



SUSTAINABILITY R E P O R T



2022

Sustainability Report



SUSTAINABILITY REPORT



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2022

Sustainability Report

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Editorial Policy

Thank you for reading Hsinchu Park Bureau, National Science and Technology Council 2022 Sustainability Report. This report is published by Hsinchu Park Bureau (hereinafter referred to as HSPB), National Science and Technology Council (hereinafter referred to as NSTC) to share with the stakeholders who are concerned about the economic development, environmental protection, employee care and social care, in order to demonstrate our commitment and dedication to sustainable development of the park.

Report Scope and Time Information

This report covers the Hsinchu Science Park Bureau of the National Science and Technology Council and its coverage (Hsinchu Science Park, Jhunan Science Park, Tongluo Science Park, Longtan Science Park, Yilan Science Park, and Hsinchu Biomedical Park), focusing on the management actions and performance information of HSPB in promoting sustainable development from January 1, 2021, to December 31, 2022. There are no significant changes in organization and supply chain between this report and the 2020 annual report. There is also no impact of information recoding. The data disclosed are compiled and analyzed by each division of HSPB, which are then presented in conventional numerical description. The Report was released upon approval by the Director-General.

- Latest released version: Published in August 2023
- Later released version: Published in August 2025. Reporting cycle 2 years
- Previously released version: Published in August 2021

Report writing guidelines and principles

This report is structured according to the new requirements of GRI Standards (2021) issued by GRI and AA1000 AccountAbility Principles (2018), which are designed to reveal the strategic goals, industry development, operational governance, innovation, life functions and human right in HSP sustainability development. According to the guidelines listed, the relevant programs and initiatives are as follows:

- GRI Standards (2021) by Global Reporting Initiative, GRI
- Sustainable Development Goals, SDGs
- AA1000 AccountAbility Principles (2018)
- Task Force on Climate-Related Financial Disclosures, TCFD

Third party verification

In order to ensure that the content of this report complies with information disclosure requirements of GRI Standards (2021), British Standard Institution (BSI) is entrusted to verify according to GRI Standards 2021 and AA1000AS v3 (Assurance Standard) Type 1 Moderate Level Assurance. and issue Independent Assurance Opinion Statement as declaration of compliance with GRI Standards requirements, so as to improve the transparency and reliability of content in this report.

Contact information

HSPB has set up a specialized website for voluntary review of Corporate Social Responsibility (CSR) and sustainability goals, allowing stakeholders who are concerned about the park development to understand the efforts and achievements of HSPB in implementing CSR and sustainable development while using the feedback from public as a basis for continuous improvement.

Should you have any suggestions regarding the HSPB Sustainability Report, please provide us with your valuable comments through the following contact information:

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Sustainability special column: <https://web.sipa.gov.tw/CSRWeb>



Message From Director-General



Innovation As Our Motive, Sustainability as Our Core

Hsinchu Science Park (HSP) has become the leading science and technology industry, as well as the worldwide science park par excellence after undergoing 42 years of development. “Innovation as our motive, sustainability as our core”, as our principle value in 2023, we will confront the trend of net-zero carbon emission in 2050 and rapid development of all competitive industries around the globe. As part of the key clusters of advanced technology worldwide, Hsinchu Science Park Bureau (HSPB) aspires to drive the growth of Taiwan industries in the upcoming generation with innovation as our dynamic. On top of that, we will also focus on sustainability-oriented industrial integrations and partnerships, progressively establishing a sustainable culture in science parks.

The expanding of HSP is ongoing. Hsinchu Baoshan Expansion Area is planned for research and development (R&D) of advanced semiconductor manufacturing and mass production. Apart from park expansion and factories construction, HSPB is committed to be powerful backbone for park manufacturers and practitioners. In order to fulfill their childcare needs, Du -XSing non-profit kindergarten was established in the park in August 2022. Ten classes with a total of 262 children have been enrolled. A non-profit kindergarten is also planned for the first building at X-site in the coming future. HSPB provides affordable, quality and accessible education and healthcare services to allow parents to work at ease.

Corresponding to the mission to persistently promote the development of hi-tech industries in our country and passion to enhance international communication, HSP has participated in International Association of Science Parks and Areas of Innovation (IASP) and Asian Science Park Association (ASP) annual conferences in 2022. Through the sharing of experiences and exchanging of ideas with other science parks, we manage to accelerate the innovation and transformation of science parks, while facilitating medical industries to venture into global market. We collaborate with government agencies and medical groups from different countries in both business and technology exchanges.

Echoing the global net-zero carbon emission trend and enhancement of domestic reduction as well as leading industries in the country towards this target, HSPB and park manufacturers constantly encourage greenhouse gas (GHG) and carbon emission reduction as well as energy conservation. Moreover, we also actively introduce more environmental-friendly industries, in particular alternative energy resources and biotechnology industries, which are innovative yet in line with the trend. This aims to create an ecological science park and thus a sustainable development both technologically and environmentally. In line with the National Science and Technology Commission's 2030 vision of Innovation, Inclusion and Sustainability, HSPB will continue to move towards the ideal of a quality park with sophistication, diversity, quality of life and energy saving to ensure the momentum of industrial expansion and development, maintain the sustainable advantages of Taiwan's high-tech industry competitiveness and thus continue to reach new heights.

2021-2022 Sustainability management performance

Environmental Protection Performance

Counselled 20 manufacturers on water conservation, potential water saving up to 597,000 metric tons, equivalent to 10% of Baoshan Reservoir.

Counselled 28 manufacturers with potential power saving up to 35.56 million kWh (128,016GJ) and reduced emission of 17,967 metric tons of carbon dioxide equivalent (CO₂e), equivalent to carbon sequestration of 46 Daan Forest Park in a year.

As of December 2022, the total capacity of PV system installed in the park's factories and public facilities achieved 45.48MW.

HSPB continues to actively promote waste recycling. The percentage of waste recycling in the park progressively increased from 87.61% in 2019 to 89.93% in 2022, exceeding Taiwan's sustainable development target of 88%.

To promote environmental education in the plant, 103 visits were received with 3,391 participants in total.

A total of 40 Electric Vehicle (EV) Charging Bays have been built to contribute to energy conservation and carbon reduction.

At present, 22 manufacturers or institutions have participated in the foster-park program in Hsinchu Science Park, with an area of 28.6 hectares in 2022.

Social Friendly Performance

Introduced 79 new investment projects with a total investment amount of NTD 34.734 billion.

As of the end of 2022, Zhuke has accumulatively mentored 539 entrepreneurial teams, of which 224 start-up companies are in continuous operation, with a cumulative registered capital of approximately NTD 5.9 billion.

In 2022, there are 14 approved subsidies for the industry-academia collaboration, 162 engineers involved in research, and an estimated NTD 60 million in research and development funds to attract manufacturers.

The professional talent training plan held 582 courses publicly, and the number of trainees reached 18,060.

A total of 22 awards were awarded for the Innovative Product Award and the R&D Achievement Award.

The 2023 annual labor inspection business implementation results, the Hsinchu Science Park Administration won the honor of "excellent".

In 2022, 1,333 labor inspections, completion inspections of dangerous machinery were conducted.

Actively organized 27 labor laws and hazard prevention publicity sessions, with 1,530 participants.

The amount of subsidies for local construction around the park from 2021 to 2022 was about NTD 563 million.

HSPB conducted a total of 30 neighborhood cleanup activities.

Operational Management Performance

The turnover in 2022 will increase by 1.59% compared with 2021, and the overall industry performance is stable and ready to grow.

The number of employees in 2022 was 6.33% higher than that in 2021, which is a new record high.

2,180 people participated in the anti-corruption decree publicity activities.

HSPB held 13 gender mainstreaming training sessions, totaling 30 hours, with an average of 35 employees participating in each session.

The green procurement ratio respectively in 2021 and 2022 were achieving 100% and 99.82%.

By the end of 2022, HSPB has established sisterhood with 31 Related agencies in 16 countries.

SDGs Practice

Strategies and Practices of HSPB

No Poverty(1.4)

With the core value of Innovative Thinking and Innovative Service, HSPB conducts projects such as Science Park Emerging Technology Application Project, Booster Program for Commercialization of Biomedical Products and Precision Health Inter-Disciplinary Promotion Program, as well as Hsinchu Science Park Talent Hub to help young entrepreneurs in pursuing their dreams and has established Young Entrepreneur's Studio and Yilan Entrepreneur's Studio, which are exclusively tailored for young entrepreneurs.



Good Health and Well-Being(3.d)

In order to provide health care to the employees of park manufacturers, 29 first aid training courses, 22 cardiopulmonary resuscitation (CPR)/automated external defibrillator (AED) classes, 1 ultrasound examination, 14 eye pressure tests and vision examinations, as well as 81 other multi-faceted health promotion courses were held in 2022, which raise the employees' awareness of their own health and enable the staff clinic to contribute to health care of the park.



Quality Education(4.4)

Promote the Science Park Talent Cultivation Subsidy Program, providing NTD 9 million and NTD 8.783 million in 2021 and 2022 respectively, with 12 course programs subsidized each.



Gender Equality(5.1)

HSPB held 13 gender mainstreaming training sessions from 2021 to 2022, totaling 30 hours, with an average of 35 employees participating in each session.



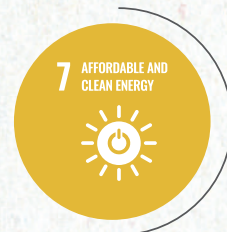
Clean Water and Sanitation(6.3)

Implement water conservation measures: Replace old-fashioned water installations to improve water production rate, reclaim rainwater and air-conditioner condensate. Counseled 20 manufacturers on water conservation, potential water saving up to 597,000 metric tons. Industries with higher water consumption such as semiconductor and optoelectronics should achieve above 85% of water reclamation rate to conserve water resources.



Affordable and Clean Energy(7.1)

Proactively guide manufacturers to install renewable energy resources equipment. As of December 2022, the total capacity of solar photovoltaic (PV) system installed in the park's factories and public facilities achieved 45.48MW



Decent Work and Economic Growth(8.5)

HSPB is shaping the park to provide employment and cultivate high quality manpower, bring in investment and actively creates job opportunities. According to the statistics, by the end of 2022, there were 175,217 employees in the six parks of HSP and the number of employees in 2022 was 6.33% higher than that in 2021, which is a new record high.



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Industry, Innovation and Infrastructure(9.5)

HSPB has consolidated the existing resources of the Project for Industry-Academia Collaboration on Innovative R&D in Science Parks and transformed to promote the Science Park Emerging Technology Application Project since 2021. With industrial demands as the guide, HSPB has initiated cross-industry collaborations while combining the strengths of academia and research institutes to jointly invest in the R&D of key technologies. In 2022, 14 grants were approved and 162 engineers were engaged in research, attracting NTD 60 million of funding in R&D.

10 REDUCED INEQUALITIES



Reduced Inequalities(10.3)

Conducted Convention on the Elimination of All Forms of Discrimination against Women (CEDAW)-related courses and training satisfaction surveys, pre- and post-course assessments, with a 90% of participation rate. Provide a sex discrimination complaint mechanism, such as a complaint mailbox, and assign dedicated personnel to handle complaints in accordance with established procedures.

11 SUSTAINABLE CITIES AND COMMUNITIES



Sustainable Cities and Communities(11.3)

The dormitories are renovated according to their conditions and will continue to be maintained and managed properly in line with personal and quality needs, so as to improve the employees' living environment. The amount of subsidies for local construction around the park from 2021 to 2022 was about NTD 563 million.

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



Responsible Consumption and Production(12.5)

HSPB continues to actively promote waste recycling. The percentage of waste recycling in the park progressively increased from 87.61% in 2019 to 89.93% in 2022, exceeding Taiwan's sustainable development target of 88% which shows that HSPB's counseling is effective.

13 CLIMATE ACTION



Climate Action(13.3)

HSPB collaborated with ASIP to establish Water, Power and Gas Supply Committee, which is responsible for compilation of information related to water, power and gas consumption as well as drafting of power-saving measures.

Set up drought contingency advisory group, in order to conduct a response meeting that involves relevant units to discuss water shortage response measures and to coordinate water allocations in the occurrence of a drought.

In response to the impacts of various disaster types, HSPB established a Disaster Relief and Recovery Response Team.

15 LIFE ON LAND



Life on Land(15.5)

HSPB promotes the designation of leopard cat corridor to minimize interference with the ecological environment of the original species and sets up 10 monitoring points to record their activities. The monitoring results showed low activity of leopard cats within park area and the leopard cat corridor provides a viable solution for the coexistence of corporate development and animal habitat.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



Peace, Justice and Strong Institutions(16.6)

A total of 2,180 participants attended 2021-2022 Integrity Booth Anti-Corruption Campaign. With the aim to incorporate integrity education, student group visits are carried out with the collaboration between Civil Service Ethics Office and Science Park Exploration Museum. A total of 4 sessions on promoting campus integrity and anti-corruption for all were organized, with about 144 students participating.

17 PARTNERSHIPS FOR THE GOALS



Partnerships for the Goals(17.16)

HSP is currently a member of International Association of Science Parks and Areas of Innovation (IASP) and Asian Science Park Association (ASPA), communicating with science parks and manufacturers from various countries in order to promote and attract investment. Since 2018, Director-General of HSP, Wayne Wang, has taken over the chairmanship of ASPA. HSPB also raises the visibility of the park and its manufacturers through various activities such as exhibitions, visits and investment recruitments.

Special Column -Net-Zero Program

Climate change has been the top challenge around the world. More than 130 countries have put forward “2050 Net-Zero Emission” declarations and actions. Following this global trend, our country as well prioritizes it as part of our development plans. In March 2022, Taiwan officially published “Taiwan’s Pathway to Net-Zero Emissions in 2050”, which provides the action pathway to achieve “2050 Net-Zero Emissions”. HSP as one of the most important technological industry in the world, HSPB has taken the lead in bringing park manufacturers towards net-zero carbon admission. Early in 2020, we have established an advisory group on energy conservation, training the manufacturers to develop ability in GHG inventory and including international initiatives or other carbon reduction strategies. The team also provides guidance in optimization of manufacturing process, utilization of alternative chemicals with carbon emission potential and low-carbon fuels, promoting removal of fluorinated gas exhaust as well as other corresponding ways of improvement.

