate" The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature



The operations area of ACC Hualien Plant can be divided into three main sections:

The mining area for raw material extraction, the plant area for production and manufacturing, and the park area for promoting environmental education. ACC strives to reduce the environmental impact of its operations through various measures while actively promoting sustainable production methods. This approach not only reflects the Company's social responsibility but also sets a sustainable example for the long-term development of the cement industry.

ACC will conduct positioning and impact assessment based on the following three criteria

I. Ecological sensitivity: Overlap of the site with nature-related conservation areas

- Source: Spatial Planning Act's Land Use Zoning and Geological Sensitive Area Map (Fig. 3-2)
- According to the classification established by the Land Use Zoning (Table 3-1)

II. Species sensitivity: Records of threatened species near the location

- Source: ACC Biodiversity Team Monitoring, ACC 2016 to 2018 Environmental Ecology Survey Report (Table 3-3), (Fig. 3-4).
- Grading basis: Established using the quintile of species counts from national grid data (Table 3-2), (Fig. 3-3).

III. Operational Impact: Based on land use status, calculate the natural vegetation degree of the site to assess the impact of operations on the environment.

- Source: ACC 2016 to 2018 Environmental and Ecological Survey Report
- Grading basis: Refer to the determination of plant naturalness in the Environmental Impact Assessment (Table 3-4).

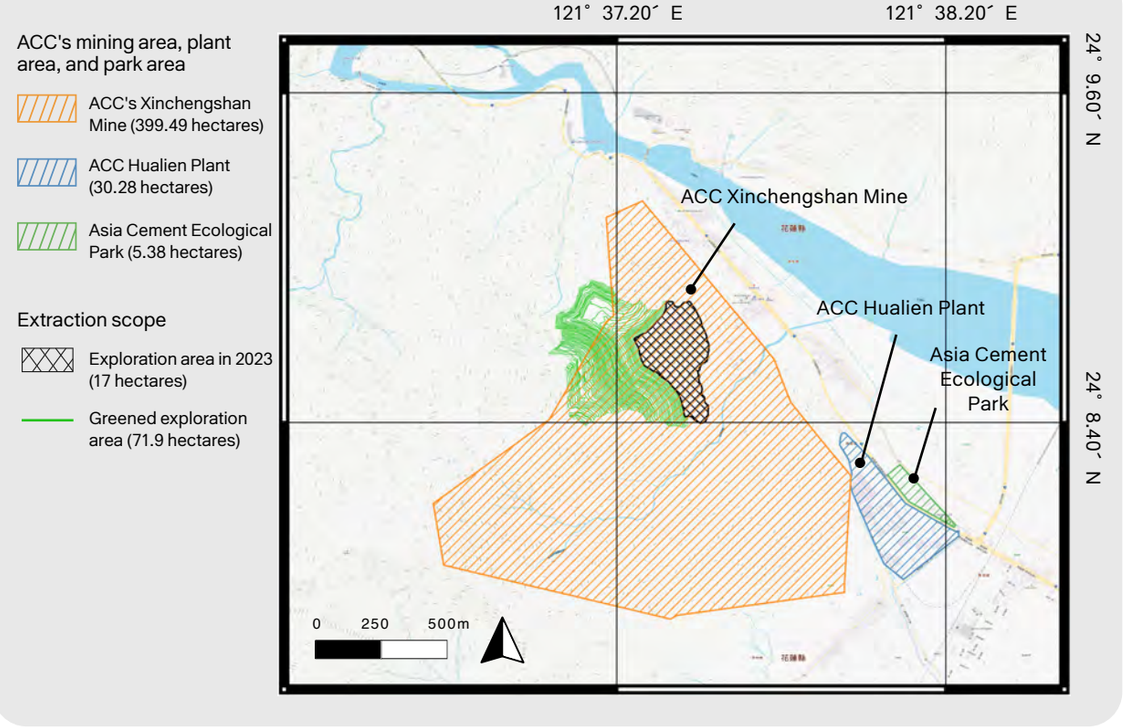


Fig. 3-1 Main Operating Locations of ACC Hualien Plant

Operating Locations and Ecosystem Sensitivity

Superior (S)

- IUCN Categories I to IV Protected Areas (e.g., Nature Reserves, National Parks, etc.)

High (H)

- First-level coastal protection areas, national security zones within state-owned forest enterprise areas, etc.
- Disaster-sensitive areas, such as geological sensitive areas

Medium (M)

- Second-class land conservation areas (e.g., forest management areas within state-owned forest enterprise zones)

Low (L)

- Agricultural Development Area

Poor (P)

- Urban-Rural Development Area

Table 3-1 Ecological Sensitivity Grading

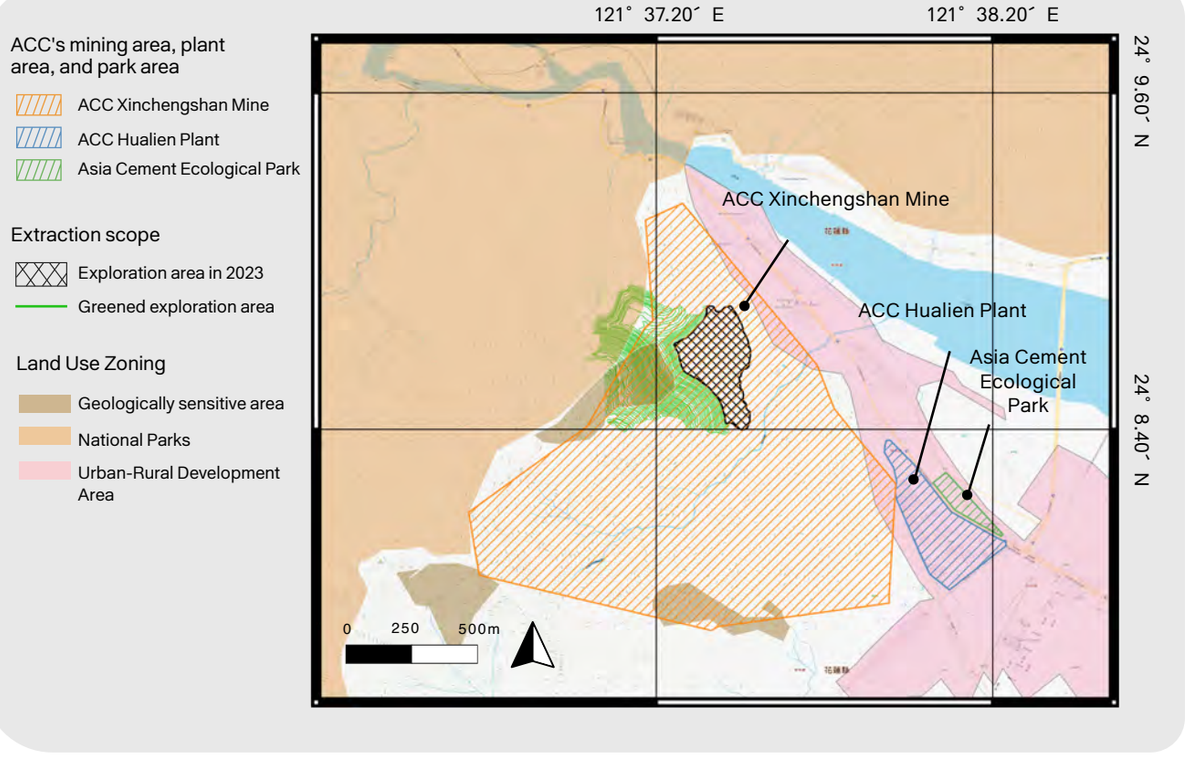


Fig. 3-2 Ecological Sensitivity of ACC



ACC Hualien Mining Area

The Xinchengshan Mine is located on the south bank of the Liwu River estuary. Before reduction, the total area of the mining area was about 442 hectares. In 1973, mining rights were approved. Later, when Taroko National Park was established in 1986, approximately 25 hectares in the northwest of the mining area were incorporated into the special scenic area of the national park. Therefore, in 2016, a reduction of mining rights was carried out to reduce the overlapping area with the national park. As a result, the current actual area of the mining area is 399 hectares, and the overlapping area with the national park has completed vegetation greening work (greening of the excavation site).

A portion of the land in the mining area is located in a geologically sensitive zone, with high ecological sensitivity. According to the analysis using the Integrated Biodiversity Assessment Tool, the mining area is adjacent to but does not cover national biodiversity protection areas, including IUCN Category II national parks and Key Biodiversity Areas (KBA).



ACC Hualien Plant

The plant is located within an industrial zone and primarily includes cement production and pollution control facilities. Although it is an industrial area, the surrounding environment still maintains rich ecological diversity. The plant area is located near Taroko National Park, surrounded by indigenous reserves and hillside areas, with a very rich natural ecosystem of flora and fauna. According to the records in the ecological survey database system, there are nearly 4,700 plant and animal records within a radius of approximately 5 kilometers from the plant area, highlighting the biodiversity of the region.

The ACC Hualien Plant is located in an urban and rural development area, making it part of an extremely low ecological sensitivity zone.



Asia Cement Ecological Park

ACC integrates environmental protection and environmental education by establishing the Asia Cement Ecological Park. This park is not only a practical base for ecological restoration but also an important site for environmental education. The park features a native plant garden, a butterfly garden, and a stick insect garden. It cultivates approximately 100 families of native trees and 250 tree species, raises around 40 species and nearly 10,000 butterflies annually, as well as over 20 species of Phasmatodea from both domestic and international sources. The Asia Cement Ecological Park is located in an urban and rural development area, making it part of an extremely low ecological sensitivity zone.

Operating Locations and Species Sensitivity

To construct the species sensitivity assessment standards, ACC uses the "Taiwan Biodiversity Network Data" from the Taiwan Biodiversity Research Institute of the Ministry of Agriculture to analyze the species sensitivity of operating locations. The evaluation examines whether there are species listed in the IUCN Red List or classified as vulnerable (VU), endangered (EN), or critically endangered (CR) within the surrounding areas. The analysis is based on the species monitored from January 1, 2016, to December 31, 2023. The species count in the Taiwan Biodiversity Network Data grid was divided into quintiles, and species sensitivity was classified according to the following grading criteria: Superior (S), High (H), Medium (M), Low (L), and Poor (P).

Grading Basis: (2016 to 2023)	Species Sensitivity Classification and Color Scale
Number of species > 15 (Q4)	Superior (S)
15 (Q4) ≧ Number of species > 4 (Q3)	High (H)
4 (Q3) ≧ Number of species > 2 (Q2)	Medium (M)
2 (Q2) ≧ Number of species >1 (Q1)	Low (L)
1 (Q1) ≧ Number of species	Poor (P)

Table 3-2 Species Sensitivity Classification

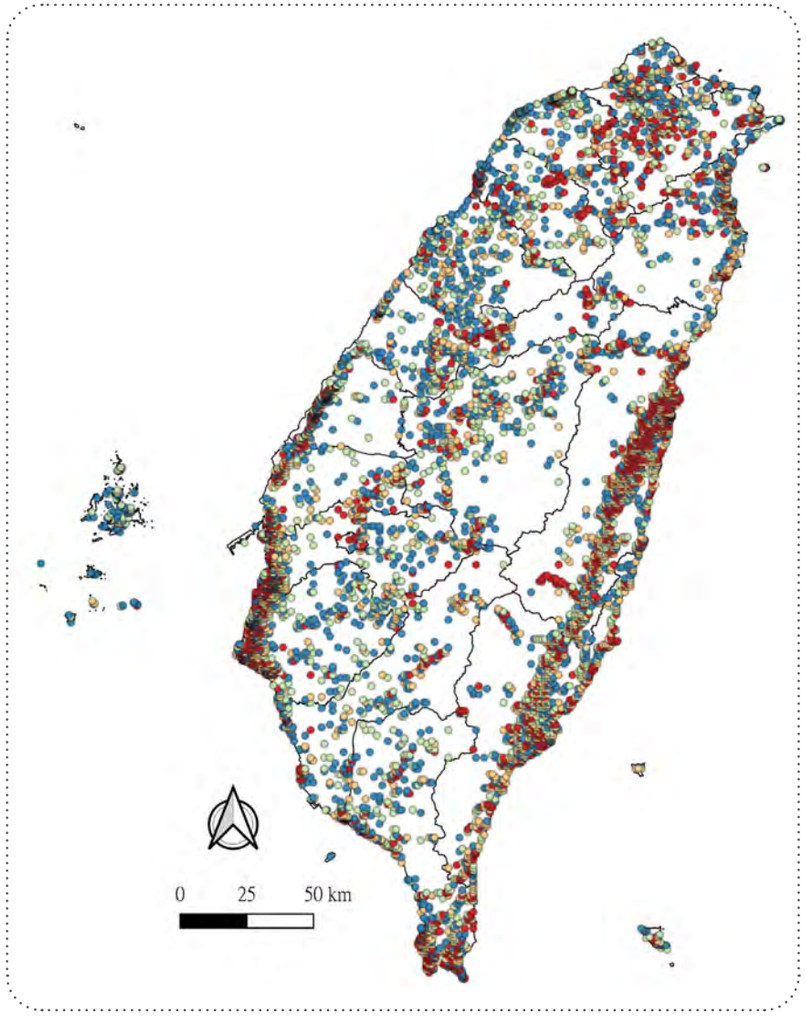


Fig. 3-3 Data from Taiwan Biodiversity Network (TBN)

ACC's Investment in Ecological Surveys

ACC has invested a great deal of effort and resources in surveys and monitoring to confirm the success of vegetation restoration and conservation efforts. In addition to the 8 seasons of systematic ecological surveys conducted in 2016, we also carried out self-initiated ecological monitoring routes from 2020 to 2023 and set up infrared automatic cameras for monitoring. ACC will also conduct a large-scale survey again in 2025. The scope of the ecological survey extends 500 meters beyond the boundary of the mining area (Fig. 3-4).

Therefore, for species sensitivity, we will use the species sensitivity classification standard in this report to conduct species sensitivity analysis based on the ecological survey data from ACC for 2016 to 2018 and 2020 to 2023, as well as monitoring from the automatic cameras (Table 3-3).

According to the data results, the mining area exhibits high species sensitivity. The plant area, located in a highly artificial industrial zone with a park that is an artificially managed environment, thus exhibits extremely low species sensitivity.

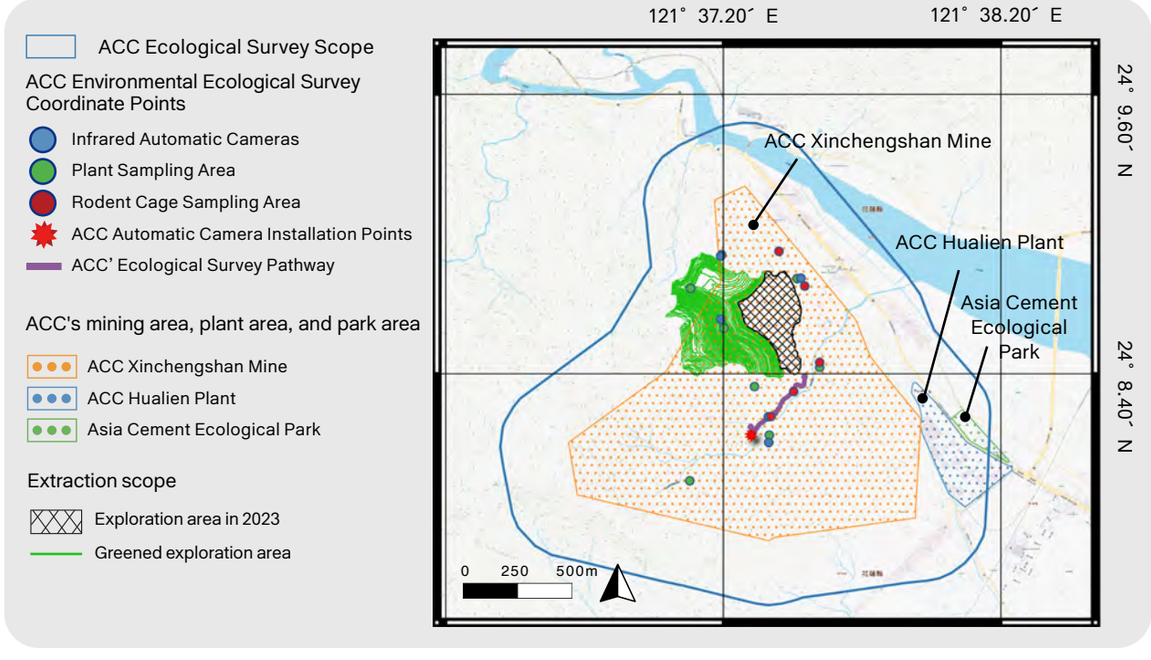


Fig. 3-4 ACC Ecological Survey Routes and Points

Table 3-3. Survey of Vulnerable, Endangered, and Critically Endangered Species and Species Sensitivity Analysis Results of ACC

Category	Name of Species	Standards		Remark
		Domestic Red List	Foreign Red List	
Plants	Calocedrus formosana	Vulnerable	–	ACC has artificially planted near the security booth.
	Nageia nagi	Endangered	Near Threantened	ACC has artificially planted next to the ammunition depot.
	Podocarpus macrophyllus	Endangered	Least Concerned	ACC has artificially planted next to the ammunition depot.
	Garcinia subelliptica	Endangered	Endangered	ACC has artificially planted in the restoration area.
	Distylium gracile	Vulnerable	Endangered	ACC has artificially planted in the restoration area.
Mammals	None	–	–	–
Birds	Taiwan Bulbul	Vulnerable	Vulnerable	Wildlife
	Javan Myna	Least Concerned	Vulnerable	Wildlife
Amphibia	None	–	–	–
Reptiles	Cuora flavomarginata	Vulnerable	Endangered	Wildlife
Total species of Vulnerable, Endangered, and Critically Endangered		8		

Grading Basis:	Species Sensitivity Classification and Color Scale
Number of species > 15 (Q4)	Superior (S)
15 (Q4) ≧ Number of species > 4 (Q3)	High (H)
4 (Q3) ≧ Number of species > 2 (Q2)	Medium (M)
2 (Q2) ≧ Number of species >1 (Q1)	Low (L)
1 (Q1) ≧ Number of species	Poor (P)

Birds

In the 2023 survey, birds recorded included Grey-chinned Minivet, Formosan White-eyed Nun Babbler, Taiwanese Whie-eye, Formosan Whistling Thrush, Crested Goshawk, Grey Treepie, Serpent Eagle, and Bronzed Drongo, among others. In the 2017 survey, a total of 29 families and 54 species were recorded, with the dominant species being Taiwanese White-eye (12.05%), followed by Hypsipetes leucoceophalus (10.09%) and Psilopogon nuchalis (5.72%). A total of 11 Taiwan endemic bird species were recorded (Arborophila crudigularis, Swinhoe's Pheasant, Psilopogon nuchalis, Taiwan Yellow Tit, Taiwan Bulbul, Taiwan Yuhina, Taiwan Scimitar-babbler, Black-necklaced Scimitar-babbler, Formosan White-eyed Nun Babbler, White-eared Sibia and Formosan Whistling Thrush). Precious and rare species numbered 6 (Swinhoe's Pheasant, Crested Goshawk, Serpent Eagle, Mountain Scops-Owl, Yellow Tit and Taiwan Bulbul). Other species that should be conserved numbered 3 (Taiwan Partridge, White-eared Sibia and Taiwan Yuhina).