Besides creating a comprehensive sustainability action force, HSPB also regularly conducts “Greenhouse Gas Management Seminar”, “Task Force on Climate-Related Financial Disclosures (TCFD)” and “Internal Carbon Pricing” courses ,a total of 6 sessions, about 250 people participated together in 2021-2022. These actions help in nurturing all-round personnels in carbon reduction and energy saving based on existing regulations, hoping for early risk identification of climate change from manufacturers to enhance carbon management and at the same time improve GHG management.



Greenhouse Gas Management Seminar



Task Force on Climate-Related Financial Disclosures (TCFD) Course

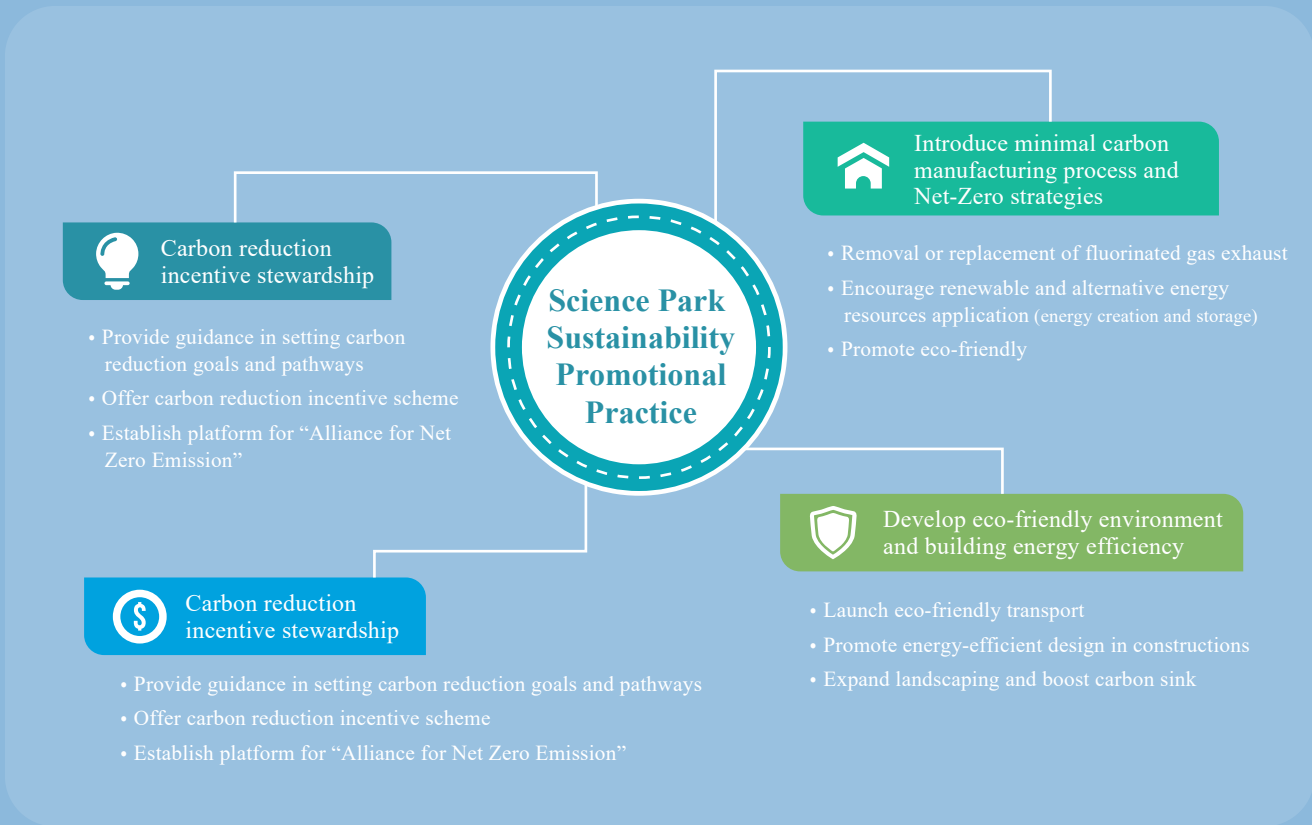


Internal Carbon Pricing Course

Furthermore, HSPB is also actively linking the upstream, midstream and downstream manufacturers to form an industrial chain of recycling resources, which then minimizes waste production and reinforces sustainability of resources while promoting ecological design and circular economy. Green transport is also launched, such as electrical tour bus, YouBike and electric car charging piles in order to achieve park sustainability. Besides, low-carbon environment is introduced by planting trees and constructing energy-efficient buildings.

Creating a sustainable park

Main Plans	Complementary Plans
Encourage industries to import eco-friendly manufacturing process and low-carbon resources	Build eco-friendly transport environment in park area
Implement industrial GHG inventory and substantial reduction	Improvement in energy efficiency of constructions and promotional demonstration of ecological parks
Promote ecological design and circular economy	Sustainability management and creation of carbon-free environment
	Awareness education in adaptation to climate change



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On 26th September 2022, “Interdisciplinary Technology Forum” was co-organized by three parks and The Allied Association for Science Park Industries. This forum emphasized “Net-Zero Carbon Emission” and invited many experts from Industry, Science and Technology International Strategy Center (ISTI) of Industrial Technology Research Institute (ITRI) to share the new ecosystem and business mode derived from the current global trend. A total of 82 participants from the fields of industry, government, academia and research were successfully enrolled in this interactive event.



A group photo of distinguished guest with forum speakers
 (2nd from right, Chief Secretary of HSPB Jing-Chiou Yu; 2nd from left, The Allied Association for Science Park Industries Mr. 張致遠秘書長)

Hsinchu Science Park Sustainability Management

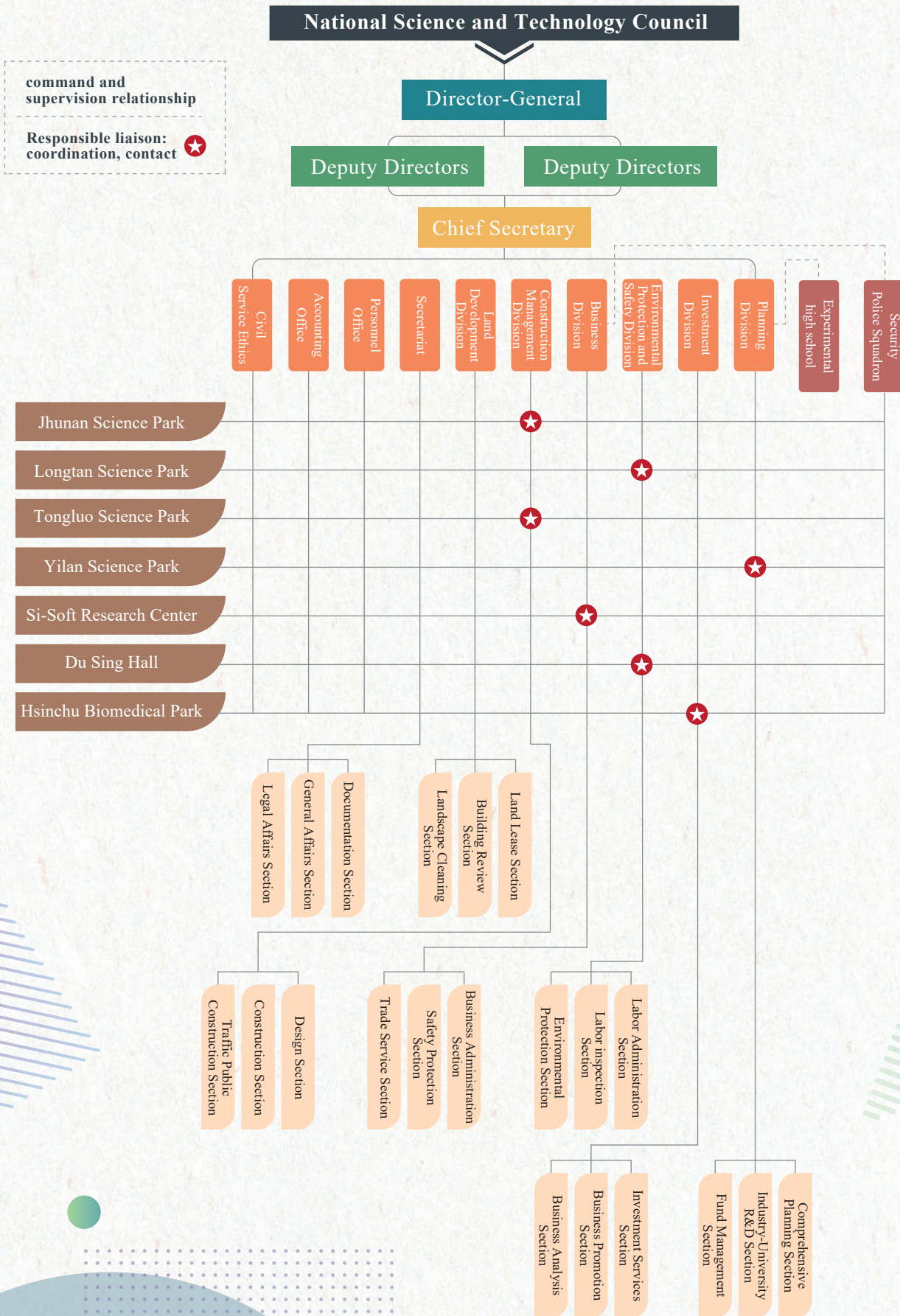
1.1 About HSPB

HSP was established in 1978 through the propagation of national policy. As the first science park in the country, HSPB established at No. 2, Xin'an Road, East District, Hsinchu City, it is responsible for the development, operation and management of science parks under the leadership of National Science and Technology Council (NSTC), covering six parks of approximately 1,375 hectares namely Hsinchu Science Park, Jhunan Science Park, Longtan Science Park, Tongluo Science Park, Yilan Science Park and Biomedical Park. The primary goals are to recruit hi-tech industries and talents besides enhancing regional innovative and integrative power, which can stimulate domestic industrial technology research and innovation while spurring development of hi-tech industries.

Organization Chart

In accordance with The Organization Act of the Hsinchu Science Park Bureau, National Science and Technology Council, the bureau is composed of a Director, two Deputy Directors and a Chief Secretary. It further branches into six divisions, in particular planning, investment, environmental protection and safety, business, construction management and land development, as well as four offices namely secretariat, personnel, civil service ethics and accounting. On January 16, 2021, Fu, Jin-Men retired as Deputy Director-General and this post was then taken up by Chief Secretary, Hu, Shi-Min. His position was filled by the head of Planning Division, Yu, Jing-Chiou. On July 27, 2022, the name was changed to Hsinchu Science Park Bureau, NSTC following the organizational reformation.

Hsinchu Science Park, National Science and Technology Council Organization Chart



Departments	Duties
Planning Division	Responsible for drafting, execution and evaluation of park developmental plan strategies; formulation of annual policy plan and budget; monitoring and inspection of important governance and project plans; preparation of official and operational budgets; industry-academia collaboration in innovation research; human resources training; coordination of park's experimental high school activities, as well as public relation affairs.
Investment Division	Engaged in review and analysis of recruitment strategies; consultation, investigation and recruitment of project investments; publicity and image development; planning and running expo and service facilities; international partnerships; domestic and overseas receptions, as well as innovative incubation programs.
Environmental Protection and Safety Division	Responsible for guiding and assisting in industrial relations; counselling and inspection on labor conditions, employee welfare, as well as planning and promotion of environmental protection in the park.
Business Division	Responsible for park manufacturers' business registration; tax exemption verification; planning and coordination of park safety defense system, security guard service, disaster management and emergency plan; protective measures of key infrastructures; permits for foreign technical personnel; logistic; inspection on application of remote control drones; coordination of civil and fire defense; import and export; bonding operations, as well as management fee collection.
Construction Management Division	Handles construction and maintenance of public work; mediates water supply and demand while promoting water conservation policies; acts as safety advisor and issues licenses for electrical technicians; manages transportation and parking lots in the park, as well as coordinates subsidies to local construction.
Land Development Division	Responsible for private land acquisition and expropriation; appropriation of public land, land administration; cadastral arrangement; property acquisition and ownership transfer; land title and property registration; formulation and adjustment of leases and rents of lands, factories and residences in the park; construction management and development of related plans or strategies; review and amendment of urban plans; landscape planning and maintenance, as well as installation of public art.
Secretariat	Safekeeping seals and handling documents and files; managing accounting, procurement and other affairs; review of renovation projects of HSPB office buildings; auditing, coordinating and supervising construction and maintenance projects; handling legal matters such as statutes, agreements, lawsuits and legal consultation; and work not related to other divisions or offices.
Personnel Office	Working out organization structure, personnel appointment and dismissal, relocation, training, remuneration, performance appraisal, attendance and pension.
Civil Service Ethics	Promotes integrity and social responsibility; drafts, promotes and implements integrity laws, preventive measures and proposals for integrity transformation; responsible for declaration of public servants' assets; enacts "Act on Recusal of Public Servants Due to Conflicts of Interest" and practises "Ethics Guidelines for Civil Servants"; handles corruption and malfeasance; deals with protection of official secrets and other civil service ethics-related issues.
Accounting Office	Responsible for HSPB budget, final accounting, generation, and compilation of accounting report; internal audit; procurement inspection and formulation of accounting system.

Budget Scale

Being a public sector, the financial resources of HSPB come from national treasury and self-financing resources. The scope of the budget includes HSPB general fund budget for execution of official duties and special fund budget for maintenance of park operation. All budgets and final accounting are published on the HSPB official website.

Budget Scale of Year 2022 Unit: NTD (100 million)

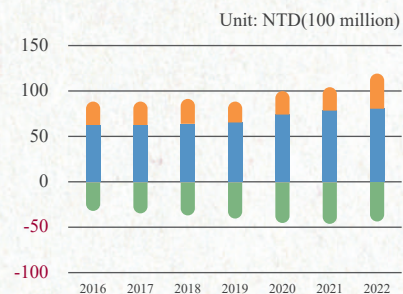
Item	Amount
Final account of general annual expenditure	8.44
Final account of project fund revenue	80.80
Final account of project fund cost	39.70
Final account of fixed assets investment	141.32



All the budgets and final reports are disclosed on the official website of HSPB in an open and transparent manner for all to download online.

Project Fund Utilization

Final account	2018	2019	2020	2021	2022
Total Revenue	62.48	63.80	70.85	78.35	82.74
Total Expenditure	-34.57	-39.05	-42.66	-43.60	-40.98
Surplus	27.91	24.75	28.19	34.75	41.76



High-Efficiency Service

In order to shorten the application process, HSPB is committed to improving administrative efficiency and service quality by providing a “single window service” with comprehensive information system and speedy service flow. Investment application, factory construction application, import and export permits, labor affairs, labor inspection, etc. can all be handled at HSPB. Relevant government departments have also set up branches in the park to provide more efficient administrative service.

Single Window Authorized or Entrusted Services:

Ministry of the Interior (MOI)	Specially designated construction agency approved by MOI. In accordance with authorization of Article 2 of Building Arct, HSPB accepts applications for construction, usage and usage alteration licenses, permit for indoor decoration as well as building public safety attestation.
Ministry of Economic Affairs (MOEA)	HSPB is entrusted by MOEA to handle company and factory registration, trade deals, International Import Certificate of strategic high-tech commodities, Delivery Verification Certificate and Written Assurance Certificate; export of strategic high-tech commodities, application of export permit; issuance of permit for certain specifically designated strategic high-tech commodities to be transited or be transshipped via a commercial port of the Republic of China en-route to certain restricted areas and Certificate of Origin.
Ministry of Labor (MOL)	HSPB is authorized by MOL to perform labor inspection, and employment of foreign workers for specialized or technical duties as stipulated in Subparagraph 1, Paragraph 1, Article 46 of the Employment Service Act.
Environmental Protection Administration (EPA)	HSPB is delegated by EPA to deal with various environmental permits, including water pollution control measures and waste disposal plans, as well as review, issuance and extension of stationary pollution source installation, operating and fuel use permit.
National Science and Technology Council (NSTC)	HSPB is authorized by NSTC to be in charge of inspection of individual waste reusing cases permission in the park.
County and City Government	HSPB is entrusted to handle occupational and safety health, labor inspection, labor relations, gender equity, employee welfare, vocational training, employment service, foreign labor inspection and other labor administrative affairs.

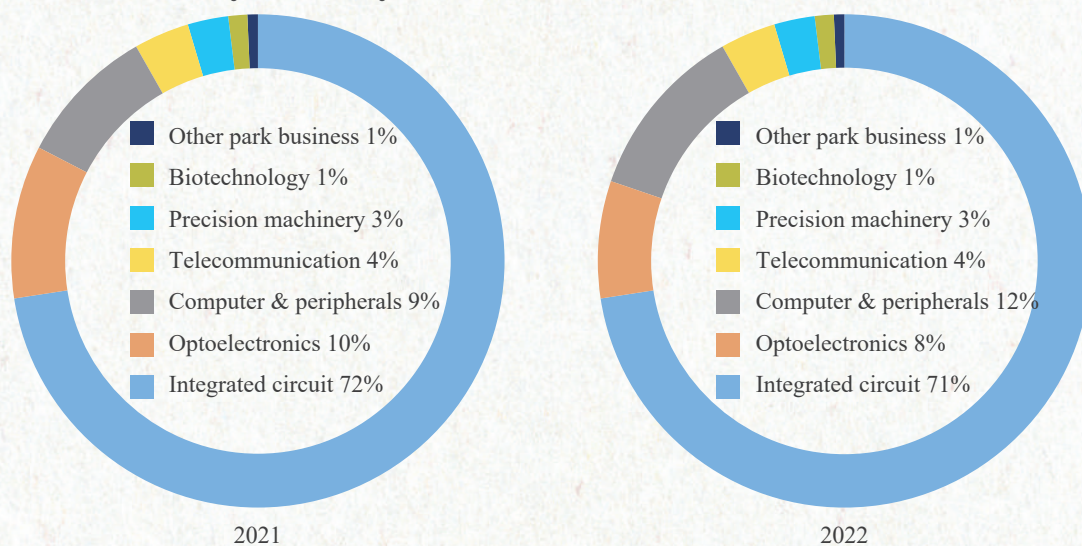
● 1.2 Overview of HSP Development

The world had a tough time from year 2021 to 2022 facing challenges of Covid-19 pandemic, Russo-Ukrainian War, inflation and geopolitics. Despite that, the overall industry of HSP continued to excel in the face of adversity and performed steadily, with revenue growing 1.59% in 2022 compared to 2021, and continuing to grow.

HSP has successfully attracted 49 and 30 new investors in year 2021 and 2022 respectively. The industry continues to diversify into other emerging industries with its original technology as the core, driving the development of eco-industrial chain while maintaining its leading position.

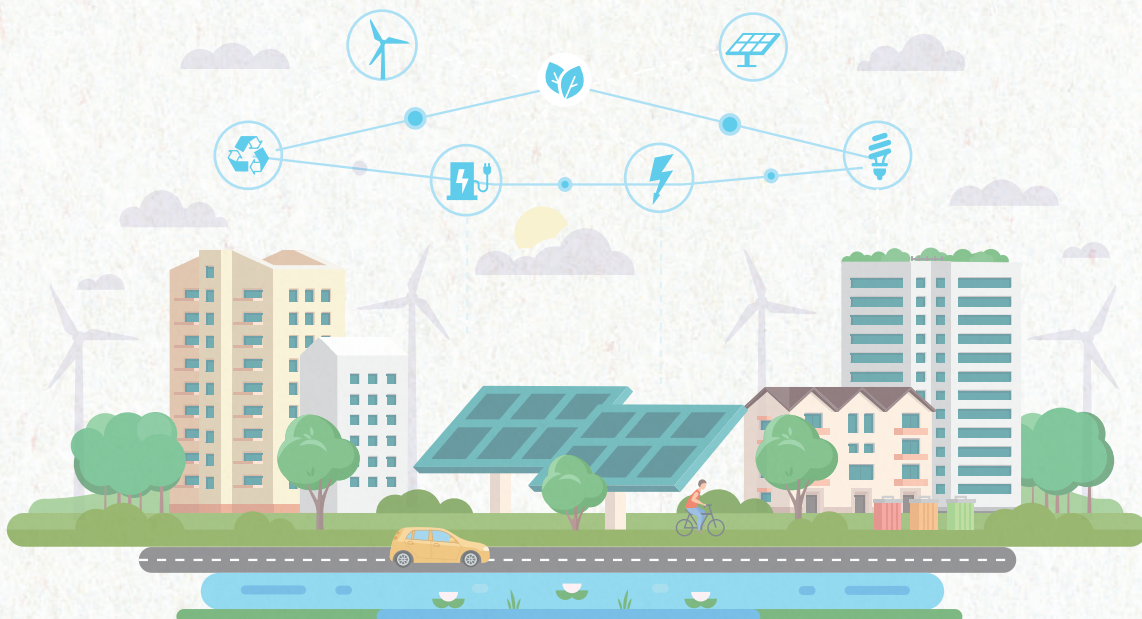
HSP is the benchmark of global high-tech science parks. With its outstanding semiconductor industry cluster and ongoing innovation and transformation, HSP possesses R&D capabilities and competencies in key areas such as 5G, AIoT, automotive electronics and high-performance computing (HPC), holding the key position in global high-tech product supply chain. In 2022, revenue and exports grew by 1.59% and 8.52%, respectively, to NTD 1,613,255 million and NTD 1,729,282 million compared to the same period last year (2021). HSP has not only consolidated its position as a global high-tech industry stronghold, but has also become a key partner for the relevant industries around the world.

■ Revenue Ratio by Industry



Industry	2021-2022 Industry Development Overview
Integrated circuit (IC) industry	<ul style="list-style-type: none"> ➤ Accumulated 17 manufacturers with total approved investment amounting to NTD 19.04 billion. ➤ IC industry is dominated by foundry and IC design and has the largest global market share. Semiconductor proprietors continue the strengths along manufacturing process, and with the increasing demand and penetration of markets in 5G, mobile Artificial Intelligence (AI), HPC, automotive chip and wide band-gap semiconductors, encourage smart applications, cloud services, electric vehicles, green economy and other industries with high market growth potential, creating a new era of diversified industries. Facing the challenges of inflation, geopolitics and global rivalry, HSP will put more effort in R&D and innovation power, develop resilience of industrial chain, enhance core technical skills and cultivate talented manpower.
Optoelectronics	<ul style="list-style-type: none"> ➤ Successfully brought in 7 manufacturers with total approved investment amounting to NTD 1,937 million. ➤ The optoelectronics industry is oriented towards developing key components and upstream optoelectronic materials, while emphasizing the features of own exclusive technology. In recent years, it has been actively investing in development of new applications to meet the rapid changes in market and technology. Lately, HSP's optoelectronic industry has been actively transforming into various niche markets, including battery and cutting-edge display floater materials, automotive displays, Mini/Micro LED and other interdisciplinary applications. Along with the future market trends in automotive display, Augmented reality (AR)/Virtual Reality (VR), clean energy and optical sensing, HSP will uphold its competitive advantages with high technology barrier, market differentiation, high customization and high value-added commodities.

Industry	2021-2022 Industry Development Overview
<p>Computer and Peripherals</p>	<ul style="list-style-type: none"> ➤ Introduced 9 manufacturers with total approved investment amounting to NTD 1,291 million. ➤ As a result of consumption rebound post-epidemic, there is an increasing demand for personal computers and smartphones, and thus accelerating the application of digital technology. Many domestic and foreign enterprises have started to invest in promoting digital transformation, which then drives the growth of orders and revenue of park manufacturers. As 5G officially enters the commercialization phase, network industries such as Artificial Intelligence of Things (AIoT), mobile Internet, cloud computing and e-commerce are on the rise. Computer and peripherals are again leading the industry development trend, which is expected to trigger another wave of thrilling growth.
<p>Telecommunication</p>	<ul style="list-style-type: none"> ➤ Cumulative introduction of 2 manufacturers with total approved investment amounting to NTD 120 million. ➤ The prevalence of 5G communication application and trend of smart cities trigger the rapid growth of new-generation Wi-Fi 6/6E router, 5G Fixed Wireless Access (FWA) and Low Earth Orbits (LEO) satellite, creating huge potential for end-user applications. Furthermore, with the commercialization of LEO satellite industry and change in previous focus on application in scientific observation and military defense, countries attach great importance to the prospect of space industry, creating value in emerging industry applications. Taiwan has a comprehensive yet mature information and communication industrial chain, therefore providing a highly advantageous niche for developing space industry.
<p>Precision Machinery Industry</p>	<ul style="list-style-type: none"> ➤ Accumulated 12 manufacturers with total approved investment amount of NTD 1,765 million. ➤ The intellectualization of precision machinery will become mainstream in the coming future. The smart machinery, which combines sensing, data linking, data processing and autonomous decision making based on Industry 4.0, has been developed and matured. With the cumulative R&D power in hardware market, robots gradually penetrate into markets of smart manufacturing and intelligent automation (IA) application services. HSP manufacturers such as industrial machinery controllers, automated optical inspection (AOI) tools, printed circuit board (PCB) equipment, semiconductor packaging and testing devices, with great potential, have expanded their markets out of localized niche.
<p>Biotechnology Industry</p>	<ul style="list-style-type: none"> ➤ Introduced 31 manufacturers with total approved investment of NTD 10.481 billion. ➤ Biotechnology industry is the fastest growing industry in recent years. In addition to invention of new drugs, the policy of precision healthcare industry has boosted the development of various fields, ranging from precision prevention, precision diagnosis, regenerative medicine, precision treatment, minimally invasive surgery, smart healthcare to health promotion. By leveraging the advantage of information, communication and technology (ICT) in HSP, application industries such as wearable healthcare devices, medical data convergence and AI are maturing. Through the integration of ICT and software technology, biotechnology industry has emerged as a leader.

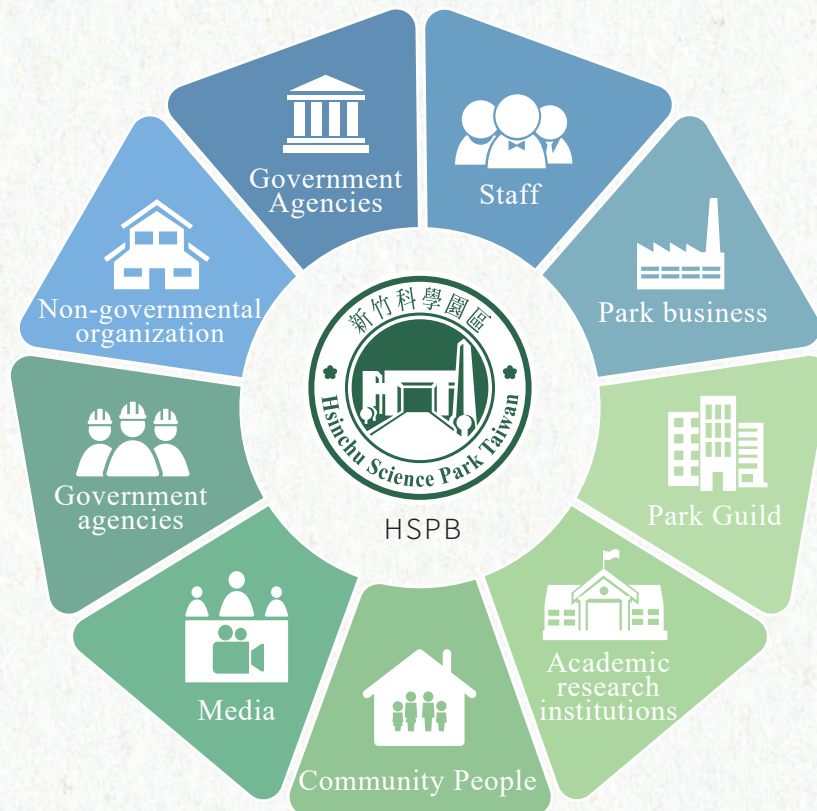


● 1.3 Stakeholder Communication and Identification

In order to pursue sustainable development, we seek to establish effective communication channels with stakeholders who are concerned about development of science parks to understand their needs and expectations towards HSPB, which will serve as an important reference in organizing related projects and plans.