Mammals

In the 2023 survey, mammals recorded included Formosan Reeve's muntjac, Formosan Serow, Formosan Rock Macaque, crab-eating mongoose and Dormer's Bat. In the 2017 four-season survey, a total of 6 orders, 10 families, and 12 species of mammals were recorded, with the crab-eating mongoose and the Formosan Yellow-throated Marten being observed only by the infrared automatic cameras. Based on animal excretion, footprints, and photos captured by infrared automatic cameras, it is inferred that the dominant species in this area are the Formosan Ferret Badger, Formosan Rock Macaque, Formosan Reeve's muntjac, and Formosan Serow. Among these, there are 3 species of Taiwan endemic mammals (Formosan Serow, Dormer's Bat, and Formosan Rock Macaque) and 3 other species that should be conserved (Formosan Serow, crab-eating mongoose, and Formosan Yellow-throated Marten).

Land Plants

In the eight seasons of ACC Environmental Ecological Survey Reports from 2016 to 2018, a total of 131 families, 346 genus, and 480 species were recorded. Based on plant attributes, there are 307 native species, 50 endemic species, 58 naturalized species, 38 cultivated species, and 27 invasive species, with native species accounting for the majority (64.0%).

Amphibians

Survey results from January 2022 to December 2023. Taiwan endemic amphibians include the Central formosan toad, Odorrana swinhoana, Buergerua otai, Hylaraba katouchii, Ornate Ricefrog and Spectacled toad. No protected species were found.

Butterfilies

In the 12 monthly surveys in 2023, a total of 1,550 individuals from 60 species in 10 families were recorded. In the 2017 four-season survey records, a total of 5 families, 15 subfamilies, and 56 species of butterflies were discovered, with the highest abundance being the Ceylon Blue Grassy Tiger (9.51%), followed by the Eurema hacabe (6.75%) and the Ypthima multistriata (6.44%). Two species of Taiwan endemic butterflies were discovered: the Taiwan Dravira chrysolora and the Ypthima angustipennis. Other species that require conservation include the Golden Birdwing.

Reptiles

In the survey from January 2022 to December 2023, a Japalura swinhonis and a Big-eyed rat snake were recorded. In the 2017 survey, records of Taiwan endemic species such as Swinhoe's tree lizard, Gekko hokouensis, Mock Viper, Turtle-designed Snake, and Taiwan bamboo viper were also found.


Formosan


Female Grey-chinned Minivet


Hylaraba katouchii


Parantica aglea maghaba

Operating Loca tions and Operational Impact

A naturalness map was created based on the current land use and plant composition distribution, categorized into levels from 0 to 5 and defined with the following classifications: Superior (S), High (H), Medium (M), Low (L), and Poor (P). The operational impact assessment was conducted using the naturalness data from the eight-season ecological survey by ACC.

Naturalness	Distinction	Definition	Operational Impact
5	Natural Forest Land	This includes undisturbed forests and forests that were once disturbed but have now evolved into a natural state. The composition of the plant landscape and plant community, as well as their structure, are quite stable. If left undisturbed, their composition and structure will not change significantly in the future.	Superior (S)
4	Pristine Grassland	Under the local atmospheric conditions, it should be able to develop into a forest. However, due to limiting factors such as site factors, including soil, moisture, nutrients, and repeated disturbances, its succession is halted at the grassland stage, maintaining a grassland form over the long term.	High (H)
3	Afforestation Land	This includes reforestation areas such as logged-over land, grasslands, fire-damaged areas, and bamboo forests. Although the vegetation is artificially planted, its long harvest period and higher stability distinguish it from agricultural land, which is frequently plowed and involves changing crop types.	Medium (M)
2	Agricultural Land	The vegetation consists of artificially planted crops, including fruit trees, rice fields, cereals, specialty crops, and temporarily fallowed grasslands, with the ground cover potentially changing at any time.	Low (L)
1	Bare Land	Areas without vegetation caused by natural factors, such as river waters, reefs, and bare land resulting from natural landslides.	Poor (P)
0	Vegetation-free Land	Vegetation-free areas caused by human activities, such as cities, buildings, roads, airports, etc.	Poor (P)

Table 3-4. Impact Level Classification of ACC's Operations

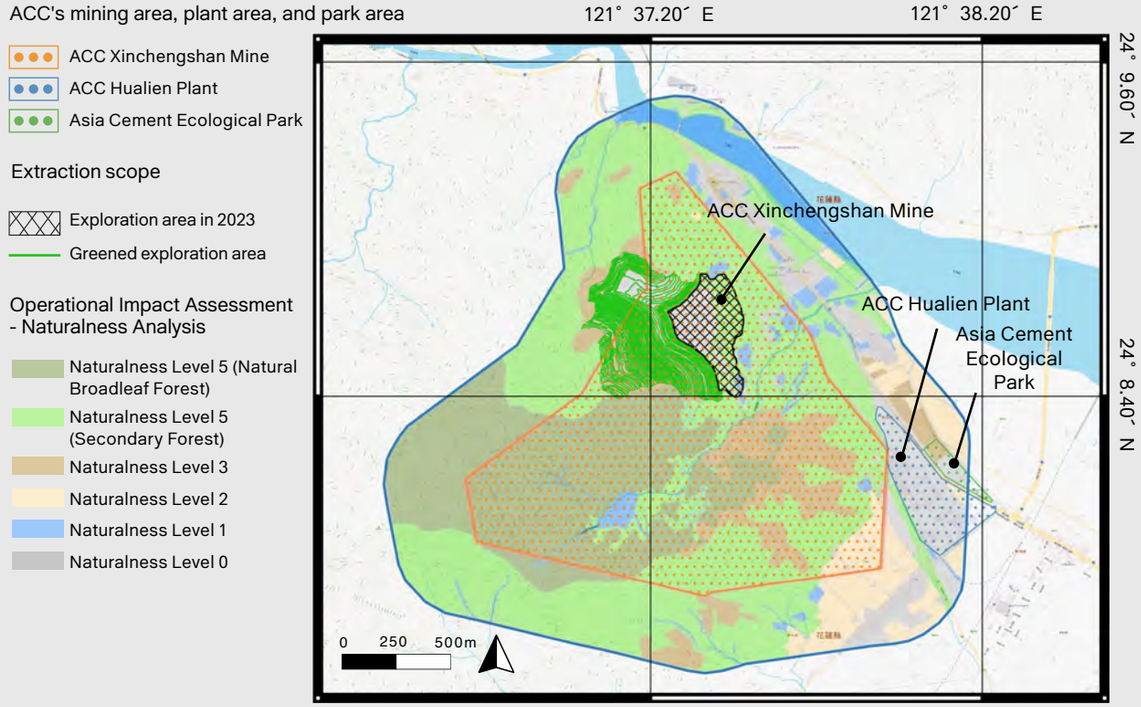


Figure 3-5. Operational Impact of ACC

ACC Xinchengshan

ACC makes every effort to mitigate the impact of mining on the landscape and vegetation. Therefore, the actual mining area is limited to 17.1 hectares. At the same time, a phased mining method is adopted, with vegetation greening and restoration carried out progressively.

The mining area mainly covers natural broadleaf forests, afforested land, secondary forests, and barren land areas. It is classified as having a very high ecosystem sensitivity.

ACC Hualien Plan

The plant area is classified as a non-vegetated area, thus resulting in an extremely low ecological sensitivity. However, within the plant area, active efforts are made for park greening, and strict pollution control measures are implemented.

Asia Cement Ecological Park

The park consists of artificially cultivated plants as well as a native plant garden. The area mainly covers barren land and artificially afforested land, thus it has a moderate operational sensitivity.

Natural Sensitivity of Operating Locations

Based on the integrated analysis results (Table 3-5), combining Criterion 1: Ecosystem sensitivity, Criterion 2: Species sensitivity, and Criterion 3: Operational sensitivity analysis, the Xincheng mountain Quarry exhibits high natural sensitivity, the ecological park exhibits low natural sensitivity, and the manufacturing plant exhibits extremely low natural sensitivity.

In accordance with priority order, ACC will continue with its phytoremediation plan in the mining area and carry out long-term ecological monitoring to continuously track the environment and ecosystem.

Table 3-5 Comprehensive Analysis of ACC's Natural Sensitivity

Area	Criterion 1: Ecosystem Sensitivity	Criterion 2: Species Sensitivity	Criterion 3: Operational Sensitivity	Comprehensive Analysis of Natural Sensitivity
Mine	High	High	Very High	High
Plant	Poor	Poor	Poor	Poor
Park	Poor	Poor	Medium	Low




Sustainable green homes




3.2 "Evaluate" The Dependence on and Impact of ACC Hualien Plant on Nature

Extraction activities inevitably require the temporary removal of surface vegetation, altering the original natural state and terrain, and also reducing ecosystem service functions. ACC places great emphasis on nature-related issues, setting self-imposed standards that are more stringent than regulations and actively improving technology to gradually reduce the environmental impact caused.

ACC's reliance on natural resources and the extraction and utilization of mineral resources are significant. However, ACC fully recognizes this dependency and, through a series of innovative ecological protection and restoration measures, strives to reduce the negative environmental impact of its operations while seeking a balance between resource development and environmental protection. Empirical results from various ecological surveys covering plants and animals also show that ACC's reforestation method, based on natural forest creation and plant diversity, attracts wildlife back to their habitats, providing mutual food sources and initially forming a biological chain. The restoration of the mine's ecology is carried out gradually during the extraction period and after operations are completed, creating stable and prosperous habitats, providing important opportunities to enhance biodiversity, and properly addressing the five driving factors of natural change (Fig. 3-6).

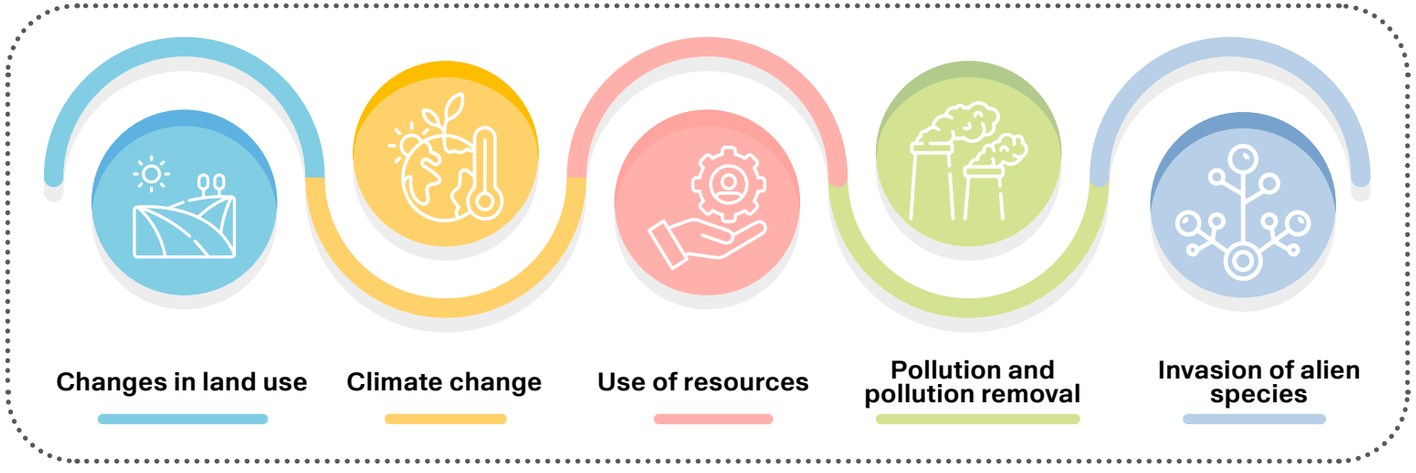


Fig. 3-6 Natural Impact Driving Factors

Superior (S)
- Has a decisive impact on system operation
- Cannot be replaced by other elements
- Once damaged, it will cause immediate and severe negative impacts

High (H)
- Has an important impact on system operation
- Extremely difficult to be replaced by other elements
- Damage will cause significant negative impacts

Medium (M)
- Has a certain impact on system operation
- May be partially replaced by other elements
- Damage will cause moderate negative impacts

Low (L)
- Has a minor impact on system operation
- Relatively easy to be replaced by other elements
- Damage will cause limited negative impacts

Poor (P)
- Has an extremely minor impact on system operation
- Easily replaced by other elements
- Damage will cause extremely minor negative impacts

Table 3-5 Dependence Impact Scale

Evaluation Consideration

- **Function importance:** Assessing the significance of the function to the overall ecosystem.
- **Substitutability:** Considering whether the function can be easily replaced by other natural or artificial systems.
- **Impact duration and spatial scope:** Assessing the geographic extent of the impact when the function is impaired, and considering the time required for recovery after the function is damaged.
- **Systemic impact:** Assessing the extent of the collateral impact on other ecosystem functions.

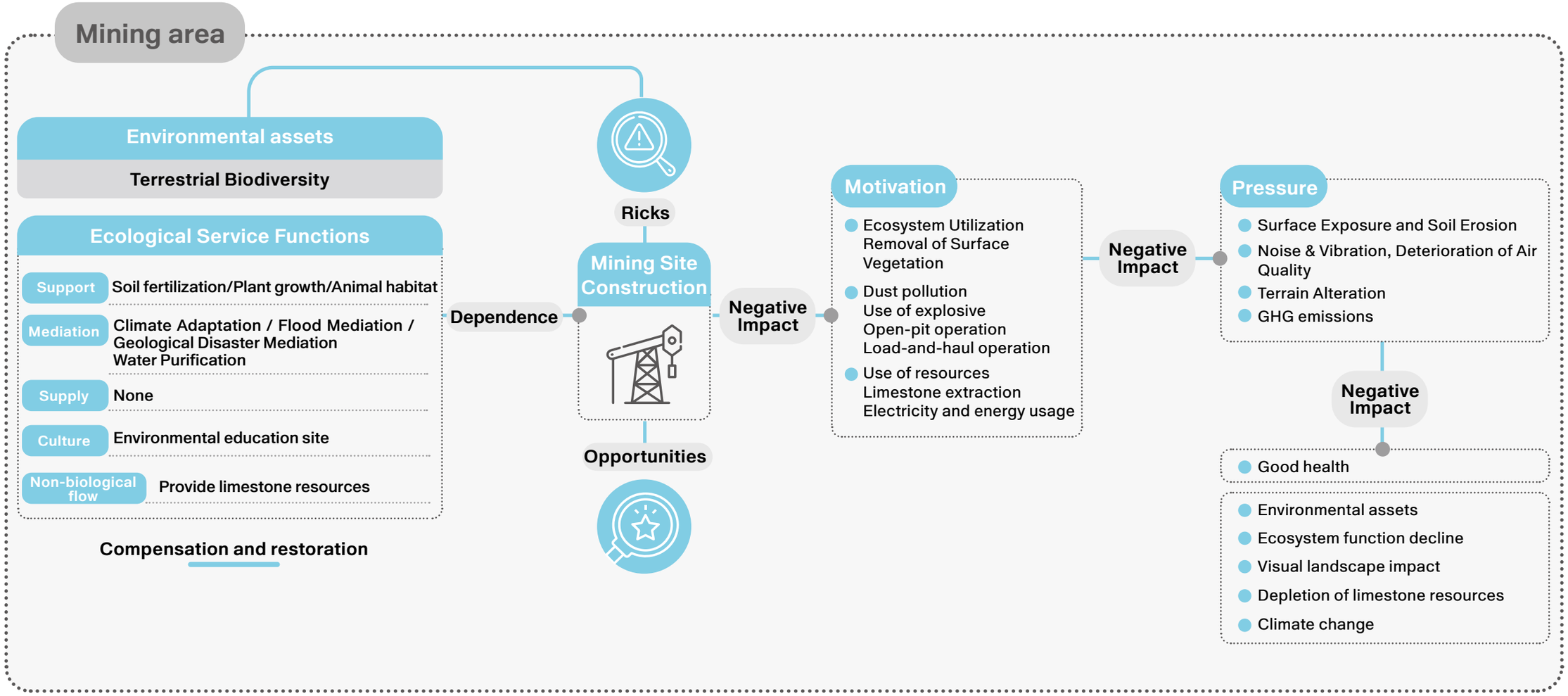


Fig. 3-7 Assessment Process of the Dependence and Impact of the Xinchengshan Mine on Nature

Geological resource extraction and landscape conservation: Balanced development in mining operations

The Xincheng mountain Quarry possesses abundant limestone mineral resources, while also relying on the ecosystem service functions of the mining area, including soil conservation and climate disaster regulation, among other environmental benefits. The secondary forests within the mining area not only possess functions such as climate regulation and natural disaster protection, but also serve as an important field for practical teaching in disciplines related to biological resources and the Earth's environment. Adhering to the concept of balancing environmental conservation and economic development, ACC adopt benches mining method that has minimal impact on the landscape, while also promoting a native tree species phytoremediation plan. In the restoration process, continuous monitoring and control of invasive species such as White Popinac are conducted, with the goal of minimizing the impact of mining activities on the landscape environment, thereby realizing the vision of sustainable mining area development.

Environmental assets	Function Scope	Functional Indicators	Environmental Dependence Function	Dependence
Terrestrial ecosystem services	Support	Soil composition and nutrient cycling		
		Plant growth	Pollination	Pollination
		Animal habitats		
		Natural disaster protection	Prevention of erosion and material stability	Prevention of erosion and material stability
	Supply	Clean water		
		Wood material, food	Materials	Materials
	Mediation	Climate Adaptation	Climate Adaptation	Education, culture, leisure, and entertainment
		Flood Mitigation	Disaster prevention	Climate Adaptation
		Earthquake and typhoon disaster mediation	Disaster prevention	Disaster prevention
		Water Purification		Prevention of erosion and material stability
	Culture	Environmental Education	Education, culture, leisure, and entertainment	
Non-biological flow	Geophysical Sources		Wind, solar energy, and tidal energy	
	Geological resources		Limestone, land, natural resources	
	Water resources			
	Renewable resources			

Impact Driving Factors	Description
Climate change	
GHG emissions	Use of diesel, electricity, and ammonium nitrate
Changes in land use	
Use of the terrestrial ecosystem	
Use of resources	
Depletion of limestone minerals	Depletion of mineral resources
Water consumption	Depletion of water resources
Pollution and pollution removal	
Air Pollution	PM Emissions
Water Pollution	Surface Runoff Discharge
Waste	
Soil	
Invasion of alien species	
Biological changes	

Degree — Extremely High | High | Moderate | Low | Extremely Low

Table 3-6 Assessment of Environmental Assets, Dependencies, and Impact Driving Factors for the Xincheng mountain Quarry

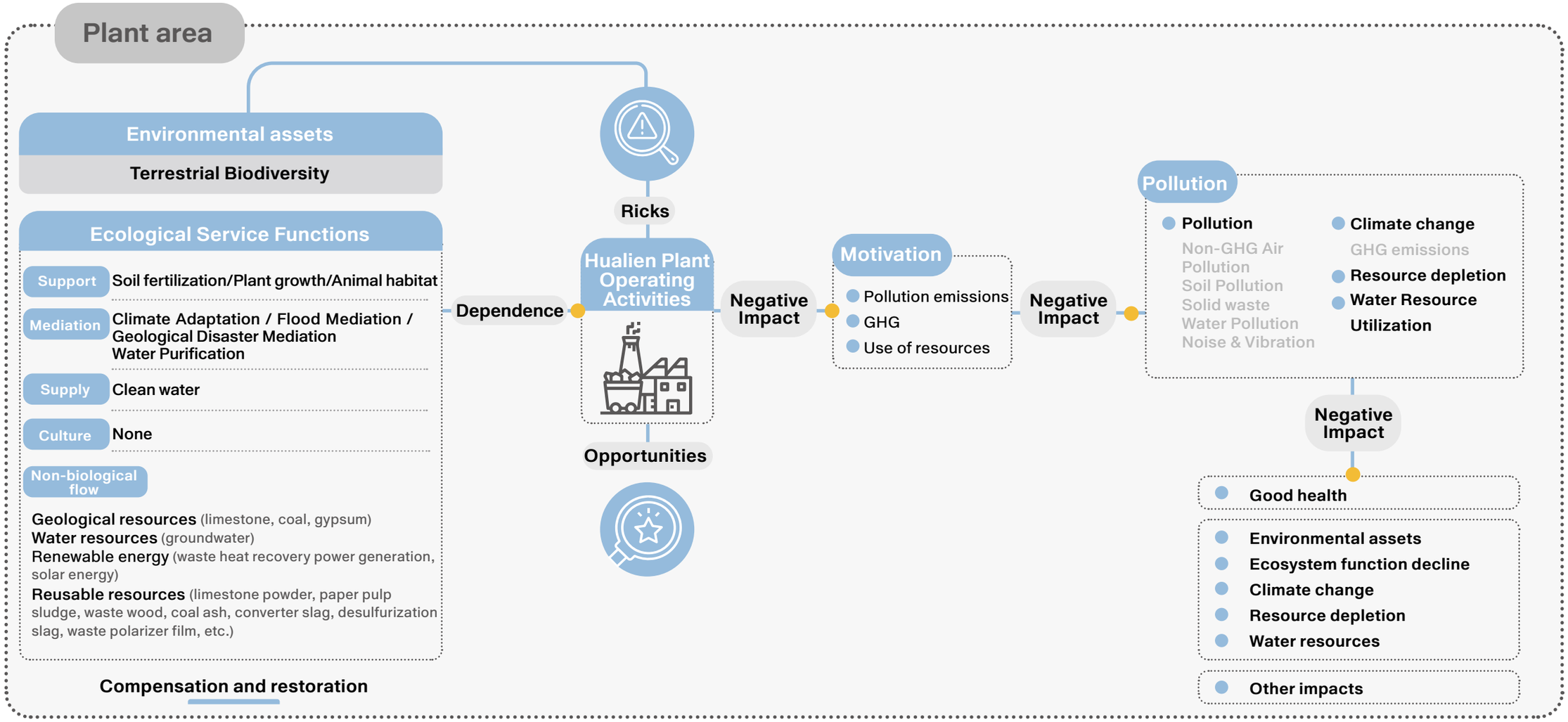


Fig. 3-8 Assessment Process of the Dependence and Impact of the Manufacturing Plant on Nature

Circular Economy and Environmental Management: Low-carbon Cement Manufacturing in the Plant

The operation of the manufacturing plant heavily relies on ecosystem provisioning services, including the supply of raw materials and energy. The main raw materials for cement production are limestone, coal, and gypsum, and water resources are relied upon for process support. In terms of resource efficiency, the manufacturing plant combines multiple energy sources, utilizing green energy such as solar power and waste heat generation. This reduces waste heat temperature, increases power generation, and minimizes environmental impact. In water management, the mine suppresses dust using 100% of the water sourced from the plant's (reusable) recycled water, demonstrating the optimization of resource efficiency. To reduce the environmental impact of operations, the manufacturing plant implements comprehensive pollution control measures and strictly manages the emissions of particulate matter, SOx, and NOx in terms of air quality. ACC continues to strengthen its environmental sustainability strategies, including expanding waste heat recovery and recycled water usage efficiency, implementing low-carbon raw material alternatives, improving pollution control facilities' effectiveness, and promoting waste reduction and resource recovery. Through continuous optimization of process technology and environmental management systems, ACC is committed to achieving a balanced development of process sustainability and environmental protection.

Environmental assets	Function Scope	Functional Indicators	Environmental Dependence Function
Terrestrial ecosystem services	Support	Soil composition and nutrient cycling	
		Plant growth	
		Animal habitats	
		Natural disaster protection	Drainage capacity
	Supply	Clean water	
		Wood material, food	
	Mediation	Climate Adaptation	The storage and transportation of materials and products rely on the aforementioned functions to ensure smooth storage and transportation operations.
		Flood Mitigation	
		Earthquake and typhoon disaster mediation	
		Water Purification	
	Culture	Environmental Education	
Non-biological flow	Geophysical Sources		Solar energy (approximately 10% of total electricity usage)
	Geological resources		Raw materials for production process (limestone, coal, gypsum)
	Water resources		Cooling of process equipment, and water shortages will cause operational disruption
	Renewable resources Currently, a total of 25 alternative raw materials and fuels are used		Waste Reutilization

Dependence	Impact Driving Factors	Description
Waste Reutilization	Climate change	
	GHG emissions	Carbon emissions
Raw materials for production process	Changes in land use	
	Use of the terrestrial ecosystem	
Solar Energy	Use of resources	
	Depletion of limestone minerals	Raw materials for production process (Limestone, coal, gypsum)
	Water consumption	Cooling of production equipment
Water resources	Pollution and pollution removal	
	Air Pollution	Emissions of PM, SOx, NOx
	Water Pollution	
Disaster prevention	Waste	Assist in waste disposal
	Soil	
Prevention of erosion and material stability	Invasion of alien species	
	Biological changes	

Degree
- Extremely High
- High
- Moderate
- Low
- Extremely Low

Table 3-7 Environmental Assets, Dependencies, and Impact Driver Factor Degree Assessment of the Manufacturing Plant

★ Alternative raw materials: Mineral fine powder, blast furnace slag, chemical gypsum, limestone powder, reduced slag, waste ceramics, waste bricks, co-fired coal ash, mine tailings, incinerated regenerated pellets, coal bottom ash, coal fly ash, hydrated lime, water treatment sludge, inorganic sludge, calcium carbonate, water-quenched blast furnace slag, air-cooled blast furnace slag, a total of 18 types.

★ Alternative fuels: paper sludge, solid fuel, plastic sheets, wood chips, waste plastic, sewage sludge, solid regenerated fuel, a total of 7 types.

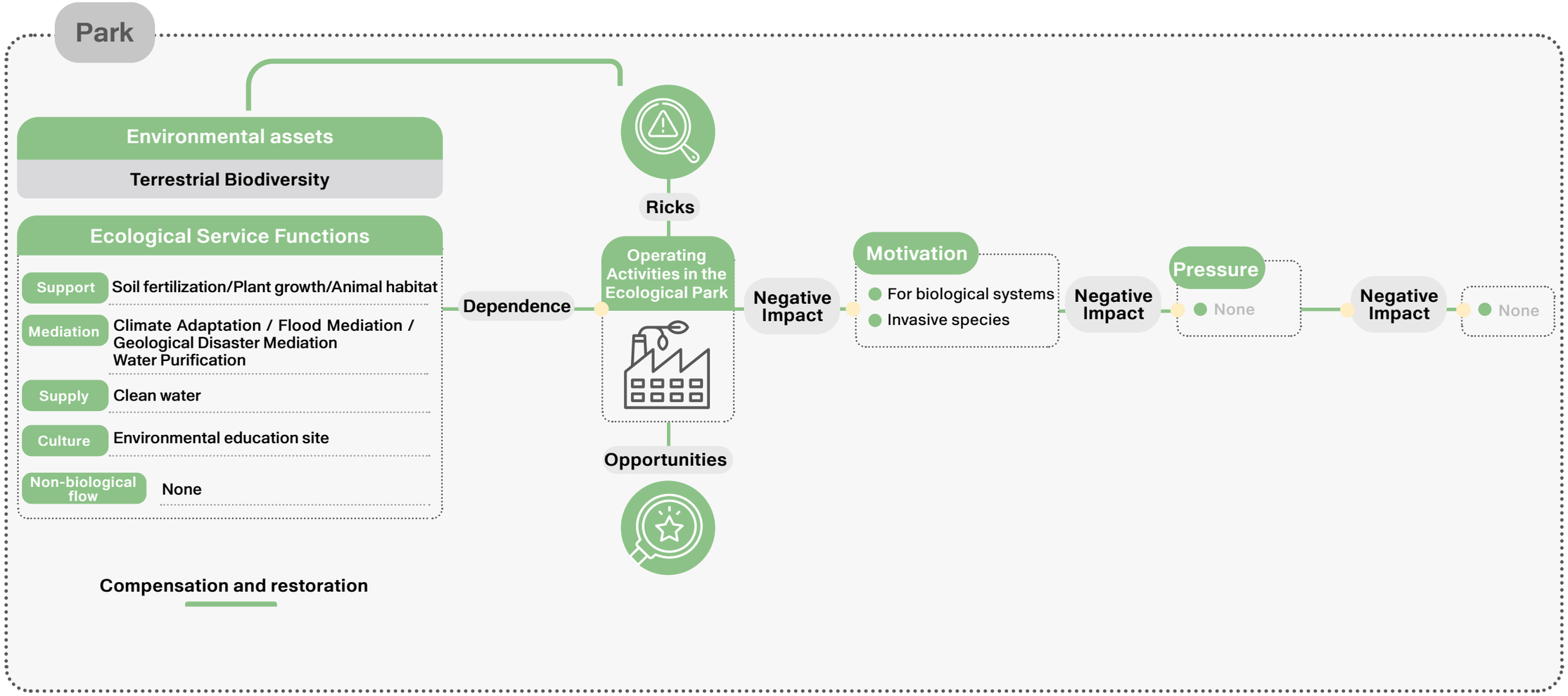


Fig. 3-9 Ecological Park's Dependence on Nature and Impact Assessment Process

Ecological Sustainability and Environmental Education: Green Vision of the Asia Cement Ecological Park

To ensure the sustainable use of environmental assets and implement ACC's off-site compensation and restoration plan, the operation of the Asia Cement Ecological Park is deeply integrated into the local ecosystem. Based on environmental assets, it relies on abundant biodiversity resources and supports the park's ecological conservation and environmental education through various ecosystem services. The park also features the creation of a butterfly ecological park, a Phasmatodea park, and a native plant cultivation area. Provides cultural ecosystem services. The main operational activities focus on the sustainable use of the ecosystem, while also actively preventing the threat of invasive species to native ecosystems. To ensure the sustainable use of environmental assets, the park implements a comprehensive compensation and restoration plan, continuously maintaining and enhancing the biodiversity of the area.

This integrated management approach not only preserves the health of the local ecosystem but also generates multiple benefits for environmental education and ecological conservation. The Asia Cement Ecological Park is also adjacent to the Asia Cement Hualien Plant. The healthy growth and cultivation of flora and fauna within the park are not only the result of the dedicated efforts and commitment of the ACC team to conservation but also benefit from the plant's effective control of pollutants. The Asia Cement Ecological Park continues to maintain and enhance regional biodiversity. It has also actively demonstrated ACC as a model of harmonious coexistence between industrial development and ecological conservation through initiatives such as citizen scientists and butterfly corridors, realizing the vision of sustainable development.

Table 3-8 Assessment of Environmental Assets, Dependencies, and Impact Drivers in the Ecological Park

Environmental assets	Function Scope	Functional Indicators	Environmental Dependence Function
Terrestrial ecosystem services	Support	Soil composition and nutrient cycling	Support plant growth
		Plant growth	Insect herbivory and nectar sources
		Animal habitats	Maintain a good ecosystem
		Natural disaster protection	The impact of wind, flooding, and drought is extremely high
	Supply	Clean water	
		Wood material, food	
	Mediation	Climate Adaptation	
		Flood Mitigation	
		Earthquake and typhoon disaster mediation	
		Water Purification	
	Culture	Environmental Education	
Non-biological flow		Geophysical Sources	
		Geological resources	
		Water resources	
		Renewable resources	

Dependence
Plant growth
Insect herbivory and nectar sources
Ecological system maintenance
Education, culture, leisure, and entertainment
Climate Adaptation
Disaster prevention

Impact Driving Factors	Description
Climate change	
GHG emissions	Warming causes abnormal growth of plants and animals
Changes in land use	
Use of the terrestrial ecosystem	
Use of resources	
Depletion of limestone minerals	Depletion of mineral resources
Water consumption	Depletion of water resources
Pollution and pollution removal	
Air Pollution	
Water Pollution	
Waste	
Soil	
Invasion of alien species	
Biological changes	

Degree — Extremely High — High — Moderate — Low — Extremely Low

Comprehensive Analysis of Natural Dependencies and Impacts in the Plant, Mine and Park

Table 3-9 Comprehensive Assessment of Environmental Assets, Dependencies, and Impact Levels in the Xincheng mountain Quarry, Manufacturing Plant Area, and Ecological Park

Environmental assets	Function Scope	Functional Indicators	Mine	Plant	Park	Comprehensive Evaluation
Terrestrial ecosystem services	Support	1 Soil composition and nutrient cycling				Moderate
		2 Plant growth				Moderate
		3 Animal habitats				Moderate
		4 Natural disaster protection				High
	Supply	5 Clean water				Moderate
		6 Wood material, food				Extremely Low
	Mediation	7 Climate Adaptation				High
		8 Flood Mitigation				High
		9 Earthquake and typhoon disaster mediation				High
		10 Water Purification				Low
	Culture	11 Environmental Education				High
Non-biological flow		12 Geophysical Sources				Low
		13 Geological resources				Moderate
		14 Water resources				Moderate
		15 Renewable resources				Moderate

Impact	Natural Impact Classification	Impact Driving Factors	Mine	Plant	Park	Comprehensive Evaluation
Impact Driving Factors	Climate change	1 GHG emissions				High
	Changes in land use	2 Use of the terrestrial ecosystem				High
	Use of resources	3 Depletion of limestone minerals				High
		4 Water consumption				Low
	Pollution and pollution removal	5 Air Pollution				Low
		6 Water Pollution				Low
		7 Waste				Low
		8 Soil				Extremely Low
	Invasion species	9 Biological changes				Extremely Low

Degree — Extremely High | High | Moderate | Low | Extremely Low

Comprehensive Analysis of Natural Dependencies and Impacts in the Plant, Mine and Park

ACC's operational activities are closely interconnected with the natural environment. Based on the comprehensive analysis of the dependencies in the mine area, plant area, and park area, ACC's dependence on environmental assets is primarily concentrated in several key aspects: there is a high reliance on natural disaster protection, while regulatory functions such as climate regulation, flood regulation, and earthquake and typhoon disaster regulation all show a high degree of dependency. This reflects that the safety and stability of mine operations rely on the regulatory functions provided by the natural environment. In cultural functions, environmental education also shows a high degree of dependency, illustrating ACC's emphasis on environmental preservation and education. Other supporting supply functions, such as soil composition and nutrient cycling, plant growth, animal habitats, and non-biological flows, show a moderate degree of dependence, reflecting the overall importance of the ecosystem in the mine area.

Based on the analysis of impact levels, the primary environmental pressures from ACC's operational activities are assessed as moderate in terms of GHG emissions and geological resource depletion, which directly relate to issues of climate change and the consumption of non-renewable resources and reflect the significant pressure that mining and production activities exert on the environment. However, in certain environmental aspects, ACC has shown better management outcomes, with indicators such as water consumption, air pollution, water pollution, soil, and biodiversity changes maintained at low impact levels. This is attributed to the environmental management measures implemented by ACC and its proactive actions in pollution control, especially in plant operations, where resource recycling, dust control, and waste disposal measures have effectively reduced various impacts on the surrounding environment.

To balance this relationship between dependence and impact, ACC has adopted a series of response strategies. In the planning of the ecological park, ACC actively promotes biodiversity conservation through the cultivation of native plant species and the establishment of butterfly corridors. In the manufacturing process, ACC has introduced technologies such as the use of green energy and waste heat recovery, striving to reduce its environmental footprint. Although these measures have not yet completely eliminated the environmental impact of operational activities, the impact has been decreasing year by year and remains under control, demonstrating ACC's active commitment to environmental sustainability. ACC will continue to reduce GHG emissions from both processes and products while developing more proactive investments in low-carbon technologies. Additionally, it will optimize resource utilization efficiency, particularly in the sustainable management of mineral extraction. Lastly, it will enhance ecosystem service functions to ensure the ecological integrity of the mine area and its surrounding environment.