Stakeholder Identification

After discussion with environmental, social and governance (ESG) editorial board, chief officers, head of departments and external experts, and with reference to stakeholder profiles identified by peer group and other benchmark companies, HSPB decides to implement five principles of AA1000 Stakeholder Engagement Standard (SES) to rate and rank the stakeholders. Nine categories of stakeholders are identified, namely employees, government agencies, media, contractors, community members, non-government organizations (NGOs), research institutions, park associations and park bureau.












Stakeholders in 2022

Stakeholder Communication and Response

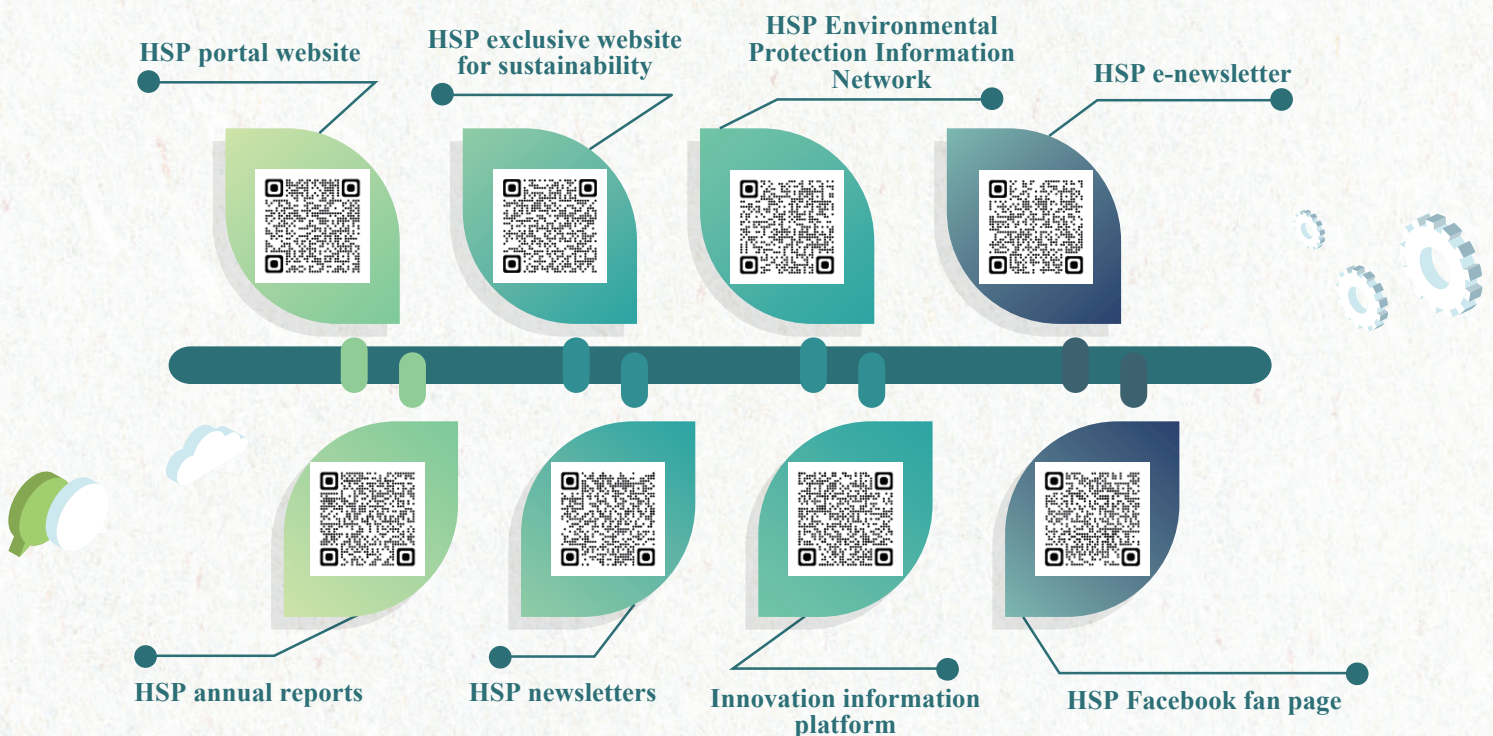
Director-General of HSPB regularly attends joint meeting of directors and supervisors of The Allied Association for Science Park Industries and general meeting of members' representatives, in order to understand their needs, and to solve problems related to operational development, environmental protection or labor disputes, while facilitating HSPB policies implementation. Besides, HSPB also provides different channels of communication with stakeholders.

Stakeholders' Way of Communication and Response

Stakeholder	The significance of stakeholders to the organization and the purpose of communication	Topic of interest	Communication channel	Communication and response
 Government agencies	All operations in the park should follow regulations and authorization by central government. Park manufacturers must follow related laws and regulations. Strengthen the promotion of park laws and regulations to create a safe and healthy park.	<ul style="list-style-type: none"> ➤ Adaptation to climate change ➤ Net zero program ➤ Energy resources management (including stable energy supply) ➤ Circular economy (including waste) 	Official correspondence/as required Convene meeting/as required Counselling/as required	<ul style="list-style-type: none"> ➤ Conduct fire safety counselling. Organized 10 seminars/hands-on training, 5 on-site counselling and 1 emergency response drill within 2021-2022 ➤ Conducted 2 meetings on improvement and maintenance of Hsinchu County/City and Miaoli County Air Quality Index (AQI) within 2021-2022.
 Employee	HSPB daily operation relies on all staff to administer in accordance with law. Pay attention to the opinions of employees and establish good communication channels to ensure that the service efficiency of employees can be fully utilized.	<ul style="list-style-type: none"> ➤ Anti-corruption/Corporate integrity ➤ Life enrichment ➤ Traffic control ➤ Net zero program 	Park newsletter/monthly Annual report publication/annually Employee's performance interview/annually Director-General's email/as required	Face-to-face communication, performance interview, grievance hotline, director's mailbox, single window for immediate response
 Media	The image of park will be affected by news coverage. Ensure the smooth flow of information channels so that we can quickly respond to public opinion on related issues and avoid the spread of wrong information.	<ul style="list-style-type: none"> ➤ Matchmaking of industrial technologies ➤ Local community ➤ Industry upgrading and transformation ➤ Net zero program 	Media events/as required Press conferences/as required	Total from 2021-2022: <ul style="list-style-type: none"> ➤ Issued 68 press releases ➤ Conducted 7 press conferences
 Community Members	Committed to reducing negative impacts on surrounding community along the manufacturing process. Coexist and prosper with the community, promote friendship and neighborliness, maintain good interaction, and maintain two-way communication.	<ul style="list-style-type: none"> ➤ Environment quality ➤ Administrative efficiency ➤ Local community ➤ Traffic control 	Director-General's mailbox/as required Information service window/as required Council survey/as required	<ul style="list-style-type: none"> ➤ Organized 4 health promotion parenting events in 2022 ➤ Organized 30 community clean-up campaigns ➤ Conducted more than 100 surveys and meetings targeting on traffic improvement ➤ Responded to more than 200 submissions on traffic suggestion
 Research institutions	HSPB encourages technology advancement and industry transformation through collaboration with research institutions. Link academic research institutions and industries for bilateral scientific research cooperation and talent cultivation to promote industrial upgrading.	<ul style="list-style-type: none"> ➤ Investment recruitment ➤ Matchmaking of industrial technologies ➤ Local community ➤ Industry upgrading and transformation 	HSP newsletter/monthly Annual report publication/annually Industry-academia collaboration program/as required Platform for professional skills exchange/as required Official correspondence/as required	Conducted 3 technology matchmaking conferences (results presentation)
 NGOs	In order to eliminate doubts concerning environmental impact of park production, Gather suggestions from various parties to ensure proper operation through substantive meetings and visits.	<ul style="list-style-type: none"> ➤ Environment quality ➤ Water and effluent ➤ Adaptation to climate change ➤ Circular economy (including waste) 	Public explanation meeting on environmental impact assessment/as required Environment protection supervisory meeting/as required Park visits/as required Review meetings/as required	Conducted 19 environmental impact assessment (EIA) audit and tracking as well as supervisory meetings for development plans.
 Park associations	Issues related to water, electric and gas supplies are conveyed to park manufacturers with park associations as representative. Promote the park's Net zero program to ensure a stable supply of water and electricity in the park.	<ul style="list-style-type: none"> ➤ Energy resources management (including stable energy supply) ➤ Net zero program ➤ Adaption to climate change ➤ Water and effluent 	Joint meeting of directors and supervisors/annually Professional committee meetings/as required General meeting of members' representatives/annually Counselling of water and energy conservation Counselling of electricity security inspection Power quality meeting Power incident review meeting Hydropower resources supply and demand platform meeting Water and energy saving performance sharing session Education training on water and energy saving	<ul style="list-style-type: none"> ➤ In 2022, HSPB and The Allied Association for Science Park Industries co-organized "Interdisciplinary Technology Forum", which emphasized net zero carbon emission, sharing new ecological chain and business modes derived from this global trend. ➤ Power quality meeting/4 sessions yearly ➤ Power incident review meeting/4 sessions yearly ➤ Hydropower resources supply and demand platform meeting/4 sessions yearly ➤ Water and energy saving performance sharing session/4 sessions yearly ➤ Education training on water and energy saving/4 sessions yearly

Stakeholder	The significance of stakeholders to the organization and the purpose of communication	Topic of interest	Communication channel	Communication and response
 Park manufacturers	The purpose of park establishment is to build an industry cluster and facilitate development. Promote environmental protection-related issues, promote water and energy conservation in the park business, and achieve a sustainable park.	<ul style="list-style-type: none"> ➤ Energy resources management (including stable energy supply) ➤ Environment quality ➤ Net zero program ➤ Traffic control 	Joint meeting of directors and supervisors/annually Professional committee meetings/as required General meeting of members' representatives/annually	<ul style="list-style-type: none"> ➤ Conducted 17 public explanation meetings on environmental topics and regulations, as well as 57 counselling meetings on park operations ➤ Achieved score of 85.57 in overall satisfaction survey among manufacturers ➤ Handled 2 climate related TCFD courses in 2022 ➤ In 2022, guided one manufacturer in setting science-based emission reduction targets (SBT) ➤ Counselling of water and energy conservation/20 sessions yearly ➤ Counselling of electricity security inspection/10 sessions yearly
 Contractors	The construction of park depends on assistance from contractors, while some facilities are also operated on an outsourced basis. Let the park have an excellent and healthy and safe working environment.	<ul style="list-style-type: none"> ➤ Environment quality ➤ Water and effluent ➤ Energy resources management (including stable energy supply) ➤ Circular economy 	Information service window/as required Operation review report meeting/monthly	<ul style="list-style-type: none"> ➤ In 2022, completed daytime audit of 377 manufacturers with 158 of them having abnormal results. Currently improvement rate has achieved 99.37%. ➤ In 2022, completed 117 mobile audits with 16 abnormal results and current improvement rate achieving 100%; continue tracking manufacturers' improvement condition.

HSPB values every stakeholder's opinions and has established convenient yet diverse communication channels, taking stakeholders' feedback as basis for practising sustainable economic, social and environmental development. With two-way communication channels, HSPB responds to stakeholders and communicates ESG action strategies and performances, thus enhancing the interactivity, timeliness and information transparency of sustainability issues. HSPB, regularly or irregularly, communicates and interacts with public through HSP portal website, HSP exclusive website for sustainability, HSP Facebook fan page, annual reports, newsletters and sustainability reports (formerly known as "Sustainable Development Corporate Social Responsibility Report"). HSP also learns the concerns of every stakeholder through other approaches and provides related response and explanation.

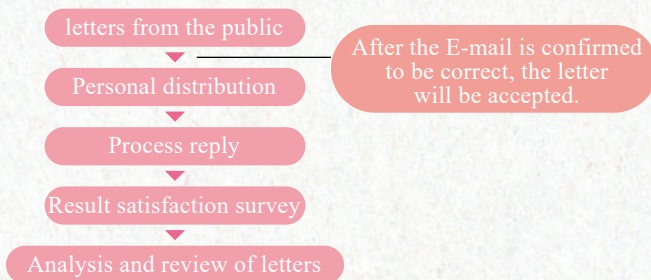


DIRECTOR-General’s mailbox

In order to improve the service quality, HSPB has set up a Director’s mailbox to provide the public with more communication channels. Every submission to the mailbox will be directed to HSPB electronic document management system and a specialized personnel will be assigned to deal with it spontaneously in a timely manner. After the case is closed, public can give feedback on the case management to assess their satisfaction with the results. According to statistics, Director’s mailbox handled a total of 580 cases in 2022 with 70% of them rated very satisfied, satisfied and fair with the outcomes.



Director’s mailbox process

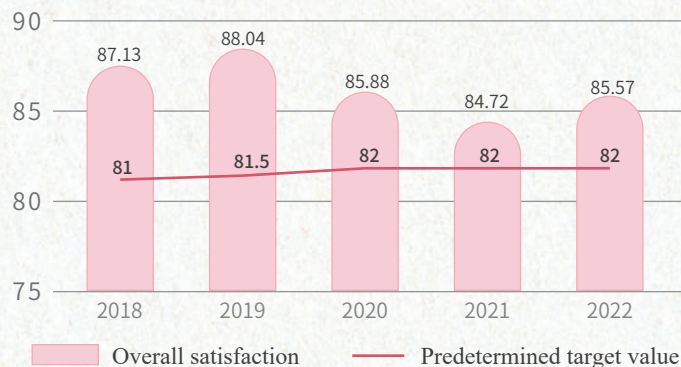


Director’s mailbox of Hsinchu Science Park Bureau
https://w3.sipa.gov.tw/DMS/web/index_show_dmospj.jsp

Park satisfaction survey

NSTC started to conduct survey on satisfaction level among park manufacturers since 2004, prompting every park bureau to pay attention to clients’ satisfaction level in order to improve service quality. HSPB managed to maintain satisfaction score above 84 (out of 100) in the past 5 years (2018-2022).