ACC is striving to find a balance between economic development and environmental protection. Through a comprehensive environmental impact assessment system and corresponding management measures, ACC is gradually implementing the concept of sustainable development. In the future, ACC will continue to strengthen improvement measures in high-impact areas, preserve the ecosystem service functions on which it highly depends, and steadily advance toward its sustainable development goals.



Plant Area Greening - Vegetated Green Wall of the Outbound Circular Warehouse

3.3 "Assess" The significant and Opportunities of ACC Hualien Plant

ACC has referenced the four major scenarios recommended in the official version of the TNFD, using physical risk (ecosystem services) and transition risk (market drivers) as the two key variables to categorize four scenarios: Development Advantage (Ahead of The Game), Material Concerns (Go Fast or Go Home), Risk Control (Sand in The Gear), and Lower Priority (Back of The List) (Fig. 3-10). Additionally, it has defined the corresponding Chinese names and established indicators (Table 3-10). Through meetings and interviews with the TNFD's responsible unit—the Biodiversity Task Force—ACC has established key risk indicators and opportunity items (Table 3-11 and 3-12) and utilized the guidelines to define the quadrants.

Based on consensus discussions held by the Biodiversity Working Group, it was concluded that Asia Cement is currently positioned at the "Ahead of the Game" stage. With appropriate governance and strategy implementation, nature-related risks have been effectively managed. However, there remains room for improvement in addressing social dimensions and responding to stakeholder concerns. Looking ahead, as climate change intensifies, the company may face scenarios of "Go Fast or Go Home", where nature-related issues could become matters of significant concern.

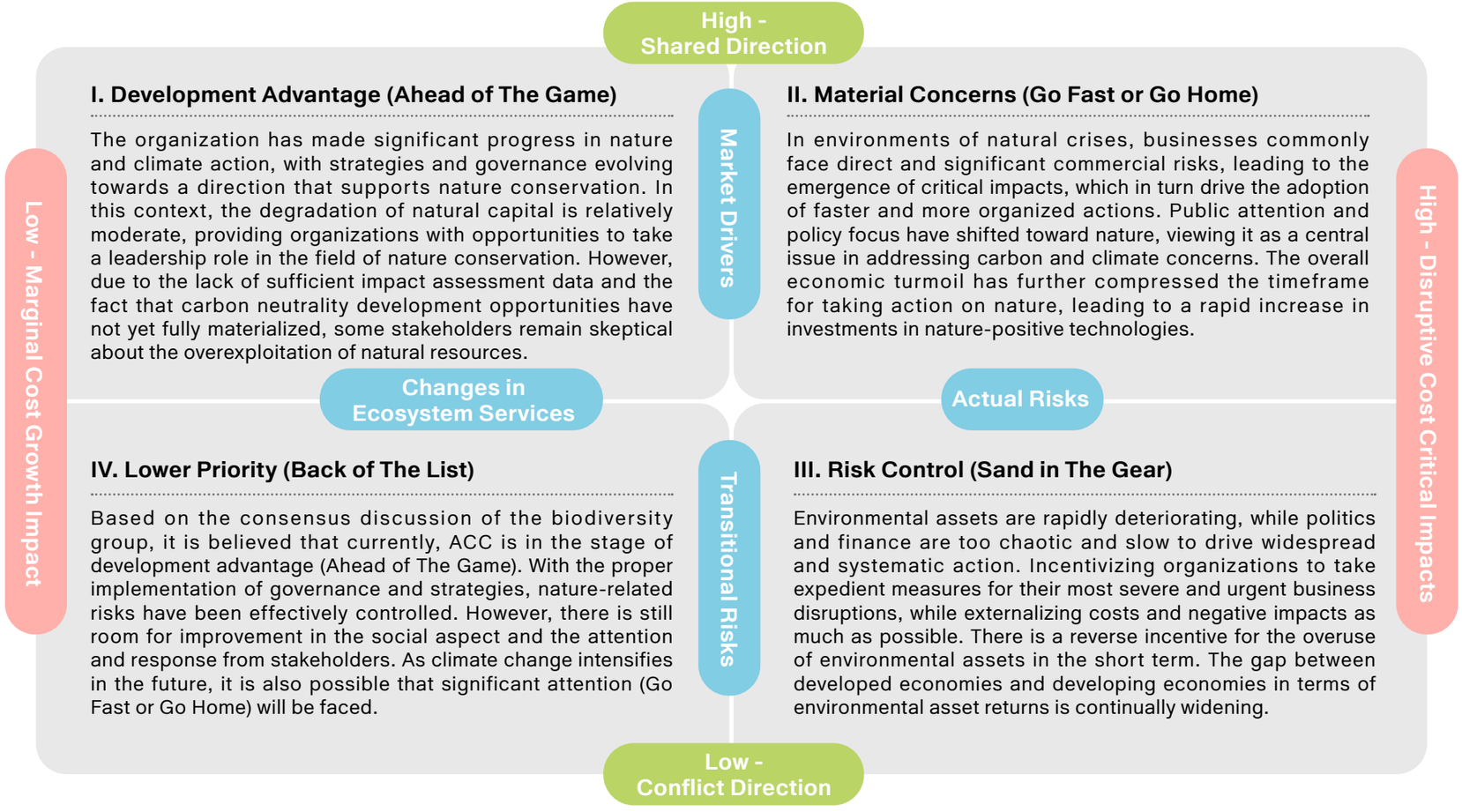


Fig. 3-10 TNFD's Nature Risk Scenarios
Source: This report references TNFD (2023). "Suggestion for TNFD Operations" (Fig. 29) drawn

Tab. 3-10 TNFD Risk and Opportunity Category Definitions

Sounrce: This report references TNFD (2023). “Suggestion for TNFD Operations” (Tab. 1, Tab. 2, and Fig. 16) drawn

Physical Risks	
Acute risks	Short-term nature hazard events: Direct impacts of natural disasters such as typhoons, heavy rains, earthquakes, and others.
Chronic risks	Climate change and long-term air pollution-related diseases may impact the stability of raw material extraction, production facilities, and water resource supply.
Transition Risks	
Policy	The cement industry faces stricter carbon emission standards, mining permit regulations, and increased environmental impact assessment requirements.
Market	Changes in the overall market dynamics, including shifts in consumer preferences.
Technology	There is a need to invest in low-carbon manufacturing technologies and develop eco-friendly cement products.
Reputation	Reputation changes regarding the organization's actual or perceived natural impacts, such as the effects of mining activities on forest environments and carbon emission issues potentially affecting the corporate image.
Liability	Potential legal challenges such as environmental lawsuits and indigenous land rights disputes.
Sustainability performance opportunity	
Sustainable Use of Natural Resources	Utilizing regeneration and recycling technologies for sustainable resource use, such as through a circular economy model, recycling cement kiln waste heat for power generation, reusing industrial waste to create alternative materials, and implementing wastewater recycling systems.
Ecosystem protection, restoration and regeneration	Restoration and conservation actions for habitats and ecosystems outside the organization's value chain, such as ecological restoration programs for mining areas, afforestation, biodiversity maintenance, conservation of native species, and greening of the surrounding environment of mining areas.
Business performance	
Market	Market access and meeting consumer demands, such as exploring the eco-friendly building materials market, responding to green building certification requirements, and developing opportunities in the circular economy.
Capital Flow and Financing	Securing green financing opportunities through sustainable performance and enhancing ESG investment attractiveness.
Resource Efficiency	Optimizing raw material usage, improving energy efficiency, and process improvements to reduce carbon emissions.
Products and Services	Developing high-performance eco-friendly cement, innovative concrete products, and providing comprehensive construction solutions. Enhancing the added value of products.
Reputational capital	Strengthening the sustainable brand image, enhancing community relations, and improving environmental-friendly corporate evaluations. Strengthening stakeholders' positive evaluation of the Company.

Table 3-11 Major Risk Indicators of ACC

Major Risk Indicators of ACC	ACC Risk Aspect	TNFD lists categories of nature-related risks
1. Difficulty in acquiring raw materials	Operational and economic risks	Technology, market
2. Shortage of raw coal and rising costs		
3. Increased air pollution emissions during the production process		
4. The impact of alternative materials on product quality and cost increase		
5. ncreased operational impacts after the amendment of the Mining Act	Environmental Risks	Natural-related physical risks
6. The impact of mining area development on landscapes and the environment	Reputation and Social Risks	Reputation
7. Increased impact of extreme weather events	Regulatory Risks	Liability
8. Impact on market value and brand value due to negative nature-related news		
9. Poor community resident satisfaction		
10. Strengthened pollution control regulations, increasing operational and equipment costs		

Table 3-12 Development Opportunity Projects of ACC

ACC Development Opportunity Projects	ACC Risk Aspect	TNFD lists categories of nature-related risks	SBTN AR 3T Action framework
1. Establishing biodiversity conservation-related facilities	Eco-Environmental Education	Ecosystem protection, restoration and regeneration	Restore & regenerate
2. Developing mining area ecosystem restoration and landscape conservation			
3. Promoting environmental education and citizen scientists	Environmental Risks	Natural-related physical risks	Avoid
4. Establishing biodiversity monitoring survey data and management systems	Reputation and Social Risks	Reputation	Reduce
5. Real-time geological environment monitoring of mining areas			
6. Implementing water resource management			
7. Promoting circular economy and resource management			
8. Regulating pollutants and air pollution emissions			
9. Develop low-carbon technologies	Risk Response and Cross-sector Collaboration	Reputational capital Capital Flow and Financing, and Market	Transform
10. Promoting amendments to relevant regulations			
11. Enhancing resilience to extreme climate events			
12. Cross-sector Collaboration			

Analysis of ACC's Major Risk Indicators and Opportunity Projects

The "Development Advantage" quadrant includes indicators such as increased air pollution emissions during the production process, the impact of alternative materials on product quality and cost increase, heightened operational impacts after the amendment of the Mining Act, and environmental impacts of mining area development. Although these items carry high transformation risks, they also indicate that the Company has strong adaptive capabilities and development potential in these areas.

In the "Material Concerns" quadrant, key indicators such as the impact of nature-related negative news on brand value, poor community resident satisfaction, and strengthened pollution control regulations are concentrated. These items not only carry high risk but also require the company to take immediate action in response.

In the "Risk Control" quadrant, indicators such as difficulty in acquiring raw materials, shortage of raw coal and rising costs, and increased impact of extreme weather events are included.

Although these risk items have higher physical risks, the Company has established corresponding management mechanisms, so their impact is relatively controllable. This distribution pattern mainly reflects three aspects: First, environmental and social risks are mostly concentrated in the high-attention area, indicating that sustainable development has become the Company's primary challenge; second, operational risks are more dispersed, with some representing development opportunities while others require continuous management; third, regulatory risks are also listed as significant attention items, reflecting the profound impact of industry policies on corporate operations. This situation also highlights the unique challenges and environmental-social responsibilities faced by ACC during its transformation process in the mining industry, specifically how to balance operational efficiency while properly addressing multiple issues such as environmental protection, community relations, and regulatory compliance.

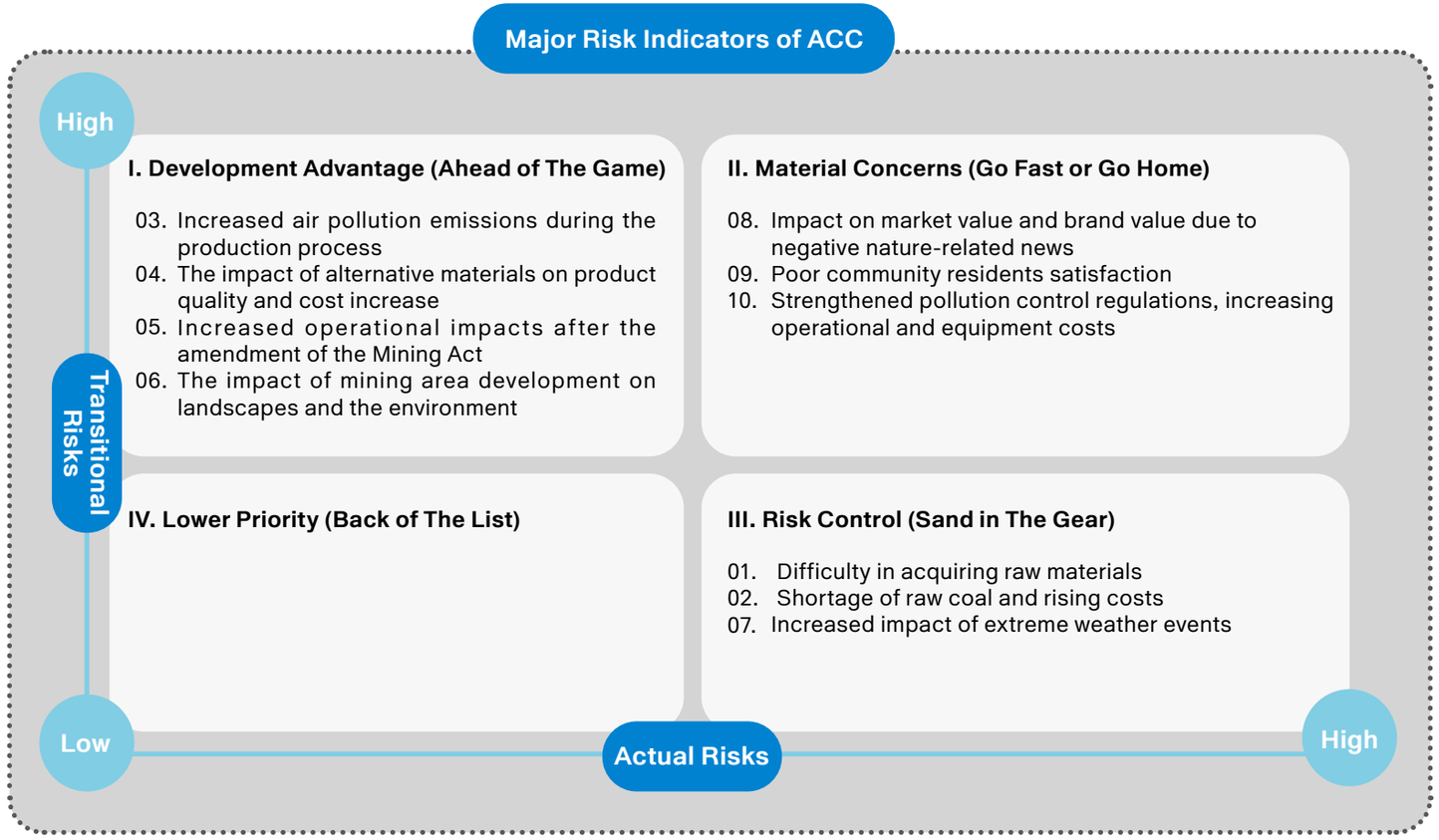


Fig. 3-11 ACC TNFD Major Risk Scenario Analysis

The "Development Advantage" quadrant includes the promotion of regulatory amendments and the implementation of cross-sector collaboration. These items not only demonstrate the Company's environmental responsibility but also create a positive social impact. Through these initiatives, the Company can strengthen its sustainable image while also meeting stakeholders' expectations for environmental protection.

The "Material Concerns" quadrant concentrates many key development initiatives, including water resource management, promoting circular economy, pollution control, low-carbon technology development, and enhancing overall extreme climate response capabilities. Water resource management, circular economy, and pollution control are not only regulatory requirements but also key to reducing the environmental footprint. The development of low-carbon technologies can simultaneously enhance efficiency and environmental performance. Additionally, in the face of increasingly severe climate change, strengthening the ability to respond to extreme climate events is also a proactive measure. These initiatives possess high commercial potential and urgent practical relevance.

In the "Risk Control" quadrant, the planning of initiatives such as biodiversity conservation actions, environmental education, ecological restoration and landscape conservation, as well as monitoring and analysis of biodiversity and geological potential areas, reflects that while these issues are important, the Company has established relatively mature management mechanisms. The consideration for placing the aforementioned items here is that, while they require continuous resource investment for maintenance, standardized management processes are already in place, making the risks relatively controllable. Especially in investments and practices related to nature, the steady advancement of foundational work such as monitoring, conservation, and restoration becomes even more crucial, as the ecological restoration and monitoring of mining areas are directly linked to the sustainability of mining activities.

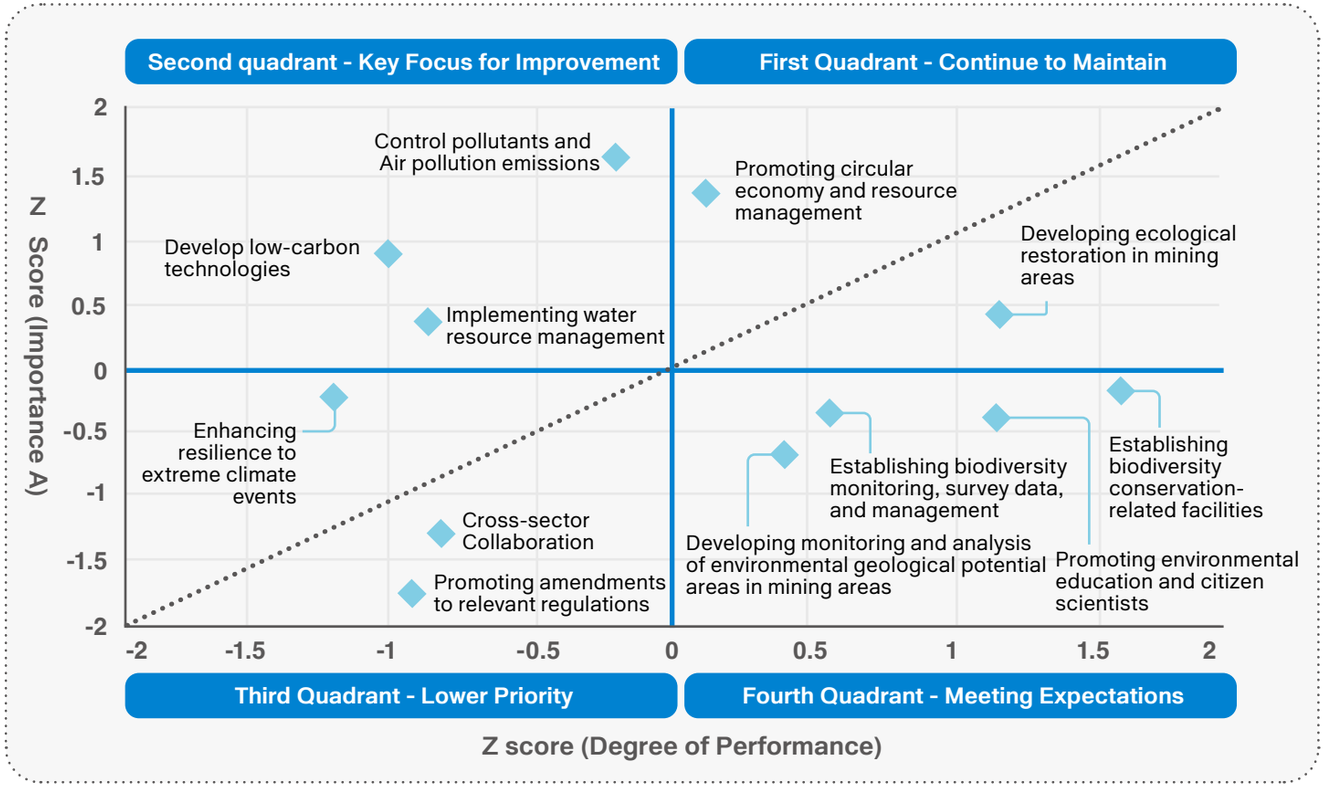


Fig. 3-12 ACC TNFD Development Opportunity Scenario Analysis

ACC Stakeholders' Perspectives on the Importance and Performance of ACC's Development Opportunity Projects

To further explore the opportunity projects in ACC's development and the allocation of its resources. This report uses the Importance-Performance Analysis (IPA) method. This method will help ACC analyze the perspectives of stakeholders regarding the importance and performance of opportunity projects. It allows the identification of areas that require attention and improvement, explores the reasons behind unsatisfactory performance, and facilitates the effective allocation of human resources and investments. Additionally, it enables systematic adjustments and prioritization of improvements, thereby enhancing the effectiveness of management strategies and improving overall operational performance and satisfaction.

Based on the IPA analysis results of ACC's development opportunity projects, the distribution of each indicator across different quadrants reflects the differences in their importance and performance levels:



First Quadrant

In the first quadrant, "Continue to Maintain", the scope includes indicators such as the promotion of circular economy and resource management, and the development of mine ecosystem restoration and landscape conservation. These projects not only hold high importance, but the Company has also demonstrated better performance in their execution, indicating that ACC has established a solid development foundation in these areas. Particularly the mining area ecological restoration project, where the importance and performance show only slight differences, reflects that the execution results are closely aligned with expectations, and should continue to be maintained and developed.

Second quadrant

The second quadrant, "Key Focus for Improvement", includes several key indicators, such as regulating pollutants and air pollution emissions, developing low-carbon technologies, and implementing water resource management. These items, while highly important, show relatively low performance levels, particularly in the development of low-carbon technologies, where the gap is significant. This indicates that these areas require more resources and improvement, making them key focus areas for enhancement. Therefore, ACC will actively invest resources to enhance this area.

Third Quadrant

In the third quadrant, "Lower Priority", it includes projects such as improving extreme weather response capabilities, cross-sector collaboration, and promoting relevant regulatory amendments. These indicators, although currently of lower priority, show a significant difference in the case of extreme weather response capabilities, which still require ongoing attention and improvement. They are considered secondary improvement projects with lower priority.

Fourth Quadrant

In the fourth quadrant, "Meeting Expectations", are items such as setting up biodiversity conservation facilities and promoting environmental education and citizen scientists. These indicators have a similar level of importance and performance, indicating that the current execution results are generally in line with expectations and should be maintained.

Fig. 3-13: IPA Analysis of ACC's Development Opportunity Projects

From an overall perspective, the average importance value of all indicators is 4.33, and the average performance value is 3.87. This indicates that the Company still has room for improvement in the overall execution of its sustainable development projects. Especially in the areas that need improvement, such as pollution control and production technology improvements, these are key areas that need to be prioritized for strengthening in the future to narrow the gap between importance and performance.

This analysis also highlights that in pursuing sustainable development, ACC should continuously engage with various stakeholders, incorporate their suggestions, systematically analyze the situation, and adjust resource allocation and investments to enhance overall performance, especially in opportunity areas with high importance but where performance still needs improvement.

Indicators	Average Importance Value (Level)	Average Performance Value (Level)	Difference
1. Establish biodiversity conservation facilities	4.29(6)	4.29(1)	0.00
2. Promote environmental education and citizen scientists	4.24(8)	4.15(3)	0.09
3. Develop ecosystem restoration and landscape conservation in mining areas	4.43(4)	4.24(2)	0.19
5. Develop monitoring and analysis of environmental geological potential areas in mining areas	4.18(10)	3.99(5)	0.19
4. Establish biodiversity monitoring, survey data, and management	4.24(8)	4.03(4)	0.21
10. Promoting amendments to relevant regulations	3.99(12)	3.61(10)	0.38
12. Cross-sector collaboration	4.07(11)	3.64(8)	0.43
7. Promotion of Circular Economy and Resource Management	4.61(2)	3.90(6)	0.71
11. Enhancing resilience to extreme climate events	4.29(6)	3.53(12)	0.76
6. Implementing water resource management	4.42(5)	3.64(8)	0.78
8. Control of Pollutants and Air Pollution Emissions	4.65(1)	3.81(7)	0.84
9. Develop low-carbon technologies	4.53(3)	3.60(11)	0.93
Total Average	4.33	3.87	

3.4 "Prepare" ACC Hualien Plant's Response and Resource Allocation Decision

Based on the risk and opportunity items defined by LEAP, ACC has established the TNFD organizational structure and responsibility management table to proactively prepare for both current and potential future risks and opportunities. At the same time, specific responses and actions are formulated for risk items and their corresponding mitigation strategies, as well as for opportunity items and their action plans.

All Members of ACC

Evaluate and manage nature- and climate-related risks, and propose response measures to enhance resilience to extreme climate events.

Headquarters

- ★ Implement ESG governance strategies
- ★ Track and review the implementation of biodiversity policies
- ★ Conduct cost analysis and budget management

Accounting Team

- ★ Audit investment returns and manage the budget
- ★ Audit R&D investments and returns
- ★ Conduct cost analysis and budget management

Secreta

- ★ Monitor public opinion analysis and establish public relations
- ★ Manage media relations and community communication

Purchasing Center

- ★ Manage fuel supply

Excavation Team

- ★ Develop and implement environmental management plans
- ★ Responsible for facility optimization planning and operation
- ★ Responsible for the overall implementation of the restoration plan
- ★ Implement sustainable mining techniques and execute ecological restoration plans
- ★ Ensure compliance with the Mining Act and relevant regulatory requirements

General Affairs Team

- ★ Responsible for the environmental management of the respective areas
- ★ Responsible for facility optimization planning and operation

Engineering Team

- ★ Responsible for equipment upgrades
- ★ Responsible for optimization planning and construction

Electrical Instruments Team

- ★ Responsible for the planning, optimization, and construction of equipment upgrades
- ★ Responsible for drawing the plant's water balance diagram
- ★ Ensure the reliability of monitoring equipment

Materials Team

- ★ Responsible for the system receipt/entry and the issuance of inspection forms for raw materials
- ★ Manage fuel supply

Manufacturing Team

- ★ Responsible for technical improvements and operational assessments
- ★ Responsible for raw materials, clinker, and cement production, as well as improving production techniques
- ★ Increase raw material utilization efficiency and reduce energy consumption
- ★ Responsible for equipment and process optimization, as well as identifying feasible alternative fuel sources
- ★ Responsible for the environmental management of the respective areas
- ★ Responsible for the operation of air pollution control facilities and continuous improvement of production processes

OSH Team

- ★ Responsible for assessing personnel safety and the adequacy of safety measures

Quality Control Team

- ★ Lead technological innovation and product development, as well as the promotion of new products
- ★ R&D product formulas, responsible for raw material procurement, quality determination of incoming raw materials, and ingredient formulation
- ★ Increase the efficiency of raw material usage to reduce costs
- ★ Responsible for ingredient optimization and ensuring that incoming materials and products meet the standards
- ★ Responsible for the quality inspection and determination of coal and alternative fuels

Environmental Protection Team

- ★ Responsible for overall planning and supervision of implementation, as well as personnel training to enhance environmental awareness
- ★ Responsible for the establishment of the water resource efficiency management system
- ★ Responsible for pollution control, compliance management, and control measures
- ★ Act as the liaison with environmental protection authorities

General Affairs Team

- ★ Strengthen participation in community public relations and interaction
- ★ Properly manage the ACC Service Center and oversee community relations
- ★ Long-term self-monitoring to provide reference for restoration strategies
- ★ Responsible for the environmental management of the respective areas
- ★ Implement community engagement plans
- ★ Train local community members to become citizen scientists for monitoring mining ecology
- ★ Manage community relations, public relations, and corporate image
- ★ Responsible for ecological survey design and data analysis
- ★ Responsible for the overall planning and daily operations of the park
- ★ Design and implement educational programs
- ★ Provide professional guidance to ensure ecological benefits

Risk Items and Preparation

Risk Indicator Aspect	Risk Indicator	Description of Indicator	Possible Impact	Countermeasures
Operational and economic risks	1 Difficulty in acquiring raw materials	Limestone and other natural ores (by-products) are the primary raw materials for cement production, and their availability directly impacts the Company's production capacity and cost structure.	**Decline in production capacity:** Insufficient raw material supply leading to reduced production. **Increase in costs:** The need to source from more distant or more expensive suppliers. **Supply chain disruption:** This may lead to material shortages on the production line, causing temporary shutdowns.	**Search for alternative ore sources:** Develop new mining areas or establish relationships with other suppliers. **Enhance mining techniques:** Improve extraction efficiency and environmental sustainability by enhancing raw material utilization to reduce costs. **R&D product formulas:** Reduce the use of clinker and limestone to decrease ore extraction and extend mining duration.
	2 Shortage of raw coal and rising costs	Coal is the primary fuel for cement kilns, and its supply stability is crucial for the Company's continuous operations. Fluctuations in the global energy market, such as geopolitical factors or policy changes, may have a significant impact on the Company's production costs and operations.	**Increase in production costs:** Rising energy costs directly impact production costs. **Unstable energy supply:** This may lead to production interruptions or reduced efficiency. **Decline in profit margins:** If costs cannot be passed on to customers, it will directly impact profitability. Unable to operate, leading to a temporary shutdown.	**Diversify energy sources:** Explore alternative fuels, such as biomass or waste-derived fuels. **Improve energy efficiency:** Upgrade equipment and improve production processes. **Install alternative fuel crushing equipment:** Enhance the diversity of supply sources.

Risk Indicator Aspect	Risk Indicator	Description of Indicator	Possible Impact	Countermeasures
Operational and economic risks	3 Increased air pollution emissions during the production process	The cement production process generates air pollutants such as NOx, SOx, and PM. If these pollutants are not properly managed, they may violate environmental regulations and cause severe impacts on the environment and surrounding communities.	**Violation of environmental regulations:** This may lead to fines or production restrictions. **Deterioration of community relations:** Declining air quality may lead to community dissatisfaction and complaints. **Damage to brand image:** Being seen as a polluting company may affect market position. Impact on the surrounding environment and ecosystem.	**Invest in air pollution control and monitoring equipment:** Such as electrostatic precipitators, baghouse filters, SNCR, and opacity monitoring equipment. **Optimize production processes:** Reduce pollutant generation. **Regular testing, continuous monitoring, and reporting of emission data:** Ensure data transparency and compliance with regulations. **Establish an immediate reporting mechanism for detecting abnormal dust emissions:** Notify relevant units immediately and implement corrective actions without delay.
	4 The impact of alternative materials on product quality and cost increase	To reduce raw material costs or improve environmental efficiency, the Company uses alternative raw materials and fuels. However, this may affect product quality and could lead to an increase in costs.	**Unstable product quality:** May lead to a decline in customer satisfaction and loss of trust, affecting market competitiveness. **Increase in production costs:** Some alternative fuels may have larger particle sizes, resulting in incomplete combustion, or contain harmful substances such as sulfur, chlorine, and alkalis that adversely affect the operation of the rotary kiln, leading to reduced production efficiency and increased costs. **Deterioration of community relations:** Alternative raw fuels may generate odors, causing opposition from the community.	**Diversify energy sources:** Explore alternative fuels, such as biomass or waste-derived fuels. **Improve energy efficiency:** Upgrade equipment and improve production processes. **Install alternative fuel crushing equipment:** Enhance the diversity of supply sources.

Risk Indicator Aspect	Risk Indicator	Description of Indicator	Possible Impact	Countermeasures
Operational and economic risks	5 Increased operational impacts after the amendment of the Mining Act	According to mining regulations, resource development must comply with the "Consultation and Agreement for Indigenous Peoples' Participation Guidelines." ACC's Xinchengshan Mine passed the consultation vote with the alang Bsngan Tribe on February 12, 2022, implemented 21 benefit-sharing mechanisms, and invested more resources to engage with the local community. The Mining Act was enacted on June 23, 2023, requiring an environmental impact assessment (EIA) to be submitted within three years. The Xinchengshan Mine, within its existing mining land area, must conduct a supplementary EIA. The operation does not need to cease during the EIA process.	**Mining activities affected:** If there is an expansion of the mining area or new plans, consultation and consent must be reprocessed. **Increase in operating costs:** Invest more resources to implement the benefit-sharing mechanisms, participate in local revitalization, and support tribal markets. **Community relations are even more important:** More resources need to be invested in engaging with the local community.	**Strengthening communication with the community:** Establish long-term, mutually trusted relationships. **Establish a fair and transparent mechanism:** Ensure that every member of the local community receives fair and reasonable benefits. **Train employees to be sensitive to multiculturalism:** Enhance employees' understanding and respect for local culture. Implement ESG governance strategies, improve ESG performance, ensure sustainable development, and contribute to society and the environment. Ensure transparent information disclosure, strengthen communication with society, and establish public relations.
Environmental Risks	6 The impact of mining area development on landscapes and the environment	The mining activities required for cement production may have significant impacts on the local ecosystem, landscape, and indigenous traditional territories. This includes issues such as deforestation, loss of biodiversity, and water resource pollution.	**Ecological environment damage:** This may result in a local ecosystem imbalance. **Impact on the quality of life of local residents:** Impact on the quality of life of local residents may lead to protests. **Damage to reputation:** Being perceived as an irresponsible company may affect investor confidence.	**Implement ecological restoration plans:** Actively carry out mine reclamation and ecological restoration. **Maintain communication with the local community:** Establish a transparent communication mechanism. **Adopt sustainable mining technologies:** Minimize the impact on the environment.

Risk Indicator Aspect	Risk Indicator	Description of Indicator	Possible Impact	Countermeasures
Environmental Risks	7 Increased impact of extreme weather events	Extreme weather events (such as typhoons, heavy rains, high temperatures, droughts, etc.) may directly impact the company's production facilities, supply chain, and transportation networks.	**Damage to production facilities:** These factors may lead to production suspension and increase the cost of repair. **Supply chain disruption:** Raw material transportation or product distribution may be disrupted. **Employee safety risk:** Extreme weather may pose a threat to employee safety. **Drought and water shortage:** Lack of cooling water for equipment may lead to production interruptions.	**Develop climate adaptation strategies:** Assess risks and develop response measures. **Strengthen infrastructure:** Enhance the climate resilience of facilities. **Enhance the climate resilience of facilities.** Ensure that operations can be quickly restored under extreme conditions while prioritizing the safety of personnel.
Reputation and Social Risks	8 Impact on market value and brand value due to negative nature-related news	The spread of environmental-related negative news (such as pollution incidents, ecological damage, etc.) may affect the company's market value, brand reputation, and investor confidence.	**Decline in stock price:** Negative news may lead to investors selling off stocks. **Decline in investor confidence:** May affect the Company's future financing capabilities. **Loss of customers:** Damage to brand image may lead to a decline in market competitiveness.	**Strengthen environmental management:** Proactively prevent environmental issues. **Increase information transparency:** Provide real-time and accurate disclosure of environmental-related information and monitoring results. **Actively engage in social responsibility:** Enhance the positive image of the brand.
	9 Poor community resident satisfaction	The Company's mining and production activities may impact the quality of life of nearby community residents, such as issues related to noise, dust, and traffic.	**Increase in community complaints:** May affect normal production. **Risk of government intervention:** Severe community issues may lead to related operational restrictions.	**Conduct regular community satisfaction surveys:** Understand and effectively respond to community needs. **Establish a community communication mechanism:** ACC Service Center maintains an open and transparent dialogue platform for feedback. **Assist local community development projects:** Create employment and development opportunities for the local community.

Risk Indicator Aspect	Risk Indicator	Description of Indicator	Possible Impact	Countermeasures
Regulatory Risks	10 **Strengthened pollution control regulations, increasing operational and equipment costs**	Environmental regulations (such as those related to carbon emissions and air pollution) are becoming increasingly stringent, which may require the Company to invest in new pollution control equipment or alter production processes, thereby increasing operational costs.	**Increase in operating costs:** Investment in new environmental monitoring equipment and technologies is required. **Significant capital investment is required:** May affect the Company's short-term financial performance. **Profit margin under pressure:** If costs cannot be passed on, profitability may be affected.	**Invest in environmental technologies in advance:** Proactively invest in technologies that meet future standards. **Participate in the policy formulation process:** Influence policy direction through industry associations. **Refine production processes to reduce emissions:** Find solutions that comply with regulations and reduce costs.

Opportunity Items and Preparation

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Continue to Maintain	2 Developing mining area ecosystem restoration and landscape conservation	Mining activities are complemented by scientifically-based mine greening and restoration efforts, alongside the establishment of a systematic mine ecological restoration evaluation system.	**Improve the environmental conditions after mining:** Reduce visual impact and restore ecological functions. **Increase social acceptance:** Demonstrating restoration achievements shows the Company's commitment to environmental responsibility, gaining support from the local community. **Improve the Company's image:** Develop responsible mining technologies to enhance corporate reputation and become an industry benchmark. **Create opportunities for future land use:** The land after restoration can be used for ecotourism, cultural exhibition halls, research, or other purposes.	**Develop a long-term restoration plan:** Use nature as a solution, aligning with the long-term evolutionary mechanisms of the ecosystem. **Adopt advanced ecological restoration technologies:** Such as soil improvement, vegetation greening, and planting native plant species. **Collaborate with local universities, research institutions, and environmental organizations:** Incorporate diverse opinions to increase the acceptability of the plan.	**Conduct detailed and continuous ecological surveys:** Understand the baseline condition of the local ecosystem. **Implement a phased restoration plan:** Develop specific plans based on the characteristics of different areas of the mining site. **Regularly evaluate and adjust restoration strategies:** Continuously optimize restoration methods based on monitoring results.