Park satisfaction



1.4 Material topics and sustainability goals

• Material topics determination and results

In order for the information disclosed in this report to be in line with sustainable development trend worldwide and stakeholders' expectations, HSPB has established a sustainability topic materiality analysis framework by referring to the five-steps guidance in Global Reporting Initiative (GRI) Standards 2021, which includes "understand the organization's context", "identify actual and potential impact", "assess significance of impacts", "prioritize the most significant impacts" and "define materiality threshold".

4 major sustainability aspects
21 sustainability topics

① Understand the organization's context

In order to understand organization's context and collect sustainability topics, HSPB refers to keynote criteria of GRI Standards, TCFD, the United Nations Sustainable Development Goals (SDGs) and other important topics, as well as stakeholders' suggestions. A total of 21 sustainability topics are compiled, including 4 major sustainability aspects: governance, economic, environmental and social.

② Identify actual and potential impacts

External ESG experts rated the actual and potential impacts of HSPB certain topic on economy, environment and society (human and human rights).

13 material topics

③ Assess significance of impacts

Overall rating is ranked by the summation of scores from actual/potential negative and positive impacts on economy, environment and society (human and human rights) for each topic. Those with total score of 30 and above are considered to have significant impact.

④ Prioritize the significance of impacts and determine material topics

HSPB use the GRI Sector Standards (Sector Standard for Oil and Gas and Sector Standard for Agriculture, Aquaculture, and Fishing) are first used to determine the consistency with assessed topics with significant impacts. 13 material topics are determined through internal executive meeting and prioritized for reporting in this sustainability report.

⑤ Define materiality threshold

Assessed material topics are analyzed with value chain as the threshold criteria. Use the ESG editorial team to compile relevant governance procedures and content, HSPB will continue to enhance management and disclose information in sustainability report.

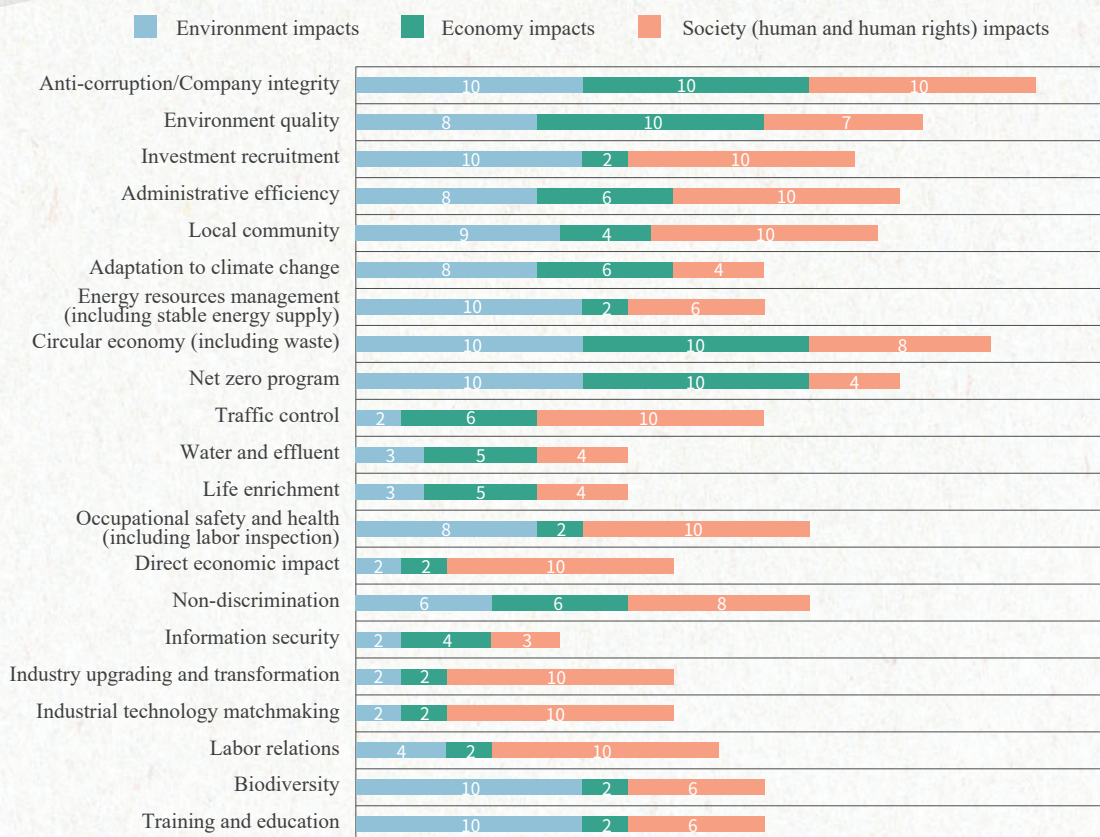
13 material topics

Value chain as threshold analysis criteria

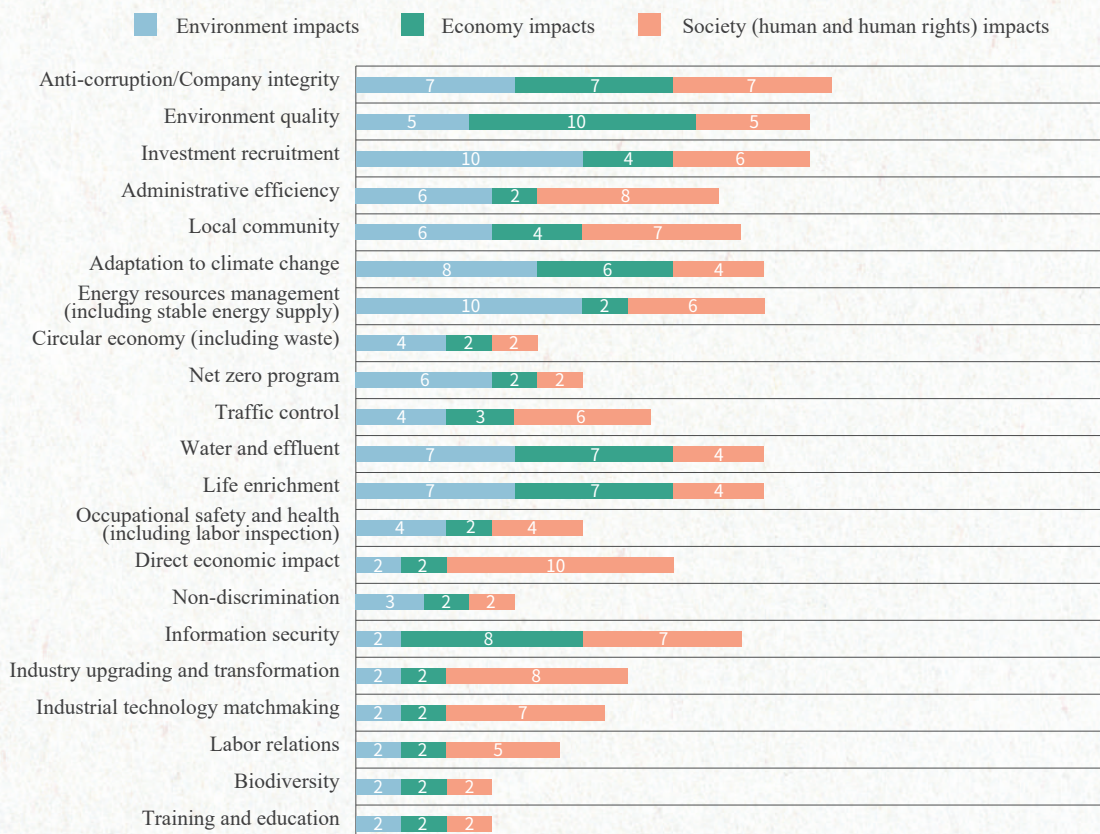
After the identification and analysis of material topics and the internal discussion meeting, some topics were grouped, including Energy Resources Management as combination of Stable Supply of Energy Resources and Energy Resources, Occupational Safety and Health of the Park as combination of Labor Inspection and Occupational Safety and Health, and merging of Waste into Circular Economy, compared with the report issued in the previous year, in order to refine the topics and contents. A new Net Zero Program was added in response to the disclosure of the management and performance of the topics by stakeholders of the HSPB. Meanwhile, the secondary topics are disclosed as much as possible. A total of 13 major themes have been identified for 2022.



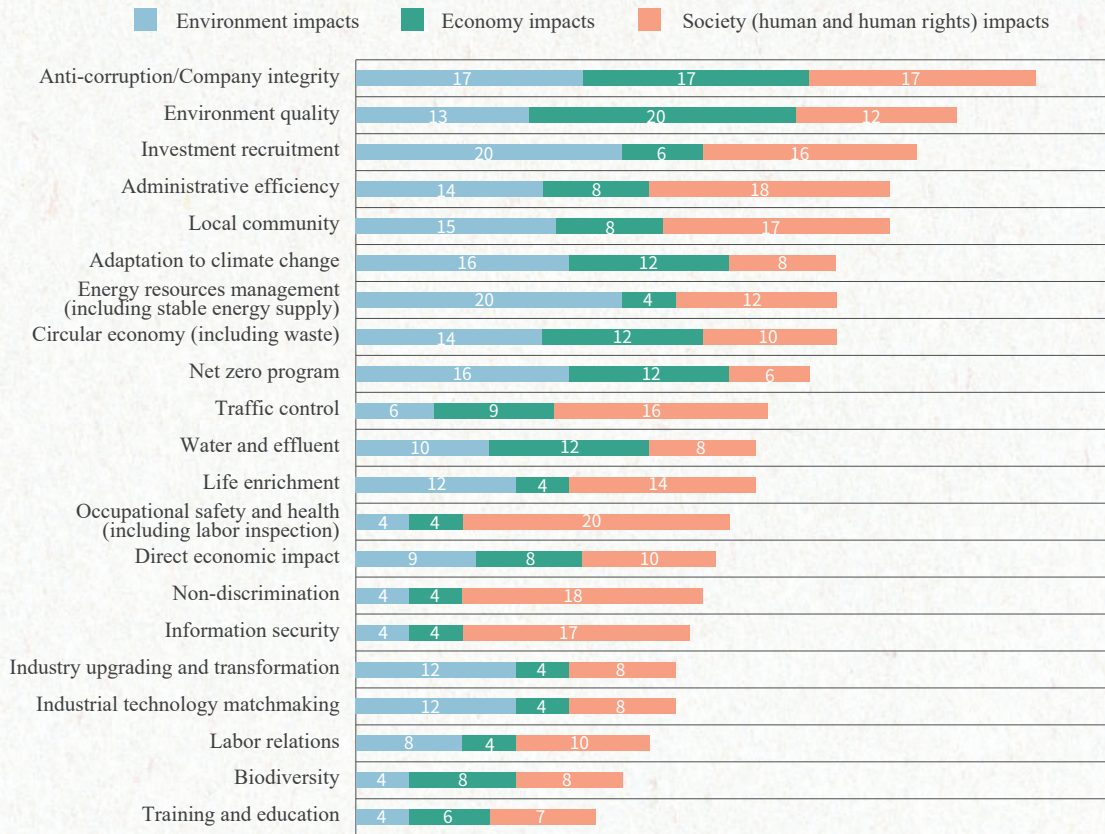
Positive impact assessment ranking



Negative impact assessment ranking



Material topics impact assessments



HSP value chain and sustainability strategies

The material topics in this report summarize HSPB governance plans into 8 topic frameworks in response to stakeholders' concerns from different aspects.

Topic frameworks	Corresponding material topic (Corresponding GRI Index)	Impact Category	Organizational Impact Boundary:					Page
			Internal Impacts of HSPB	External Impacts				
				Park manufacturers	Contractors	Government agencies	Community members	
Hsinchu Science Park Sustainability Management	--		○	○	△	○		
Environment								
E.1 Green action	<ul style="list-style-type: none"> ◆ Net zero program ◆ Energy resources management (including stable energy supply) ◆ Adaptation to climate change ◆ Water and effluent ◆ Circular economy (including waste) ◆ Environment quality 	<ul style="list-style-type: none"> ◆ Positive Actual ◆ Negative Actual, Negative Potential ◆ Negative Actual, Negative Potential ◆ Negative Actual, Negative Potential ◆ Negative Actual, Negative Potential ◆ Negative Actual, Negative Potential 	●	○	▲	●	○	28
E.2 Ecological Investigation	--		●				○	54
Social								
S.1 Dream Accelerator	--		●	○		●	●	56
S.2 Workplace well-being	◆ Park occupational safety and health (including labor)	◆ Negative Potential	●	○	▲	●		64
S.3 Joyful living in HSP	<ul style="list-style-type: none"> ◆ Local community ◆ Traffic control ◆ Life enrichment 	<ul style="list-style-type: none"> ◆ Positive Actual, Positive Potential ◆ Negative Actual ◆ Positive Actual 	●	○	▲		○	75
Governance								
G.1 Integrity governance	<ul style="list-style-type: none"> ◆ Administrative efficiency ◆ Anti-corruption/corporate integrity 	<ul style="list-style-type: none"> ◆ Positive Actual ◆ Negative Potential 	●	○	▲	●		88
G.2 Continued success	<ul style="list-style-type: none"> ◆ Investment recruitment ◆ Indirect Economic Impact 	<ul style="list-style-type: none"> ◆ Positive Actual ◆ Positive Actual 	●	○	▲			104
G.3 Global Network	--		●	○	▲			113