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Continue to Maintain	7 Promoting circular economy and resource management	Maximize the use of alternative raw fuels to reduce the extraction and consumption of natural raw fuels, driving the company towards a circular economy and green transformation.	**Reduce dependence on natural resources:** Lower the cost of raw fuels and supply risks. **Reduce GHG emissions:** Using waste as fuel can reduce carbon emissions. **Explore new business models:** Such as waste disposal services, reducing production costs. **Assist the government and industry in waste disposal**	**Optimize the technology for using alternative raw materials:** Increase the proportion of alternative raw materials and fuels used under stable quality conditions. **Establish a waste recycling and reuse system:** Create efficient processes for waste crushing, storage, and usage management.	**Optimize the use of alternative raw materials and fuels:** Increase the proportion of alternative raw materials and fuels used while ensuring stable product quality. **Establish a supplier evaluation and selection system:** Ensure the stable supply of alternative raw fuels. **Implement a company-wide resource recycling program:** Maximize internal resource utilization.
Key Focus for Improvement	8 Regulating pollutants and air pollution emissions	Through investment and implementation of various measures, including adopting advanced pollution control technologies, improving production processes, and implementing a comprehensive emission monitoring system. To reduce the emissions of pollutants and air contaminants.	**Improve air emission quality:** Enhance community satisfaction and the Company's reputation. **Obtain more government incentives or benefits:** Obtain rewards or benefits from regulatory authorities for exceeding environmental standards in pollutant emissions. **Enhance corporate image:** Attract more environmentally conscious customers and investors. **Improvement in employee health:** Improved productivity and reduced health-related costs. **Opportunities for technological innovation:** Developing new pollution control technologies may bring new business opportunities.	**Invest in advanced pollution control technologies:** Such as high-efficiency dust collection and denitrification equipment. **Improve production process:** Reduce the generation of pollutants at the source. **Implement an emission monitoring system:** Track and control emissions in real time. **Develop a long-term pollution reduction plan:** Set clear stage-specific goals.	**Install and upgrade efficient dust collection and denitrification equipment:** Ensure compliance with the latest emission standards. **Implement a closed material storage and transportation system:** Reduce dust dispersion. **Develop and adopt low-emission production processes:** Continuously improve production technology. **Establish a real-time emission monitoring network:** Connect with environmental protection departments to achieve transparent management. **Conduct regular environmental protection training for employees:** Enhance the environmental awareness and operational skills of all employees.

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Key Focus for Improvement	6 Implementing water resource management	Through water-saving measures, improving water resource efficiency, and developing alternative water sources. Comprehensively improve the Company's water resource management.	**Reduce the pressure on local water resources:** Minimize the impact of the Company's operations on local water resources. **Reduce water usage costs:** Reduce water costs through water conservation and recycling. **Reduce water resource-related risks:** Reduce the risk of production disruption due to water shortages.	**Implement comprehensive water resource measurement:** Understand the current water usage and areas for improvement. **Invest in water-saving technologies and equipment:** such as high-efficiency cooling systems, water-saving devices, etc. **Plan water collection and greywater reuse systems:** Develop alternative water sources.	**Establish a water resource efficiency management system:** To improve overall water usage efficiency. **Install high-efficiency water equipment:** Replace outdated equipment, update water pipes, and reduce leakage. **Establish a water resource recycling system:** Treat and reuse production wastewater.
	9 Develop low-carbon technologies	R&D low-carbon cement and improve energy efficiency. Involves innovation in production processes, aiming to reduce carbon emissions, improve energy efficiency, while maintaining or enhancing product quality.	**Reduce production costs:** Increase profit margin and enhance market competitiveness. **Reduce carbon emissions:** Contributes to achieving carbon reduction targets and aligns with global trends. **Improve energy efficiency:** Reduce energy costs and decrease reliance on natural ores and fuels. **Develop new market and industry integration opportunities:** Such as green building market, expanding business scope. **Increase product competitiveness:** This could potentially increase market share, especially in markets with high environmental requirements. **Technological innovations leading to patents:** This increases the Company's intangible asset value.	**Increase investment in R&D:** Establish a dedicated team for low-carbon cement R&D. **Establish partnerships with research institutions and universities:** Leverage external expertise and resources. **Participate in the formulation of industry standards:** Lead the technological development direction of the industry. **Improve energy efficiency:** Perform energy usage calculations and implement energy-saving improvement plans.	**Form a dedicated R&D team for low-carbon cement:** Establish clear R&D objectives and a timeline. **Conduct a factory-level energy efficiency assessment:** Identify and implement energy-saving retrofit projects. **Conduct pilot projects for new technologies:** Such as using alternative fuels or raw materials. **Conduct a feasibility study on the development of carbon capture and utilization technology:** Explore the application of cutting-edge technologies. **Establish an industry-academia-research collaboration platform:** Promote technology exchange and innovation.

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Lower Priority	10 Promoting amendments to relevant regulations	Actively participate in promoting revisions of industry-related regulations, such as updates to CNS national standards and environmental regulations. By participating in the regulatory formulation process, the Company can influence the direction of industry development while proactively adapting to the new regulatory environment.	**Shape a favorable policy environment:** This may long-term competitive advantages. **Improve overall industry standards and competitive environment:** Beneficial to the development of advanced enterprises and the overall industry. **Enhance the Company's influence in the industry:** Increase voice and participation in decision-making.	**Actively participate in industry association activities:** Play a leading role in the industry. **Establish a dedicated policy research team:** Provide professional opinions and recommendations. **Showcase the Company's best practice cases:** Demonstrate the feasibility of higher standards. **Establish a conversation mechanism with the government, academia, and other stakeholders:** Facilitate consensus among multiple parties.	**Establish a dedicated policy research team:** Regularly analyze policy trends and impacts. **Regularly organize or participate in industry seminars:** Share the Company's environmental achievements and technological innovations. **Prepare a detailed policy proposal:** Submit to the relevant government departments and industry associations. **Establish regular communication channels with policymakers:** Provide timely feedback on industry demands and suggestions. **Conduct policy impact assessments:** Analyze the potential impact of different policy options on the Company and the industry.
	11 Enhancing resilience to extreme climate events	Focus on enhancing the Company's ability to respond to extreme weather events, including strengthening disaster prevention capabilities at the plant, improving relevant hardware and software facilities, and enhancing personnel training. This is to ensure business continuity in the face of escalating climate change, while protecting employee safety and company assets.	**Reduce the losses caused by extreme weather events:** Enhance operational continuity and reduce the likelihood of unexpected production stoppages. **Enhance the overall resilience of the Company:** Increase investor confidence, potentially boosting stock market value. **Enhance employee sense of security:** This could potentially enhance employee satisfaction and loyalty. **Demonstrating corporate social responsibility:** Enhance company image and strengthen stakeholder trust.	**Conduct a comprehensive climate risk assessment:** Identify vulnerabilities and potential impacts. **Formulate detailed contingency plans for extreme weather events:** Cover different types of extreme weather events. **Regularly conduct extreme weather response drills and employee training:** Enhance overall response capability. **Invest in upgrading plant infrastructure:** Enhance disaster resilience.	**Upgrade the plant's flood control and drainage system:** Increase drainage capacity to prevent flooding. **Install an extreme weather warning system:** Establish a linkage mechanism with meteorological departments to enable rapid response and resource allocation. **Establish a cross-department crisis management team:** Coordinate the actions of various departments during extreme weather conditions.

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Lower Priority	12 Cross-sector Collaboration	Focus on building a broad cooperation network, including developing internship programs, executing conservation projects, and establishing a stakeholder conversation platform. Promote knowledge exchange, talent cultivation, and multi-stakeholder coordination, while exploring new opportunities for innovation and development.	**Gain diversified expertise and opportunities for cross-disciplinary collaboration:** Promote innovation and enhance problem-solving capabilities. **Cultivation future talent:** Reserve human resources for the Company and reduce recruitment costs. **Strengthen relationships with stakeholders:** Enhance social recognition and improve the Company's image. **Increase the Company's influence across multiple sectors:** Enhance brand awareness and industry position. **Improve environmental and social impact through collaborative projects:** Enhance corporate social responsibility performance.	**Establish long-term partnerships with companies within the group or universities and research institutions:** Promote knowledge exchange and talent development. **Create an open innovation platform:** Attract external innovation resources and ideas. **Hold multi-stakeholder discussion meetings:** Facilitate conversation and understanding. **Develop targeted internship and training programs:** Cultivate talent that meets the Company's needs.	**Develop structured student internship programs:** Cover different disciplines, such as engineering, mining, environmental science, and environmental education. **Launch cross-industry conservation collaboration programs:** Such as biodiversity conservation projects. **Establish an online stakeholder conversation platform:** Regularly collect feedback and suggestions. **Organize an annual sustainability forum:** Invite various parties to participate and discuss industry development trends. **Establish a cross-sector innovation fund:** Fund promising industry innovation projects and research.

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Meeting Expectations	1 **Establishing biodiversity conservation-related facilities**	Establish ecological projects within company premises, such as the Asia Cement Ecological Park, and invest in promoting butterfly habitat restoration across Taiwan.	• **Enhance the Company's corporate image:** Directly demonstrate the Company's environmental commitment through ecological conservation facilities. • **Create opportunities for eco-tourism:** May attract more visitors and create new economic opportunities for local communities. • **Corporate social responsibility performance:** Specific conservation projects can be prominently featured in the ESG report. • **Enhanced brand value:** A positive environmental image can enhance the brand's value in the minds of consumers and investors. • **Promote environmental education opportunities:** Provide on-site learning venues for schools, communities, and the public to raise environmental awareness.	• **Collaborate with ecological experts to design conservation facilities:** Ensure the scientific validity and effectiveness of the facilities. • **Integrate conservation facilities into the Company's overall planning:** Turn them into an opportunity for the Company's sustainable development strategy. • **Create a unique ecological experience:** Increase the attractiveness of environmental education.	• **Plan and construct an ecological park:** Including native plant gardens, butterfly gardens, stick insect gardens, and other ecological facilities. • **Promote environmental education by developing ecological tour programs:** Train ecological tour guides and design interactive tour routes. • **Use the Asia Cement Ecological Park as a starting point to promote the creation of butterfly habitats across Taiwan.**

IPA Positioning	Opportunity Indicator	Description of Opportunities	Possible Benefits	Implementing Strategy	Action Plan
Meeting Expectations	3 Promoting environmental education and citizen scientists	By operating the ecological park, organizing visit activities, and promoting ecological knowledge from the park to schools, communities, and tribes, cultivate public environmental awareness and scientific participation.	**Increase public awareness of the Company's environmental efforts:** Directly showcase the Company's environmental contributions. **Increase community engagement:** Provide local residents with opportunities to engage in environmental protection. **Enhance the Company's influence in the field of environmental education:** Become a leader in environmental education. **Cultivate future environmental conservation talents:** Inspire youth's interest in environmental science. **Strengthen connections with the community:** Establish long-term and active community relations.	**Design interactive environmental education programs:** Combine field experiences with theoretical learning. **Establish volunteer and internship programs:** Attract the public to participate in environmental protection efforts. **Establish partnerships with schools and community organizations:** Expand the educational impact.	**Develop a variety of environmental education activities:** Such as park ecological explorations, environmental education camps, ecological lectures, the nationwide tour of the Phasmatodea exhibition, and the science popularization train. **Establish a citizen scientist program:** Invite the public to participate in ecological monitoring and data collection.
	4 Establishing biodiversity monitoring survey data and management systems	Use advanced technologies such as automatic cameras to conduct comprehensive surveys of plant and animal species, establishing a long-term biodiversity monitoring system.	**Provide accurate ecological impact assessment data:** Help the Company understand the impact of its operations on the local ecosystem. **Provide scientific basis for environmental management decisions:** Develop more effective environmental protection and development strategies based on data. **Support ecological conservation research:** Provide valuable long-term ecological data for the scientific community.	**Establish a comprehensive biodiversity database:** Integrate various survey data. **Collaborate with research institutions for long-term monitoring:** Ensure the scientific accuracy and continuity of the data.	**Install and maintain an automated camera network:** Deploy monitoring equipment in key areas. **Conduct regular biological surveys:** Organize professional teams to conduct field surveys. **Establish a long-term monitoring system for mines to assess effectiveness:** Regularly collect data and analyze changes in biodiversity.

4

Biodiversity Conservation and Restoration

4．1 Vegetation Restoration in Practices

4．2 Species Monitoring Actions

4．3 Butterfly and Phasmatodea Cultivation

4．4 Environmental Education and Citizen Scientist Promotion



ACC will continuously review and revise its current biodiversity management plan during and after the completion of mining activities. This includes actions such as vegetation greening and restoration, species monitoring, butterfly and stick insect cultivation, environmental education, and the promotion of citizen science initiatives. These strategies aim to enhance biodiversity value and ecosystem services.

4.1 Vegetative Greening Practices

ACC extracts minerals as raw materials for cement production, which inevitably causes temporary surface exposure. To quickly restore the land after extraction, ACC has invested significant manpower and resources. Since 1980, the Company has been actively engaged in phytoremediation efforts in the mining areas (Fig. 4-1). First, the native topsoil from the mining process is completely recovered and fertilized. In order to preserve native tree species, besides transplanting them to other locations, we also use methods like cutting or seed collection to cultivate saplings. After excavation and the creation of vegetation trenches on the finished bench platform, fertile soil is backfilled, and robust saplings are mixed and densely planted to create a diverse range of tree species. To create a favorable habitat for the ecosystem, vegetative soil mounds are also stacked on the slopes (Fig. 4-2 and 4-3), which accelerates the greening effect. According to on-site flora and fauna ecological surveys in the mining area, the planted trees can grow to 4 to 8 meters in height after 5 years, with interlocking crowns and distinct layers of groundcover, shrubs, and trees that create a forest-like appearance with a canopy effect. After 10 years, the trees can reach up to 10 meters, and the overall slope remains stable with a relatively intact forest structure. This demonstrates that the vegetation established using this afforestation method can withstand strong wind impacts, stabilize slopes, and serve a disaster prevention function. Animal surveys have revealed frequent activity of monkey troops, flying squirrels, bamboo partridges, birds, and snakes within the forest. The large-billed eagle also occasionally patrols the mountain peaks. Infrared cameras have recorded large mammals such as the Formosan Serow, Formosan Reeve's muntjac, and wild boar returning to their habitat to forage. As of 2023, the accumulated area of restoration reached 71.9 hectares, with the greening coverage reaching 80.9% (Fig. 4-4).



★ The nursery room cultivates native tree species
★ The seedlings are provided to national parks, the Sanxing Township Office in Yilan, schools, communities, and villages

Fig. 4-1: ACC's Native Tree Seedling Cultivation and Natural Forest Restoration



Fig. 4-3 Vegetation Greening Achievements

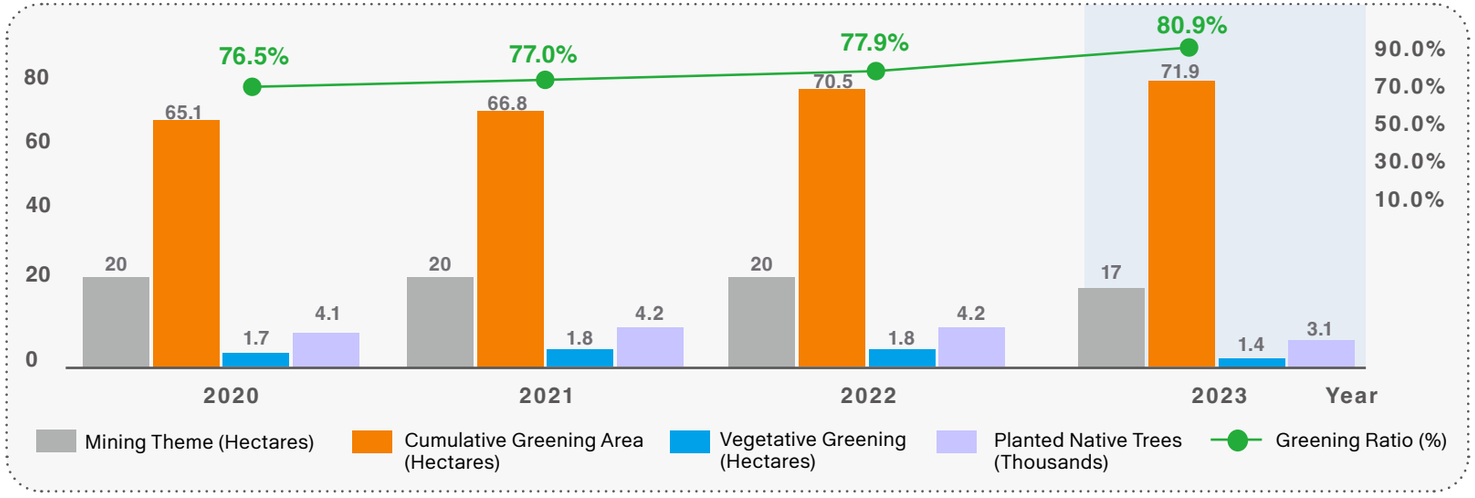


Fig. 4-4 Mining and Greening Trends Over the Years

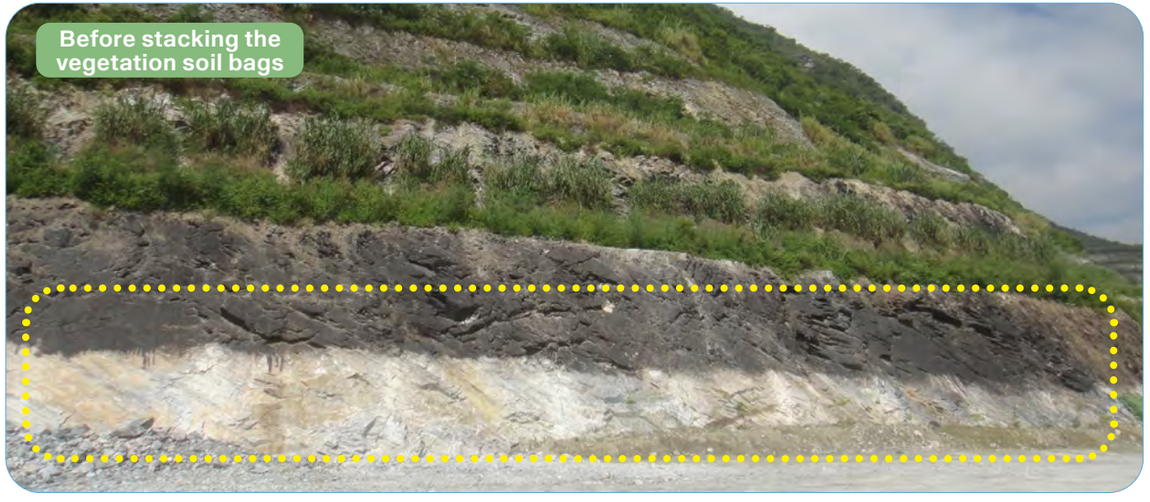




Fig. 4-2 Comparison Before and After the Implementation of Vegetative Soil Building

4.2 Species Monitoring Actions

Starting in April 2021, ACC began conducting biodiversity surveys in the Xincheng mountain Quarry (Fig. 4-7). These surveys were conducted monthly to accumulate data and monitor changes in species populations, allowing for the implementation of appropriate measures. If the species population remains stable or continues to grow, it indicates a healthy habitat. After long-term observation, if the species population decreases, the environmental management plan and measures will be adjusted. In 2023, twelve ecological surveys were conducted. The results showed a rich diversity of bird and butterfly species and numbers, indicating a stable state of species and numbers over the past three years (Table 4-1). In addition, the survey results of mammals, amphibians, reptiles, and terrestrial plants (as detailed in 3-1 Operating Locations and Species Sensitivity) further strengthen the evidence supporting the positive impact of the vegetation greening at the Xincheng mountain Quarry on species diversity and environmental diversity.