●Direct impact ○Indirect Impact ▲Business Behavior Impact

Major aspect/Corresponding material topic		ESG performance and goal		
		Year 2021-2022 Performance achievement	Short-term goal	Medium- and long-term goal (above 3 years)
Environment				
E.1 Green action	<p>Net zero program</p> <p>Energy resources management (including stable energy supply)</p> <p>Adaptation to climate change</p> <p>Water and effluent</p> <p>Circular economy (including waste)</p> <p>Environment quality</p>	<ul style="list-style-type: none"> Counselled 20 manufacturers on water conservation, potential water saving up to 597,000 metric tons, equivalent to 10% of Baoshan Reservoir. Counselled 28 manufacturers with potential power saving up to 35.56 million kWh (128,016GJ) and reduced emission of 17,967 metric tons of carbon dioxide equivalent (CO₂e), equivalent to carbon sequestration of 46 Daan Forest Park in a year. As of December 2022, the total capacity of solar photovoltaic (PV) system installed in the park's factories and public facilities achieved 45.48MW. 	<ul style="list-style-type: none"> New PV installation capacity up to 52.9MW in 2022-2023 Continue to counsel park manufacturers on water and power conservation. Achieve the target water recycling rate of manufacturing process for each industry (e.g. 85% for semiconductor and optoelectronics) The reclaimed water treatment system can treat sewage from initial manufacturers; water from dual distribution system is used for non-human contact purposes, including factory cooling, toilet flushing, park cleaning and landscape watering. Assisted in GHG inspection and counselling on reducing emission (14 sessions counselling on power conservation and 10 sessions counselling on water conservation) to improve manufacturers' energy consumption efficiency and reduce GHG emission. 	<ul style="list-style-type: none"> Promote experience sharing and skills improvement, seek after optimization of water and power conservation. Further increase the water reclamation rate for every industry under rationalization of energy consumption efficiency. To work in conjunction with regional water reclamation development plan to promote the use of water resources. Achieve 64.3MW of total PV installation capacity for park manufacturers and public facilities.
Social				
S.2 Workplace well-being	<p>Park occupational safety and health (including labor inspection)</p>	<ul style="list-style-type: none"> HSPB held 7 recruitment events with Hsinchu Employment Center and Yilan County Government respectively. Conducted 381 inspections on labor conditions and 2,565 safety and health inspections. The labor inspection coverage rates in 2021 and 2022 were 43.80 % and 42.68% respectively. 	<ul style="list-style-type: none"> The coverage rate of annual labor inspection has achieved 45%, encouraging every operational units to implement occupational safety and health autonomous management system and thus improving overall safety culture. 	<ul style="list-style-type: none"> Construct a "zero major occupational accidents" safe workplace.
S.3 Joyful living in HSP	<p>Local community</p> <p>Traffic control</p> <p>Life enrichment</p>	<ul style="list-style-type: none"> Total tour bus rides reached 464,000 in 2021 and 510,000 in 2022. Conducted 56 environmental education activities on HSPB sewage treatment plan in 2021 with 1, 509 participants whereas 47 sessions in 2022 with 1, 882 participants. Environmental education programs for rural schools, with a total of 4 sessions and 140 students participating Conducted a total of 30 neighborhood cleanup activities 	<ul style="list-style-type: none"> Currently, Hsinchu City Government and HSPB are in the process of merging urban bus routes and park tour buses running outside the park. Also, discuss cost sharing of the bus operation with Hsinchu City Government operating the original tour bus routes outside the park and HSPB operating the public transportation inside the park. Uphold the concept of protecting environment, conserving resources and sustainable coexistence of industry and the environmental ecosystem, promoting mutualistic and sustainable development of technology and the environment. 	<ul style="list-style-type: none"> In response to the net-zero program, the park tour buses are now running alternately on electric and gasoline buses and will continue to promote electric buses in the future to reduce carbon emissions.
Governance				
G.1 Integrity governance	<p>Administrative efficiency</p> <p>Anti-corruption /corporate integrity</p>	<ul style="list-style-type: none"> Organizes various anti-corruption activities and lectures and holds a total of 12 seminars on corporate integrity and governance. Uses electronic information devices to implement online advocacy and other diversified advocacy approach. Will continue to hold 3 related events or lectures per year. Verifies the implementation of early warning actions by conducting 2 integrity visits or project audits each year. Implement clean government to enhance the effectiveness of governance. Hold one cross-unit integrity meeting each year to promote the implementation of integrity measures. 	<ul style="list-style-type: none"> In order to encourage government agencies at all levels to be more committed to integrity governance, AAC of Ministry of Justice, in accordance with the concluding observations of the International Review Committee of international anti-corruption experts at the First International Conference on the Examination of Country Reports under the United Nations Convention against Corruption (UNCAC), promotes the Transparency Award to encourage agencies to strengthen the transparency of existing administrative and integrity governance measures to achieve the following objectives: <ol style="list-style-type: none"> Enhancing the international image of integrity: In recent years, our country has actively implemented UNCAC, and has achieved many good results in the ranking of the Clean Perception Index (CPI) published by Transparency International (TI) every year. The Transparency Award is a concrete demonstration of the results of our government agencies' integrity and transparency measures, creating a clean and transparent government. Demonstration of national integrity building: The Integrity Building National Action Plan in Taiwan has nine specific strategies to realize the vision of Clean Government and Transparent Taiwan. Through the application and recognition of the Transparency Crystal Award, the government will be able to exert positive influence and lead other government agencies to learn from it. Building a foundation of public trust: Convey the positive energy of governance integrity and efficiency as a benchmark of clean governance through the Transparency Crystal Award, enhancing public trust in the government's integrity. Motivating the morale of the staff: Based on the belief that preventing corruption is more important than fighting corruption through the process of participating in the Transparency Crystal Award, able to forge a consensus on integrity among directors and colleagues, take the initiative to review and strengthen the risk prevention and control mechanism, introduce innovative practices of integrity, identify the highlights of the agency and boost the morale of our staff. 	<ul style="list-style-type: none"> In accordance with the instructions of the AAC of the Ministry of Justice and the Department of Government Ethics of the National Council of Science and Technology, promote integrity HSPB in accordance with the current government policy on integrity, conduct administrative transparency seminars, implement of Sunshine Law, corporate integrity forums, and strengthen the relevant early warning actions such as security maintenance, official confidentiality maintenance, integrity visits and project audits. Continues to promote administrative transparency within the government, assists enterprises in building integrity governance networks, promote in-depth communication and consensus between the public and private sectors, create a clean and quality investment environment, create the strength of enterprises to pursue reasonable profits, enhance the competitiveness of technology industries and strengthen overall economic benefits of the country, in order to achieve joint public-private cooperation to improve Taiwan's Corruption Perceptions Index (CPI) ranking
G.2 Continued success	<p>Investment recruitment</p> <p>Indirect Economic Impact</p>	<ul style="list-style-type: none"> The actual number of investment cases introduced in 2021 was 49 with an additional investment cases of 38 per year. The actual number of investment cases introduced in 2022 was 30 with an additional investment cases of 63 per year, which are in line with the expected target. 	<ul style="list-style-type: none"> In response to the demand of the biomedical industry, the third biotech building in Hsinchu Biomedical Park is expected to be completed by the end of 2023, which is expected to create 1,200 jobs and generate about NTD 4 billion per year. Continue to build a high-performance industrial development environment and maintain the sustainability competitiveness of Taiwan's high-tech industries, HSP has renewed its standard factory buildings in Phases III, IV and V. The number of factory units has been increased from 88 to 196, which is expected to create 5,800 jobs and generate an annual output of NTD 41.2 billion. 	<ul style="list-style-type: none"> In order to continue to promote the development of the industry towards the integration of software and hardware applications, Hsinchu Park X-Base is constructing three software buildings in two phases. The first building is expected to be completed in 2024, and to create 2,800 jobs with an annual output of about NTD 19.6 billion.

Green park, Sustainable Development

● E.1 Green action

E.1.1 Risk management and adaptation to climate change

■ TCFD risk assessment on sustainable development

Following the increasing threats global climate change, every corporate and organization will be facing physical risks such as floods, hurricanes and earthquakes from extreme weather, as well as transformational risk such as regulations, policies and market demands to overcome climate change.

In order to facilitate corporates in adapting to climate change, Task Force on Climate-Related Financial Disclosure (TCFD) published by Financial Stability Board (FSB) provides a more comprehensive disclosure model to identify risks and opportunities of climate change while linking them to financial impacts. HSPB discloses climate related financial impacts through TCFD to assess the risks and opportunities, in order to enhance the organization's resilience and promote communication with stakeholders.

With reference to TCFD and through risk and opportunity identification meeting, HSPB together with ESG editorial board evaluated based on transformational risks (policy and regulation, technology, market, reputation), physical risks (immediate, long-term) and opportunities (resources efficiency, energy resources, products/services, markets, resilience) as listed in TCFD, and discussed on relevant strategies. The final results were submitted to Director-General for review and approval.

HSPB reference framework of climate-related financial disclosure

Governance

HSPB Environmental Protection and Safety Division, as the management unit of climate-related financial impacts, regularly reviews the potential risks of main operations and revises the potential risk identification table as well as risks distribution, which are then compiled and submitted for verification.

Strategy

After discussion with relevant units and evaluation of impacts of climate-related risks and opportunities on operation/strategy/finance planning, HSPB identified 9 transformational risks and 5 physical risks. The major climate-related transformational risks are legal advocacy and market while disasters and property damage caused by climate change are the main physical risks.

In view of risk of water supply in the park, HSPB carries out several water conservation and control measures, and regularly conducts meetings with water resources-related agencies, in order to gather information and ensure stable water supply. The relevant control measures are as below:

- a) Total water consumption control: Audit manufacturers' water consumption plans based on approved volume by Water Resources Agency (WRA), MOEA, to ensure good control over total usage in park.
- b) Increase water reclamation rate: Conducted counselling on water conservation since year 2022, with potential water saving up to 597,000 metric tons in 2021-2022.
- c) Striving for installation of specialized pipelines for stable water supply.
 - I. Jhunan and Tongluo science parks: Water supply through specialized pipelines from Liyutan Reservoir, expected to be completed in 2024.
 - II. Hsinchu Science Park: Water supply of HSP is supported by Shihmen Dam.
 - A. Fresh water pipe: The 225,000-metric tons water supply pipeline to backup Hsinchu area has been completed and launched on February 1, 2021.
 - B. Raw water pipe: The raw water communication pipe between Baoshan Second Reservoir and Shihmen Dam can supply 300,000 metric tons of water to Hsinchu area per day, in which completion is expected in 2026.
- d) Progressive introduction of reclaimed water
 - I. Tongluo Science Park: Install water reclamation system, with a maximum daily total reclaimed water supply of 3,600 metric tons.
 - II. Hsinchu Science Park (Baoshan Phase II): Baoshan Phase II expansion plans to build its own 30,000 metric-ton reclaimed water plant, and coordinates with Water Resources Agency (WRA), Construction and Planning Agency Ministry of Interior (CPAMI) and county and city governments to import 67,000 metric tons reclaimed water. It is expected to achieve 100% of reclaimed water usage at Baoshan Phase II in 2030.

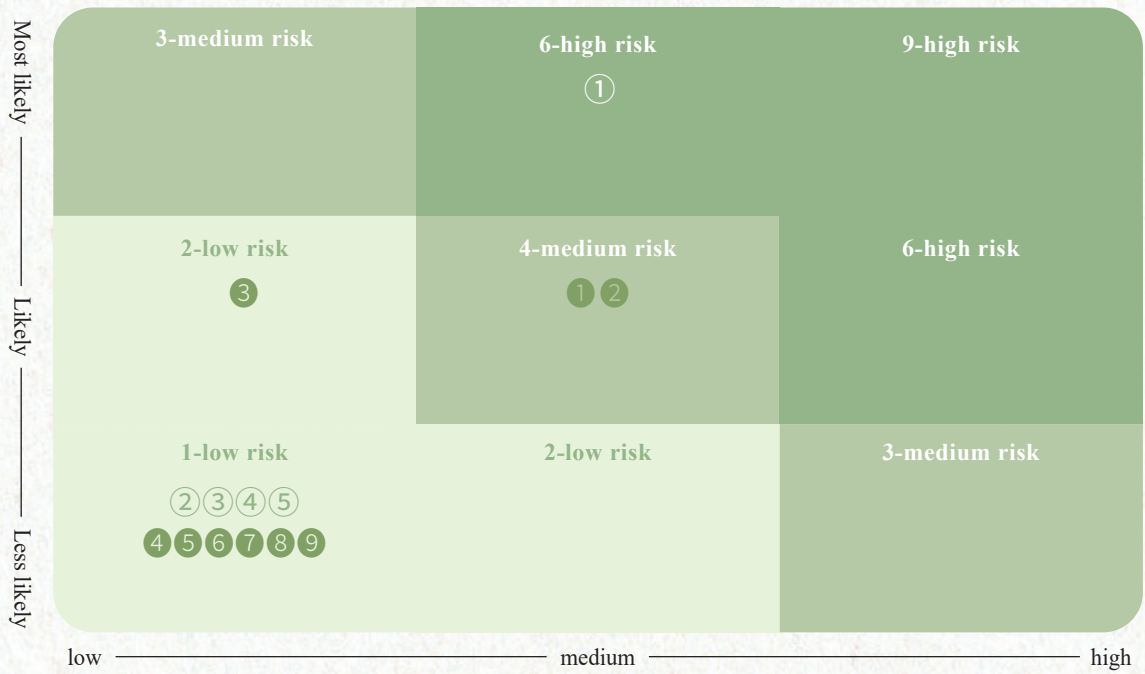
In order to enhance adaptation and mitigation to climate change, the implementation of strategies include:

- a) Integrate smart disaster prevention to increase disaster response capabilities and resilience.
- b) Establish "Emergency Response and Joint Defense Organization" and emergency response workflow to build up the disaster response and joint defense capabilities among manufacturers.
- c) Guide manufacturers in power saving and reducing carbon and GHG emission.
- d) Encourage installation of renewable energy resources.
- e) Promote water reclamation and conservation measures in the park.
- f) Encourage practices of waste reduction and recycling.

Risk management	<p>With risk analysis framework of TCFD as evaluation basis, HSPB identifies potential risks and ranks their intensities according to risk matrix of “significance of impact” and “odds”, thus defining the significant risk source.</p> <p>If new risks are identified in the year, previous risk assessment, summary table and organization’s risk map should be revised as soon as possible and submitted to head of agency for approval.</p>
Targets and goals	<ul style="list-style-type: none"> ➤ Reclaimed water handling system can treat effluents from initial manufacturers; water supply from dual distribution system is applied for non-human contact purposes, including plant cooling, toilet flushing, cleaning and watering. ➤ Assists in GHG inspection and counselling on reducing emission (14 sessions counselling on power and 10 sessions counselling on water conservation) to improve manufacturers’ energy consumption efficiency and reduce GHG emission.

Climate-related risk matrix

low risk
medium risk
high risk



Transformational risks

- ① Higher carbon fee policy advocacy cost.
- ② Instructed to increase proportion of waste resources recycling.
- ③ Total emission of HSP is highly concerned by NGOs, affecting the manufacturers’ intention to station in.
- ④ Increased policy advocacy cost for fuel tax/energy tax charges
- ⑤ Total GHG emission is limited for part of HSP area, affecting corporates to station in.
- ⑥ Most of the manufacturers are mandated to declare GHG emission.
- ⑦ Government sectors are required to achieve certain capacity of renewable energy resources installation.
- ⑧ HSP is required to join Renewable Energy 100 (RE100).
- ⑨ Inbound corporates should meet the inspection on carbon intensity.

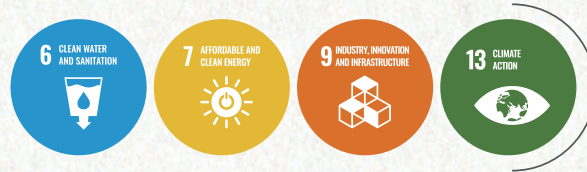
Physical risks

- ① Climate change causes unstable water supply in the park.
- ② Higher hurricane frequency and intensity compared to previous years increase risk of compound disasters, causing damage to park basic amenities.
- ③ Extremely high temperature during summer increases electricity consumption.
- ④ Increasing flood frequency and intensity causes damage to infrastructures and risk of work suspension.
- ⑤ Global warming causes sea level rise for 0.7-1 meter, causing damage to transport and basic amenities in the park.

Remark: ● as transformational risk, ○ as physical risk, number in the symbol as risk ranking.

E.1.2 Sustainable use of energy resources

Corresponding material topic: Net zero program \ Energy resources management (including stable energy supply) \ Environment quality \ Adaptation to climate change



Policy/strategy

As the extreme weather caused by climate change has increased in severity, every industry is facing risk of power and water shortage. HSPB is committed to promoting circular economy and installation of renewable energy resources, while providing continuous guidance on power and water conservation to park manufacturers. HSPB also activates relevant contingency and electricity security inspection mechanisms to prevent interruption to production and improve overall energy efficiency. Besides, HSPB cooperates with other ministries and commissions in driving circular economy through green technology, guiding and encouraging manufacturers to develop power-saving low-carbon measures, together constructing a smart and environment-friendly science park, optimizing entrepreneurial and sustainable environment, as well as leading our industries to accelerate achievement of the goal of net zero carbon emission.

Targets and goals

Short-term goals

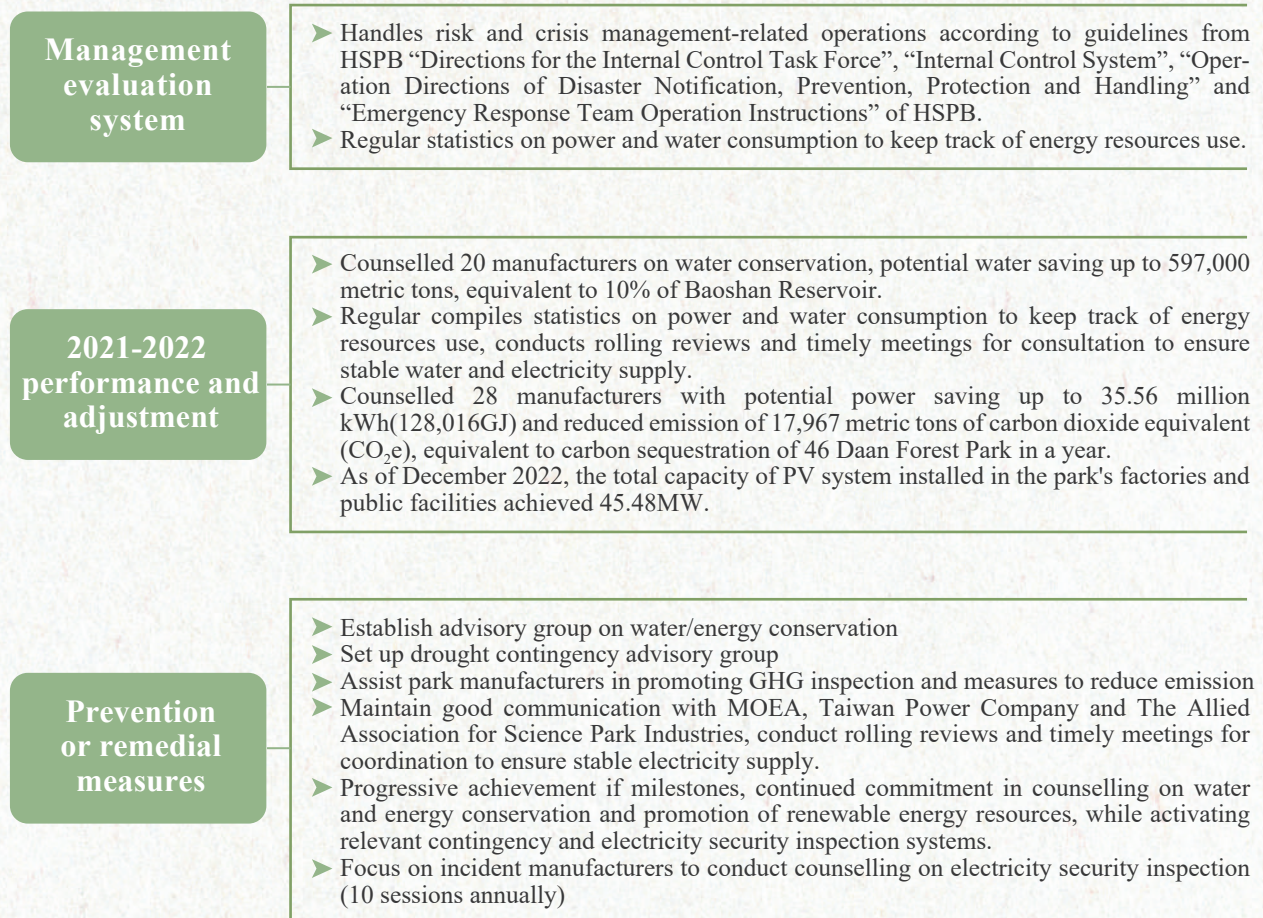
- ▶ Cumulative new PV installations up to 52.9MW in 2022-2023.
- ▶ Continue to guide park manufacturers on water and power conservation. Achieve the target water recycling rate of manufacturing process for each industry (e.g. 85% for semiconductor and optoelectronics)
- ▶ The reclaimed water treatment system can treat sewage from initial manufacturers; water from dual distribution system is used for non-human contact purposes, including plant cooling, toilet flushing, park cleaning and landscape watering.
- ▶ Assisted in GHG inspection and counselling on reducing emission (14 sessions counselling on power and 10 sessions counselling on water conservation) to improve manufacturers' energy consumption efficiency and reduce GHG emission.

Mid-term goals (3-5 years)

- ▶ Promote experience sharing and skills improvement, seek after optimization of water and power conservation. Further increase the water reclamation rate for every industry under rationalization of energy consumption efficiency.
- ▶ To work in conjunction with regional water reclamation development plan to promote the use of water resources.
- ▶ Achieve 64.3MW of total PV installation capacity for park manufacturers and public facilities.

Long-term goals (above 5 years)

- ▶ Implement the following measures to continuously increase proportion of PV installation:
 - ⇒ New manufacturers and new factory owners: In the land lease briefing, building permit pre-examination and electricity plan application, it is required to evaluate 50% of the available area of the roof to install PV system.
 - ⇒ Existing manufacturers: Establish "power saving advisory group" to actively guide manufacturers in implementing sustainable development, while focusing on potential manufacturers to enhance counselling, regular tracking and improve their intentions to install solar power system. Meanwhile, PV system advocacy, matchmaking and relevant meetings are also conducted to urge manufacturers with room for installation to actively assess solar power installation.
- ▶ Dedicated to effort in energy conservation and carbon reduction, promoting circular economy, establishing drought contingency plan and electricity security inspection systems, as well as encouraging installation of renewable energy resources.
- ▶ Assists in integrating inspections of water, power, gas supply and demand in the park to prevent imbalances.
- ▶ Semi-annually supply and demand platform meeting



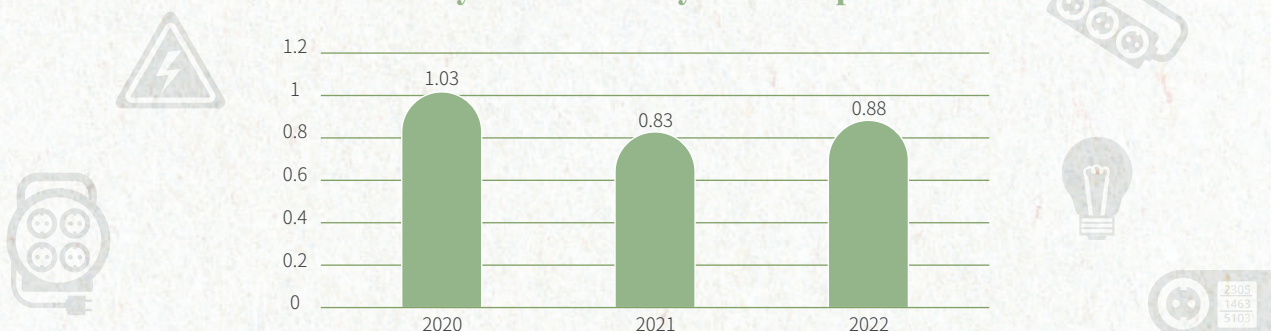
Energy resources consumption

Followed by rapid development of the six science parks and the impacts of industry emplacements as well as sales expansion, together with the improvement of semiconductor process technology, the demand of energy resources is on the rise. The total electricity and water consumption of the six science parks are also increasing. In 2022, electricity consumption increased by 7.43% and the density of power consumption grew by 5.59% compared to 2021. HSPB regularly compiles statistics to keep track of usage to ensure compliance with the approved quantity in EIA, while committed to efforts in energy conservation and carbon reduction.

Electricity consumption of park manufacturers

Park	Electricity consumption (GWh)		Electricity consumption (GJ)		Sum of business (NTD 100 million)		Density of electricity consumption (GJ/NTD 100 million)	
	2021	2022	2021	2022	2021	2022	2021	2022
Hsinchu	10,633.15	11,107.99	38,279,340	39,988,764	14,553.38	14,968.18	2,630.27	2,671.58
Jhunan	1,514.74	1,639.48	5,453,064	5,902,128	599.58	521.19	9,094.81	11,324.33
Longtan	819.62	1,147.73	2,950,632	4,131,828	542.8	433.89	5,435.95	9,522.75
Biomedical	27.77	72.22	99,972	259,992	42.7	29.29	2,341.26	8,876.48
Tongluo	238.74	244.19	859,464	879,084	136.66	174.54	6,289.07	5,036.58
Yilan	0.65	5.97	2,340	21,492	4.61	5.45	507.59	3,943.49
Total	13,234.67	14,217.58	47,644,812	51,183,288	15,879.72	16,132.55	3,000.36	3,172.67

Density of electricity consumption



Remarks: The denominator of density of electricity consumption is the current year revenue of every science park.

Water resources management has always been one of the most important environmental issues. The sources of water supply to all parks in HSP come from water corporations and reservoirs. According to “Aqueduct Water Risk Atlas” from World Resources Institute (WRI), the entire region of Taiwan is considered as Low-Medium (1-2) and water resources are not affected by water withdrawal. HSPB continues to encourage counseling on water conservation and reclamation among park manufacturers. The total water use and density have decreased by 0.49% and 2.07% respectively in 2022 if compared to 2021.

In order to improve the consumption efficiency of water resources and reduce impact on water bodies, HSPB determines target for rate of water reclamation according to industry category, water consumption and property. Industries with higher water consumption such as semiconductor and optoelectronics, except for older plants, should achieve 85% and above water reclamation rate to conserve water resources.

Water consumption of park manufacturers

Park	Water intake (million liters)		Water disposal (million liters)		Density of water consumption (million liters)		Density of Water intake (million liters/NTD 100 million)	
	2021	2022	2021	2022	2021	2022	2021	2022
Hsinchu	53,523	53,699	37,805	43,418	15,718	10,281	3.68	3.59
Jhunan	8,265	7,963	5,973	6,039	2,292	1,924	13.78	15.28
Longtan	6,330	5,996	5,264	5,242	1,066	754	11.66	13.82
Biomedical	348	412	--	--	--	--	8.15	14.07
Tongluo	648	696	139	172	509	524	4.74	3.99
Yilan	25	33	13	15	12	18	5.42	6.06
Total	69,141	68,799	49,194	54,887	521	542	4.35	4.26

Remarks:

1. Wastewater from Biomedical Science Park flows to Hsinchu Water Recycling Center through sewage system for treatment. Statistics are not included in the reference.
2. The denominator of density of water consumption is the the current year revenue of every science park.

Natural gas use is showing increasing trend over years, with an increment of 6.83% in 2022 if compared to 2021, which is mainly due to participation of new manufacturers and expansion of existing park.

Natural gas consumption of park manufacturers

Park	Natural gas consumption (million cubic meters)		Natural gas consumption(GJ)		Density of natural gas consumption (GJ/NTD100 million)	
	2021	2022	2021	2022	2021	2022
Hsinchu	37.73	42.53	1,262,898.56	1,423,564.16	86.78	95.11
Jhunan	16.14	15.49	540,238.08	518,481.28	901.03	994.80
Longtan	11.15	10.58	373,212.80	354,133.76	687.57	816.18
Biomedical	2.06	2.45	68,952.32	82,006.40	1,614.81	2,799.81
Tongluo	5.10	6.06	170,707.20	202,840.32	1,249.14	1,162.14
Total	72.18	77.11	2,416,008.96	2,581,025.92	152.14	159.99

■ Counselling on water and energy conservation

In order to improve efficiency of power and water consumption among park manufacturers, HSPB collaborates with experts, scholars, The Allied Association for Science Park Industries and technical consulting firms to form advisory groups on water and energy conservation, proposing improvement strategies based on manufacturers' current water and power consumption status, which include:



Water conservation: Replace old-fashioned water installations to improve water production rate, reclaim rainwater and air-conditioner condensate. Counselling 20 manufacturers in total in 2021-2022, with potential water saving reaching 597,000 metric tons, equivalent to 10% of Baoshan Reservoir.