From this, it can be concluded that ACC's natural reforestation method, which created forests with plant diversity, has successfully attracted animals and insects back to their habitats, thereby initially forming a biological chain.

In addition, in 2020, ACC was granted permission by the Hualien County Government to conduct a Phasmatodea survey (Fig. 4-5), including collection, recording, and ex-situ conservation. The survey has been ongoing monthly in Eastern Taiwan, documenting valuable local ecological data (Table 4-2 and Fig. 4-6). ACC will continue to conduct surveys and monitoring efforts for butterflies and Phasmatodea, investing resources to gradually establish a database of native species in eastern Taiwan. Furthermore, efforts will be made to enrich local ecological education initiatives.



Fig. 4-5 Phasmatodea Survey



Fig 4-6 Collaboration with the Department of Entomology at National Taiwan University to Identify a New Species of Phasmatodea



Fig. 4-7 Survey of Xincheng mountain Quarry

Table 4-1: Species Monitoring Survey Records of ACC Xinchengshan Mine

Species	Survey Period of Xinchengshan Mine	Number of surveys	Families	Species	Number
Butterflies	June 2018 to April 2019	7	9	75	807
	April to December 2021	9	8	98	1,393
	January to December 2022	12	9	101	1,548
	January to December 2023	12	10	90	1,550
Birds	April to December 2021	9	19	8	705
	January to December 2022	12	19	39	880
	January to December 2023	12	17	34	927
Dragonfies	April to December 2022	9	4	12	65
	January to December 2023	12	6	14	60

Table 4-2: ACC Eastern Taiwan Phasmatodea Monitoring Survey Records

Species	During the survey period in eastern Taiwan	Number of surveys	Families	Species	Number
Phasmatodea	August to December 2020	10	-	8	206
	January to December 2021	12	-	7	261
	January to December 2022	14	-	8	300
	January to December 2023	12	-	5	113

4.3 Butterfly and Phasmatodea Cultivation

ACC has established the largest privately-owned butterfly ecological park in Taiwan (Fig. 4-8) and organized a butterfly breeding and management team. An open outdoor park was created with habitat construction, planting approximately 70 species of butterfly host and nectar plants. This successful initiative attracted various butterflies to reside and lay eggs, including the nationally protected Golden Birdwing, which is classified as a third-class conservation species. Additionally, a butterfly seed collection room and breeding room have been set up. Based on the park's environmental carrying capacity, seed collection plans are evaluated and breeding is carried out. Approximately 40 species of butterflies are bred year-round, with tens of thousands of butterfly generations thriving each year, successfully creating a sustainable butterfly ecological base. ACC shares its breeding techniques and experiences, promoting the creation of butterfly habitats across Taiwan, linking various habitats to form a nationwide butterfly corridor.



Fig. 4-9 Golden Birdwing

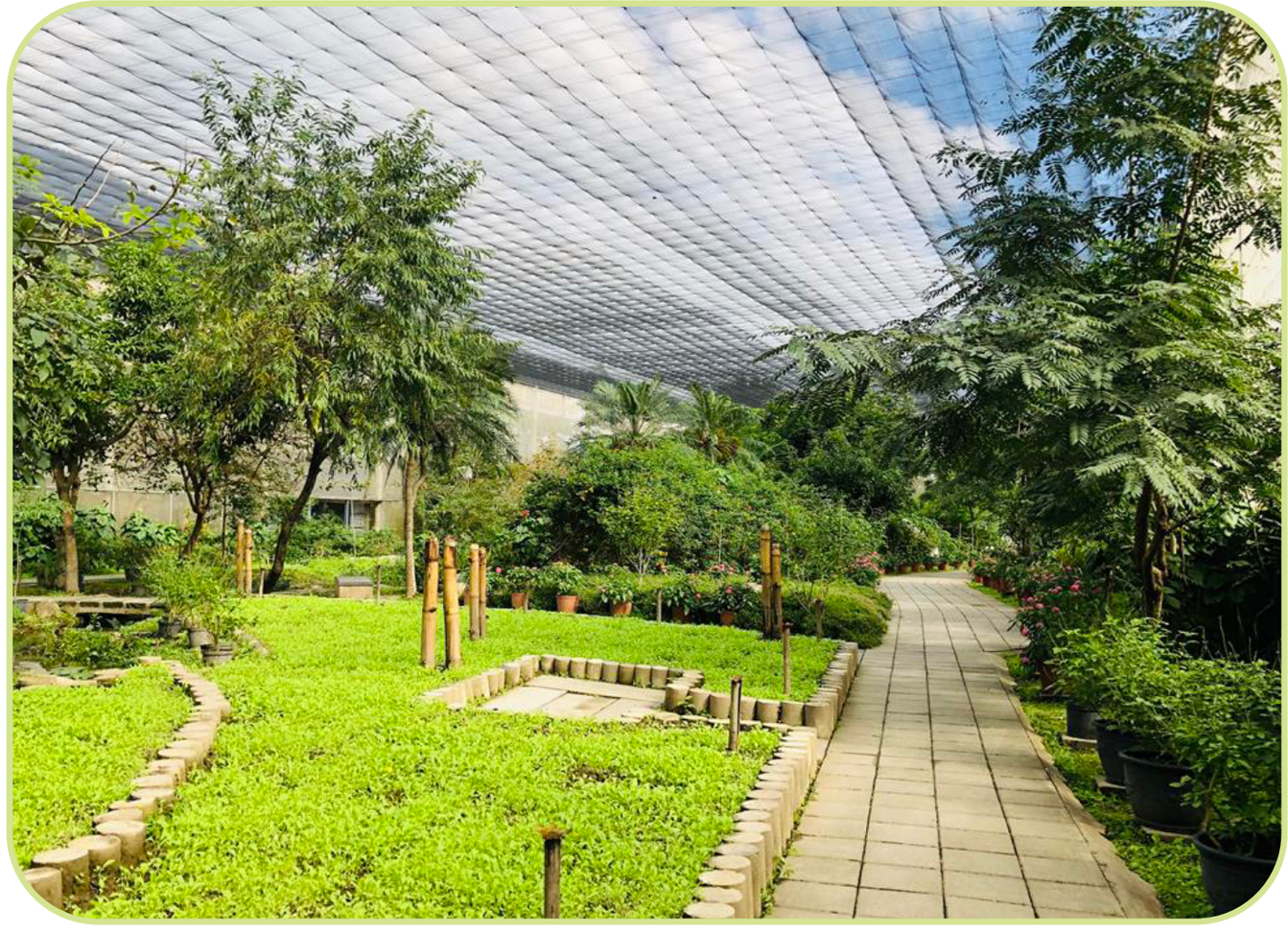


Fig. 4-8 ACC Butterfly Ecology House

In addition to butterflies, the eye-catching stick insects were also chosen as the main characters to promote biodiversity, leading to the establishment of the Phasmatodea Park (Fig. 4-11). With the continuous expansion of human activities, including urbanization, deforestation, agricultural land expansion, and infrastructure construction, the habitats of stick insects have been increasingly destroyed and reduced, leading to limited living spaces and even the loss of survival conditions. The Asia Cement Ecological Park's professional team manages and utilizes scientific recording and experimental methods to identify alternative host plants, increasing the success rate of cultivation. Throughout the year, approximately 20 species of domestic and international Phasmatodea are cultivated (Fig. 4-12), including new species discovered by the team during field investigations. These cultivation achievements not only promote species conservation but also enhance public awareness of biodiversity. The park also conducts ecological guided tours focused on stick insects, allowing the public to understand their habitat requirements and ecological roles, emphasizing the interdependence within the ecosystem (Fig. 4-13).



Fig. 4-10 ACC Native Plant Garden



Fig. 4-11 ACC Phasmatodea Ecology House



Fig. 4-12 Siploidea sipylus



Successfully restored the Class III protected butterflies - Golden Birdwing



Butterfly corridor awarded the Hualien County Landscape Garden Gold Award for two consecutive years



Taitung University Precious Species Project Collaboration Partner



Actively promoting habitat restoration to a total of 121 groups and 7,766 participants



Habitat Creation Consultation Assistance SOP Mataian Leisure Agricultural Park



Experience Sharing on Butterfly Habitat Creation – Forestry and Nature Conservation Agency Fuyuan Butterfly Valley

Fig. 4-13 ACC's Achievements in Butterfly and Phasmatodea Breeding

4.4 Environmental Education and Citizen Scientist Promotion

ACC Hualien Plant promotes environmental education as the cornerstone of its commitment to environmental sustainability. With the mission of "Creating a Sustainable Green Home", it has expanded from its expertise in mine greening and restoration techniques to environmental ecological education. The plant offers free environmental education visits to the public and conveys the meaning of sustainability. Through ecological environmental education, it aims to cultivate seeds of sustainability, bringing about a positive transformation in both the Company and Taiwan's societal sustainable development.

Since 2002, ACC has aimed to transform its plant into a "factory park" by establishing a native plant garden. Starting in 2013, the facility was upgraded to an environmental education site to promote sustainable environmental education. The site offers free visits to the public, provides guided tours, and conducts ecological education programs. To create a comprehensive ecological environmental education park, ACC has combined its native plant garden, butterfly garden, and stick insect garden, covering an area of approximately 5.38 hectares. Utilizing its core capabilities in low-carbon, recycled cement production and mine greening, it has developed one of Taiwan's highest-quality environmental ecological education sites. Serving as an ecological environmental education base, it attracts visitors from all sectors each year to learn about sustainable environmental knowledge (Fig. 4-14).



Fig. 4 -14 Environmental Education Activities in the Asia Cement Ecological Park



Fig. 4-15 Indigenous Community Youth Joining the Citizen Scientist Initiative

Since 2021, the Citizen Scientist Training Program has been actively promoted, using the ecological park as its base and surrounding mountain trails as training grounds. The program trains ecological volunteers, interpretive guides, and media volunteers while conducting occasional capacity-building sessions and ecological surveys (Fig. 4-15). ACC firmly believes that the ecological park serves as the starting point for learning, while the true continuation of learning happens in everyday life, where nature should be an integral part of living. Training volunteers to return to their communities allows them to better care for the surrounding environment. In addition to the ecological park, ACC's ecological environment education sites have expanded their services to local government agencies and schools. Since 2022, the ACC Environmental Education Ecological Team has demonstrated its commitment to sustainability by providing technical teaching on butterfly garden construction, operation, and management to government agencies and schools across Taiwan. To date, they have assisted in the establishment of multiple public and private butterfly gardens and have extended their environmental education efforts to school campuses. This initiative spreads the long-term accumulated energy of ACC's mine greening efforts, allowing it to continue to sprout and grow within the school environment (Fig. 4-16).

Preparation Planning

2002
- Establishment of the ACC's Native Plant Park
- Established the Fenghua Forest Park

2004
- Established the small butterfly ecology house

2012

Opening of the First Stage

2013
- Established a large-scale butterfly ecology house
- Established the small Phasmatodea section
- Blog of the ecological park
- Qualified environmental education personnel
- Planning and execution of park visits

2014
- Awarded by the Hualien County Government
- Environmental Education Excellence Award

2017

Expanding the Opening

2018
- Renovation of the large-scale butterfly ecology
- Established a butterfly seed collection room
- Official website of the ecological park
- Established the Phasmatodea section
- Conducting SROI analysis and benefit verification for ecological environmental education

2019

2018、2019
- Taiwan Corporate Sustainability Awards (TSCA)

2019
- Asia Responsible Enterprise Award for "Green Leadership"

Ecological Education Gaining Traction in Taiwan

2018
- Ecological videos and explanations of the park's actual conditions from 2021 to 2023 are provided to the public for in-depth learning at any time and place. The annual exposure exceeds one million views.
- From 2020 to 2023, a total of 34 butterfly habitats have been created or received technical guidance
- 2020 to 2023: Taiwan Precious Species Project
- Citizen Scientist Training Program from 2021 to 2023
- 2020、2022、2023 Taiwan Science Popularization Island Tour
- From 2019 to 2020, the Asia Cement Ecological Park Touring Exhibition was held for a total of 353 days across 7 counties and cities. In 2022, the Phasmatodea Environmental Education Train operated for 2 days, and in 2023, it operated for 99 days.
- Hualien County Government's Autumn Feast, an environmental education promotional event.

2021
- 8th National Environmental Education Award Hualien County Excellence Award

2021~2023
- Continuing to build local communities

Future Sustainability Planning

Future
- **Future Planning**
  Assisting in guiding the creation of butterfly habitats in tribes, communities, and schools.



Fig. 4 -16 ACC Environmental Education Promotion

ACC's Natural Positive Impact Action Project

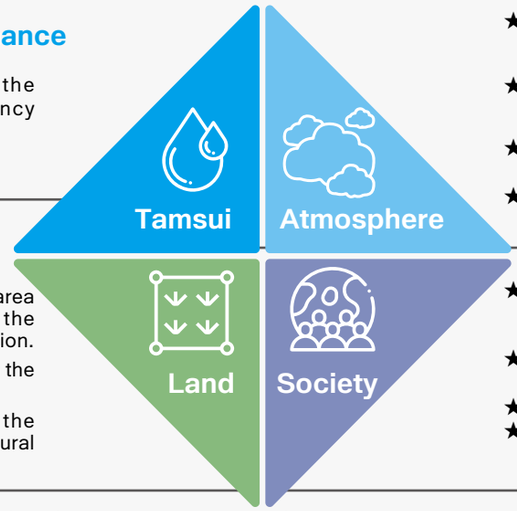
ACC actively works through actions to create a green and sustainable home. At the Xincheng mountain Quarry, ACC promotes mine rehabilitation by implementing actions such as vegetation greening, blasting vibration control, and soil and water conservation, always keeping in mind the principle of co-prosperity with the local community. In the manufacturing plant, ACC promotes net-zero carbon emissions, develops a circular economy, and low-carbon cement, deeply integrating its sustainability vision into the production process. At the ecological park, ACC elevates environmental awareness to an educational level by planning butterfly ecological gardens, Phasmatodea gardens, and native plant gardens. The relocation and restoration efforts have created ACC's ecological park, one of the highest-quality environmental ecological education sites in Taiwan (Fig. 4-17).

ACC utilizes its unique mine greening technology and, through the integration of the plant, mine, and park areas, practices multi-aspect actions for the co-prosperity of production, life, and ecology. Demonstrating its commitment to sustainability, ACC completed several natural positive impact actions in 2023 (Fig. 4-18).

2023 ACC Natural Action Performance

★ In 2023, ACC Hualien Plant introduced the ISO 46001: 2019 Water Resource Efficiency Management System.

★ The area of phytoremediation is 1.4 hectares.
★ Planted 3,094 native trees in the mining area.
★ The area of phytoremediation in the mining area has reached 80.9% to date, with 100% of the mined areas having completed phytoremediation.
★ The annual average blasting vibration value in the mining area was 0.052 cm/sec*.
★ After 18 years of vegetation greening in the mining area, it can approach the level of a natural forest.



★ Completed the improvement of three major air pollution control equipment from 2021 to 2024, reducing particulate matter emissions by approximately 40%.
★ The improvement of the main air pollution control equipment for Kiln No. 3 reduced particulate matter emissions by approximately 41%.
★ The installation of the SNCR system reduced NOx emissions concentration to below 220 ppm.
★ The update of 6 sets of dust (OP) continuous automatic monitoring equipment has met regulatory requirements.

★ Practicing ethnic equality, in 2023, indigenous employees accounted for 35% of all employees at the plant (46% at subcontractor sites).
★ ACC sponsored after-school tutoring for students at 7 elementary and junior high schools.
★ Serving the local community for a comprehensive improvement
★ Industry-academia practice in the cement industry chain

*** The smallest vibration threshold perceptible to humans is approximately 0.051 cm/sec.**

Fig. 4 -18 2023 Natural Action Performance Source: https://explosives.org/vibration-basics/human-perception/

Mining area

Greening

Using its unique mine greening technology and methods, after 18 years of rehabilitation the vegetation can approach the level of a primary forest, serving as a global model for sustainable mining that attracts visits from domestic and international industry peers.

Blasting vibration and water and soil conservation

We adhere to non-inductive blasting, achieving the lowest vibration value globally. Our mining sites provide practical training and serve as educational classrooms for slope water and soil conservation, striking a balance between development and environmental protection.

Co-existence and co-prosperity with local communities

The cement industry pioneered the establishment of a service center in the tribe, gaining consent through indigenous consultation, and coexisting and thriving with the local community.

Plant

Net zero carbon emissions

Sharing net-zero pathways and carbon reduction technologies in the cement and concrete industry, we aim to achieve national net-zero goals through cooperation among industry, government, academia, and research institutions.

Circular economy

Promote the dual-mode circular economy model of substituting raw materials and fuels, so as to reclaim and reuse resources

Low-carbon cement

Replace traditional Portland cement with Portland limestone cement (for structural purposes) and masonry cement (for mortar purposes) to reduce the carbon emissions of the construction industry.

Park

Butterfly Ecological Park

The largest Butterfly Ecological Park in Taiwan. There are about 40 species of butterflies that are bred according to the carrying capacity of the environment. Create natural habitats to attract the Level 3 protected Golden Birdwing.

Phasmatodea Park

Since 2020, we have been breeding various species of Phasmatodea in ecology houses, including native species collected and conserved, which allows visitors to gain a deeper understanding of these local masters of disguise.

Native Plant Park

250 species of native plants are planted, ranging from those found near sea level to those at 3,000 meters. The plants are organized by scientific botanical classification to facilitate the observation of their characteristic differences.

Fig. 4-17 Practices of Natural Positive Influence in Mines, Plants, and Parks

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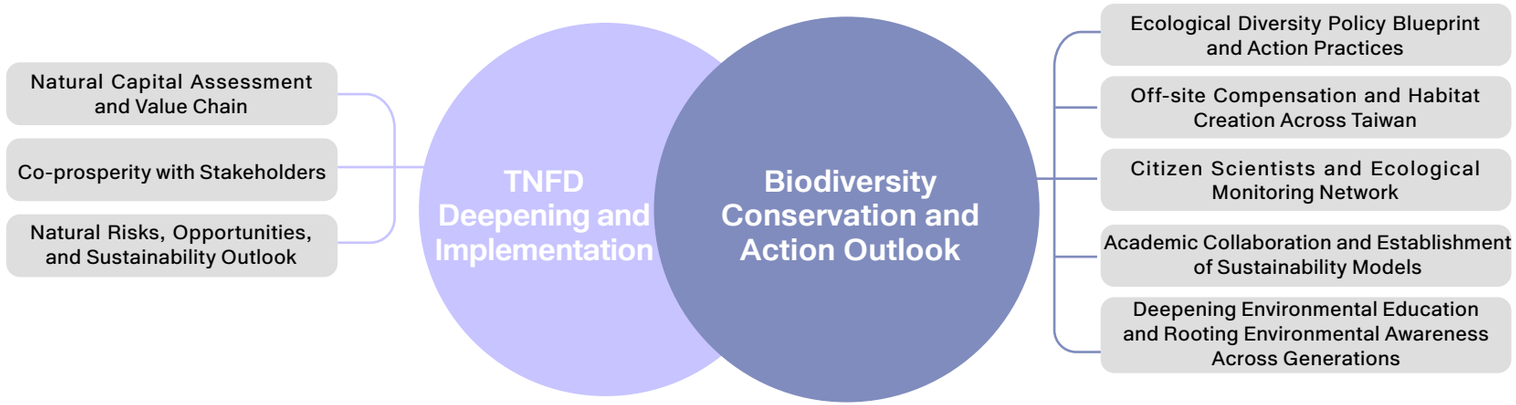
Future Expectations

5 . 1 Deepening and Implementation of TNFD
5 . 2 Biodiversity Action Outlook



5.1 Deepening and Implementation of TNFD

ACC is committed to incorporating natural capital into the core of corporate decision-making and will continue to deepen the practice and application of the TNFD framework in the future. This year, through the LEAP method, we have planned the implementation strategies and specific action plans for nature-related risks and opportunities concerning ACC's operations, aiming to build a more comprehensive nature-related risk management system. Under this vision, we will continue to strengthen existing natural impact mitigation measures and expand the scope of ecological phytoremediation as well as investments related to natural conservation. Through systematic native species restoration programs and ecological surveys, we aim to achieve the vision of harmonious coexistence between the mining area and nature. In the future, we will also dynamically review the results of ecological restoration to optimize restoration efficiency and effectiveness. We will also continue to deepen the technologies for extraction and processing, while consistently implementing ACC's biodiversity policy and fulfilling our commitment goals.



Natural Capital Assessment and Value Chain

In the area of nature-related financial disclosures, to more accurately understand the impact of operational activities on the natural environment, we plan to use the non-market valuation models of environmental economics to quantify natural capital into measurable monetary values and incorporate it into the value chain assessment. This innovative assessment method not only incorporates the core values of TNFD into business operations at its foundation but also helps us quantify the Company's reliance on and positioning within ecosystem services. It will also assess the potential financial impact of nature-related risks, thereby uncovering business opportunities created through nature conservation and biodiversity management. On this basis, we continue to conduct regular ecological surveys and establish a long-term, comprehensive ecological monitoring database. These first-hand scientific data will help monitor biodiversity changes in the mining area and surrounding regions, enabling timely assessment of the actual effectiveness of restoration programs. They will serve as a crucial basis for optimizing conservation measures and also set a leading example for cement industry players both domestically and internationally.

Co-prosperity with Stakeholders

In the process of promoting sustainable development, establishing deep conservation and effective communication mechanisms with stakeholders is a key foundation for achieving positive natural impacts. ACC places special importance on interaction and cooperation with local communities and indigenous peoples. By establishing the ACC Service Center as a dedicated unit, it maintains community relations and ensures smooth two-way communication channels. We actively participate in community activities, gaining an in-depth understanding and systematically grasping local needs, demonstrating our positive commitment to the natural environment and social development through specific actions.

In advancing various sustainability and natural initiatives, ACC prioritizes respecting local culture and safeguarding community interests, establishing a comprehensive benefit-sharing mechanism (as detailed in Section 1.3 Stakeholder Engagement). Through specific actions such as employing local talent, assisting in community development, providing housing repairs, and sponsoring cultural education and financial support, we create positive value in both natural and social development. These initiatives not only promote community development but also deepen local partners' recognition and involvement in environmental protection.

ACC firmly believes that only by collaborating with local stakeholders and implementing transparent information sharing and commitment to mutual benefits based on consensus and trust, can we ensure the sustainable promotion of nature-positive actions. Through close collaboration with the community, we are able to closely integrate environmental protection with community development, achieving a positive impact on the natural environment through our operations while creating shared value for both the business and society. Such partnerships are the key element in successfully driving nature-positive actions.

Natural Risks, Opportunities, and Sustainability Outlook

Looking ahead to the coming year, ACC will initiate a comprehensive environmental impact assessment plan for its quarries, including natural ecological surveys, environmental monitoring, and social impact assessments. This will help us establish a more complete environmental baseline, predict and assess the impact of our operations on the environment, and propose more effective mitigation, adaptation, and compensation measures. We firmly believe that only through rigorous assessments and continuous improvement mechanisms can we ensure a sustainable balance between corporate operations and the natural environment. Through systematic planning and implementation, we aim to deeply embed the core objectives of the TNFD framework into ACC's operations, achieving sustainable coexistence between the Company and nature.

5.2 Biodiversity Action Outlook

ACC has long been committed to promoting biodiversity conservation. Through systematic surveys and scientific management methods, we continue to strengthen the resilience of ecosystems both inside and outside of the mining areas. In future biodiversity conservation planning, we will further integrate international conservation trends with local practical experiences to build a more comprehensive biodiversity conservation system.

Ecological Diversity Policy Blueprint and Action Practices

ACC follows its biodiversity policy of "Avoid, Reduce, Restore, and Off-site Compensation" as the core principle, continuously improving its biodiversity conservation strategies. We will establish more comprehensive biodiversity assessment indicators and monitoring actions to reduce the impact of mining operations on ecosystems and assess ACC's positive natural impact on biodiversity conservation. We will continue with the mining area rehabilitation plan to restore the original ecological functions and species diversity. For the indigenous species within the mining area, we plan to establish a more comprehensive species database. We will also strengthen the promotion of the off-site compensation plan, advocate for the protection of local endemic species, and support ecological environmental education.

Off-site compensation and the creation of butterfly habitats across Taiwan

In response to the ecological impacts of mining activities, ACC has initiated an off-site compensation plan. In addition to establishing native plant gardens and creating butterfly habitats near the mining area, the Company is also promoting a nationwide butterfly habitat creation plan. This initiative not only expands the scale of existing butterfly habitats but also continues to support the establishment of new habitats in suitable areas, collaborating with organizations interested in developing butterfly habitats. These butterfly gardens not only serve as concrete practices of ecological compensation but also act as important environmental education hubs. In the future, we will strengthen the connections between each butterfly habitat, establish a comprehensive monitoring network, and track habitat quality and butterfly population changes to ensure the tangible benefits of the off-site compensation measures.

Citizen Scientists and Ecological Monitoring Network

To enhance public participation in conservation efforts, we plan to expand the scale of the Citizen Scientist Program. Through systematic training programs, we aim to cultivate more local ecological survey talents and establish a long-term citizen science monitoring network. Through the transmission of citizen scientist spirit and ecological survey skill training, we will convey the importance of biodiversity to more people, especially community residents and the younger generation.

Academic Collaboration and Establishment of Sustainability Models

In terms of academic collaboration, we will strengthen partnerships with research institutions and launch more diverse collaborative projects. These collaborations will focus on: Habitat requirements research for key species, ecosystem service function surveys and value assessments, innovations in restoration techniques, and the exploration of emerging conservation issues. We will also actively participate in relevant academic conferences and collaborate with domestic and international sustainability initiatives and industry peers, bringing together expertise from the industry, government, academia, and research sectors to jointly explore more effective conservation strategies and develop sustainable practices for the mining industry.

Deepening Environmental Education and Rooting Environmental Awareness Across Generations

In promoting ecological education, we will fully invest in the operational development of the Asia Cement Ecological Park, from the efficient establishment of the park's infrastructure and professional operation management, to the systematic environmental education curriculum, and the training and development of environmental education staff. All initiatives will be driven by the high standards of environmental education. At the same time, we will continue to deepen existing environmental education programs, integrating butterfly garden ecological experiences, mobile teaching through the science popularization train, and the Citizen Scientist empowerment program, to create a more comprehensive environmental education system. Through the integration of field observations, immersive experiences, scientific research, and conservation education surveys, we aim to establish a more compelling and inspiring educational model, encouraging more people to engage in ecological conservation efforts. Additionally, we will strengthen strategic partnerships with schools at all levels, jointly develop localized specialty lesson plans, deepen ecological conservation education, and cultivate a stronger sense of sustainability and proactive engagement among the next generation.

Conclusion: ACC's Sustainable Vision

Looking ahead, ACC will continue to deepen the implementation of the TNFD framework and its localized application. At the same time, through innovative conservation methods and comprehensive action plans, we will enhance the depth and breadth of biodiversity management. From the financial quantification of nature-related risks to tangible ecological conservation actions; from habitat protection within mining areas to off-site compensation for butterfly habitats across Taiwan; from local community participation to cross-domain academic collaboration, we are committed to building a comprehensive natural capital governance system. Adhering to the firm belief that "economic development and environmental protection can coexist", ACC is committed to driving various sustainability initiatives with a more proactive attitude. Through innovative thinking and practical actions, we demonstrate the Company's mission and responsibility for the sustainable development of the Earth. We firmly believe that through these systematic sustainability practices, we can create more shared value for businesses, society, and the natural environment, achieving the sustainable coexistence of enterprises and nature. ACC will continue to demonstrate its commitment and determination in biodiversity conservation through tangible conservation outcomes, while also setting a benchmark for the industry, advocating for and inspiring more businesses and organizations to engage in nature-related governance and ecological conservation, working together to make a positive contribution to sustainable development.

Appendix

ACC Hualien Plant's GHG emissions over the past three years (tons): Please refer to 2-3.

	2021	2022	2023
Scope 1	2,911,257	2,907,129	2,634,142
Scope 2	162,337	166,588	148,714
Scope 3	103,710	97,239	100,146

ACC Hualien Plant's air pollution emissions over the past three years (tons): Please refer to 2-3.

	2021	2022	2023
Nitrogen Oxide (NOx)	4848.000	3975.996	3561.354
Sulfur Oxide (SOx)	495.310	423.850	372.762
Volatile Organic Compounds	0.00455	0.00448	0.00449
Particulate matter (PM)	1257.700	1060.659	933.743
Mercury Emissions	0.044	0.037	0.032

ACC Hualien Plant's water resource information over the past three years (tons): Please refer to 2-3.

	2021	2022	2023
Groundwater	2,187,944	2,182,825	2,574,794
Surface water	0.000	0.000	0.000
Tap water	0.000	0.000	0.000
Total water intake	2,187,944	2,182,825	2,574,794
Recycling and reuse volume	13,140,000	13,414,915	12,705,145
Total water consumption	2,077,256	2,095,516	2,466,409

The waste information for the past three years at the ACC Hualien plant (tons): Please refer to 2-3.

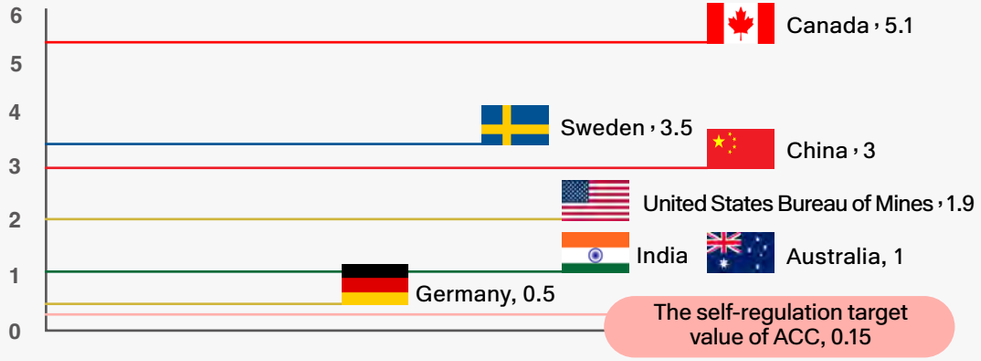
		2021	2022	2023
Total amount of general waste (tons)		0	0	0
General waste	Outsourced recycling or in-house reuse	3,765	2,573	2,716
Total amount (tons)	Total amount of general waste (tons)	67	48	40
Recycling rate [= Reuse / (Reuse + Incineration)]		98%	98%	99%

Monitoring of blasting vibration velocity at ACC Hualien Plant

	2021	2022	2023
Average vibration value (cm/sec)	0.04	0.049	0.052

* The smallest vibration threshold perceptible to humans is approximately 0.051 cm/sec.
Source: https://explosives.org/vibration-basics/human-perception/

Regulations on blasting vibrations for buildings in various countries



ACC Hualien Plant's mining rehabilitation area: Please refer to 4-1

	2021	2022	2023
Planting of native trees (number of trees)	4,223	4,113	3,094
Vegetation greening (hectares)	1.8	1.9	1.4
Cumulative greening (hectares)	68.6	70.5	71.9
Mining operation (hectares)	20	20	17
Greening ratio (%)	77.43%	77.90%	80.88%

GRI Standards Comparison Table

RI 101; Biodiversity 2024 Guidelines and Disclosure Items		Corresponding chapter of this report
GRI 101-1	Policies to halt and reverse biodiversity loss	1.2 ACC TNFD Strategic Actions, ACC's Biodiversity Policy
GRI 101-2	Management of Biodiversity Impacts	1.2 ACC TNFD Strategic Actions, ACC's Biodiversity Policy 2.3 Current Policies and Specific Actions
GRI 101-3	Acquisition and Benefit Sharing	1.3 Content of Stakeholder Engagement Chapter 4 Biodiversity Conservation and Restoration
GRI 101-4	Identification of Biodiversity Impacts	3.2 "Evaluate" The Dependence on and Impact of ACC Hualien Plant on Nature
GRI 101-5	Locations with Biodiversity Impacts	3.1 "Locate" The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature
GRI 101-6	Direct Drivers of Biodiversity Loss1	3.2 "Evaluate" The Dependence on and Impact of ACC Hualien Plant on Nature
GRI 101-7	Changes in Biodiversity Status	Chapter 4 Biodiversity Conservation and Restoration
GRI 101-8	Ecological Services	2.1 Leap Assessment Process 3.2 "Evaluate" The Dependence on and Impact of ACC Hualien Plant on Nature

Comparison Table of Core Disclosure Indicators of TNFD

Asia Cement TNFD Core Disclosure Indicators - Modified from the TNFD Guidelines			Corresponding chapter
	Climate change	GHG emissions	2.3 Current Strategies and Specific Actions, TNFD Data Sheet
A1.0	**Changes in land / fresh water / marine use**	Total space footprint	Chapter 3 Construction and Implementation of LEAP Methodology , TNFD Data Sheet
A1.1		Changes, restoration, and sustainable management of land/freshwater/marine use	Chapter 3 Construction and Implementation of LEAP Methodology, 4.1 Vegetative Greening Practices
A2.0	**Pollution / pollution removal**	Pollutants discharged into the soil, categorized by wastewater discharge types	None
A2.1		Waste handling amount for reduction, reuse, and recycling	TNFD Data Sheet
A2.2		Waste generation and disposal	2.3 Current Strategies and Specific Actions, TNFD Data Sheet
A2.3		Light pollution and noise pollution	TNFD Data Sheet (blasting vibration value)
A2.4		Non-GHG air pollution	2.3 Current Strategies and Specific Actions, TNFD Data Sheet
A3.0	**Resource use / supplement**	Water resource extraction volume and water usage in water-stressed areas	2.3 Current Strategies and Specific Actions, TNFD Data Sheet
A3.4		Total volume of high-risk natural products used from land/marine/freshwater	The natural products used by ACC include cement, coal, iron, natural gas, aluminum, and fossil fuels
A4.0	**Invasive species and others**	Measures taken against non-intentionally introduced invasive species	3.2“Evaluate” The Dependence on and Impact of ACC Hualien Plant on Nature
A5.0	**Natural state**	Ecological system	3.1 Locate” The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature
A5.1		Ecological system scope	3.1 Locate” The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature
A5.3		Risk of species extinction	3.1 Locate” The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature
A5.4		Number of species	3.1 Locate” The Relationship Between the Main Operating Locations of ACC Hualien Plant and Nature
A6.0	**Ecological Services**	Ecosystem services on which the organization depends/influences: Measuring changes in the availability and quality of ecosystem services	3.2“Evaluate” The Dependence on and Impact of ACC Hualien Plant on Nature

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