Water saving guidance for manufacturers

Note: According to the basic information of Baoshan Reservoir released by the Water Resources Agency (WRA) of the Ministry of Economic Affairs (MOEA), the effective storage capacity is 5.008 million cubic meters (measured in 2022).



Energy conservation: In 2021-2022, Counselling 28 manufacturers with potential power saving up to 35.56 million kWh (128,016GJ) and reduced emission of 17,967 metric tons of carbon dioxide equivalent (CO₂e), equivalent to carbon sequestration of 46 Daan Forest Park in a year.



Actual electricity savings in 2021 was 9,196 kWh (33,106 GJ) with 4,680 metric tons of CO₂e reduction. Meanwhile, actual electricity savings in 2022 are expected to be completed in 2023.

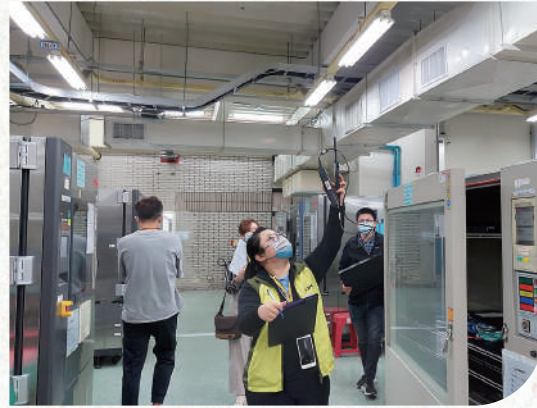


Energy saving guidance for manufacturers

Note: The calorific value of electricity is converted to 1 kWh = 3.6 MJ. The electricity emission factor in 2021 was 0.509 kg CO₂e/kWh. Remark: According to Council of Agriculture (COA), every hectare of forest can absorb 15 metric tons carbon dioxide equivalent (CO₂e) per year. Daan Forest with an area of 25.9 hectares manages to absorb 388.5 metric tons CO₂e per year.



2021 Greenhouse gas reduction



2022 Greenhouse gas reduction

HSPB will conduct educational trainings on water and energy conservation every year to expose manufacturers to new information and understand recent policy plans and global trends through relevant professional courses. In addition, HSPB also holds selection of excellent manufacturers to recognize their outstanding performance and encourage their long-term efforts in water and energy conservation. Visits to benchmark companies in the park are also organized to motivate ongoing improvement in efficiency of water and energy conservation through observational learning, so as to jointly establish an environmental-friendly park.



Hold observation activities

Greenhouse gas management

The main source of GHG emission in HSPB is electricity use. According to electricity and oil consumption of constructions (management buildings and sewage treatment plants) for each science park, the estimated GHG emissions in 2021 and 2022 were 14,504.08 and 15,050.11 metric tons of CO₂e respectively, in which electricity use accounted for 99% of total emissions.

Besides, statistics show that the total GHG emissions of all six science parks in 2020 and 2021 were 8,531,500 and 8,917,000 metric tons of CO₂e respectively. In terms of composition of GHG emissions, Scope 1 (direct emission) took up about 20% whereas Scope 2 (indirect emissions from the generation of purchased energy) occupied approximately 80%.

Composition of GHG emission in HSP

Category	2020	Percentage of total emissions in park	2021	Percentage of total emissions in park
Scope 1 (metric tons of CO ₂ e)	1,917,083	22.47%	1,967,914	22.07%
Scope 2 (metric tons of CO ₂ e)	6,614,461	77.53%	6,949,125	77.93%
Total (metric tons of CO ₂ e)	8,531,544	100.00%	8,917,039	100.00%

Remark:

1. The GHG emission factors are referred to GHG Emission Factor Management Table Version 6.0.4 published by EPA, whereas Global Warming Potential (GWP) values are referred to Fourth GWP value from Intergovernmental Panel on Climate Change (IPCC). GHG inspections are independent and have no baseline years. The major GHG emitted include CO₂、CH₄、N₂O、HFCs、PFCs、SF₆、NF₃.
2. The results of 2022 GHG inventory will be completed by the end of November 2023 and disclosed in the next report.

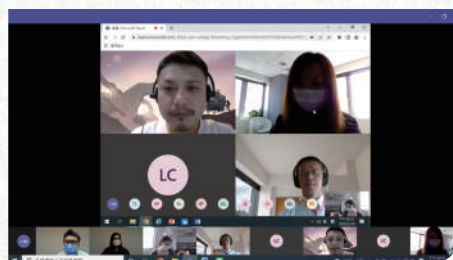
In 2020-2021, there were 45 manufacturers that meet EPA’s inspection requirements for registration. Their total emissions occupied nearly 80% of total GHG emissions in the park, with IC and optoelectronics as main industries.

Year	2020		2021	
	Number of manufacturers	Composition of GHG emission	Number of manufacturers	Composition of GHG emission
IC industry	36	66.2%	36	65.6%
Optoelectronics	9	11.2%	9	10.9%
Percentage of total park	8.5%	77.4%	8.2%	76.5%

Committed to exposing park manufacturers to the importance of reduced GHG and carbon emissions, HSPB conducts annual GHG management seminar and courses related to internal carbon pricing and corporate sustainability, in order to understand global trend of net zero and internal carbon pricing system. Meanwhile in 2021-2022, HSPB assisted one manufacturer and Yilan Science Park in building ability to inspect GHG , as well as one manufacturer in preparation of carbon offset plans. In 2022, HSPB guided one manufacturer in setting SBT to assist in adaptation to future impacts of reduced GHG emission. Moreover, HSPB conducted two courses on TCFD in 2022 to provide guidance in more precise assessment of climate-related risks and opportunities, leading industries in low-carbon transformation and thus towards a sustainable development. As a reference for GHG reduction, HSPB continues to improve its sustainability actions through the above-mentioned educational trainings.



2021 Greenhouse gas inspection counselling-educational training



2022 Greenhouse gas inspection counselling-kick-off meeting



2021 Carbon offset project counselling



2022 Carbon offset project counselling

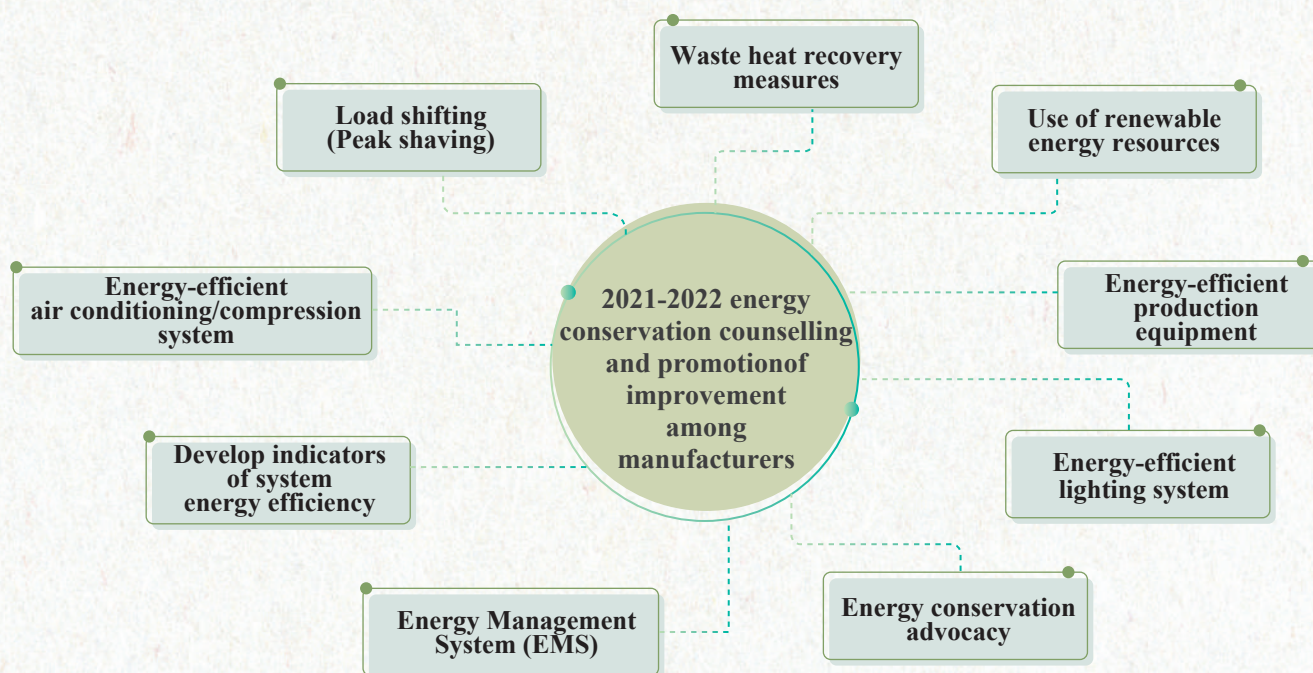


Science-based emission reduction target (SBT) educational training



Task Force on Climate-Related Financial Disclosures (TCFD) course

Furthermore, according to annual survey data, GHG reduction measures mainly focus on energy conservation of infrastructures, low-emission process and utilization of renewable energy resources, etc. The measures are as below:



Stable water, electricity, and gas supply

HSPB attaches great importance to management of water, electricity, and gas resources conservation. In 1995, HSPB collaborated with ASIP to establish “Water, Power and Gas Supply Committee”, which is responsible for compilation of information related to water, power and gas consumption as well as drafting of power-saving measures, including:

- ★ Coordinating with Taipower, Taiwan Water Corporation and gas suppliers to plan water, electricity and gas supply to the park.
- ★ Organizing courses related to power security, water resources recycling and gas safety.
- ★ Drafting design and operation specifications for water, electricity and gas equipment to be used as guidance for new or operating equipment.
- ★ Assists in integrating inspections of water, power, gas supply and demand in the park to prevent imbalances.
- ★ Promote emergency support system between Taipower, Taiwan Water Corporation and park consumers as well as gas suppliers, while improving the stability and quality of gas supply.

Drought contingency system

Due to worsening climate extremities plus difficult water storage in Taiwan’s terrain, the park will encounter critical water conditions during winter and spring seasons. In 2020, for the first time since 1964, the water condition started to worsen in the fall with no hurricane attack. Overall rainfall in the west region was persistent but relatively minimal.

In response to upcoming alterations in water condition, HSPB has implemented various back-up measures through interdepartmental cooperation, which include improving rates of water conservation and reclamation, use of reclaimed and fresh water, etc., to ensure that manufacturers have no issue with water usage. The drought contingency plans are as below:

- ◆ Through circulars, inform park manufacturers under charge (Hsinchu, Biomedical, Longtan, Jhunan and Tongluo science parks) to reinforce water conservation and early adaptation. They need to practice autonomous water saving and withhold or reduce non-production related water consumption (such as landscape, watering, wall/drapery cleaning, fire safety training and swimming pool), provided the production and epidemic prevention are not compromised, while making adjustments to relevant factory equipment to extend the period of water supply from reservoirs.
- ◆ Establish Emergency Response Team with Director and Deputy Director as convener and vice convener respectively, and relevant operational personnel as members of the team. Their main tasks include gathering information on water conditions, hosting contingency meetings, coordinating relevant authorities and releasing news, etc. Besides, the team invites park manufacturers, Central Weather Bureau (CWB), Ministry of Transportation and Communications (MOTC), Water Resources Agency (WRA), MOEA, Taiwan Water Corporation, county governments of science parks under HSPB, ASIP and other relevant departments to discuss on adaptation policies, advocate for water conservation among manufacturers and to cooperate with WRA, MOEA to implement water restriction measures at various phases.
- ◆ Set up drought zone in park's website to immediately reveal information on water conditions and counter-measures, including announcement of water loading points, central and local government sources of drought relief such as wells, ponds, and portable water purifier, etc., and therefore manufacturers can be informed in advance and be prepared to respond.
- ◆ Manufacturers with water consumption of more than 1,000 metric tons have to record daily meter reading and report weekly to control the effectiveness of water conservation. In addition, inspections are conducted on the effectiveness of water saving report from large water users, and effectiveness of water conservation is reviewed through meetings, circulars, call tracking, site visits and counselling in order to achieve water saving targets.
- ◆ Rolling review of response with WRA, Taiwan Water Corporation to reduce impact of water shortage.
- ◆ Prepare public reservoirs and manufacturers' own reservoirs for backup during water supply by districts. Water truck is activated if water situation becomes critical.

■ Stable power supply system

Regarding power consumption in the park, "Power Information Today" is set up on HSPB's website home page for manufacturers to acquire information on power supply condition in real time. This section immediately provides power information as well as forecast of power supply and demand in the coming week, and therefore manufacturers can keep track with latest power supply information and take relevant contingency actions sooner. Moreover, HSPB pays close attention to power supply condition from Taipower, maintains a smooth communication channel with MOEA, Taipower and ASIP to conduct rolling review and timely meeting to ensure stable electricity supply.

HSPB invites relevant departments (associations, Taipower, manufacturers) to conduct quarterly meetings to review power incidents. The units that have had incidents will present the causes and improvement measures, to discuss preventive measures to avoid recurrence, stabilize power supply and to preserve quality of power supply. The manufacturers involved in accidents are counseled on electricity safety inspection (10 sessions per annum). Through electricity safety inspection counseling group, HSPB will conduct on-site safety inspection of electrical equipment with manufacturers, providing professional advices and sharing experiences by having face-to-face discussion and interaction between experts and electrical technicians, in order to preserve the electric equipment at all times.

In order to enhance power quality in the park, Taipower launched new construction of "Baoshan Extra-High Voltage Substation (E/S)" in 2022 corresponding to power demand of Baoshan Phase II plan of expansion. This will increase the power supply capacity, quality and reliability, effectively improving resilience of HSP power grids, stabilizing power supply while meeting the future growing power demands.

■ Promotes renewable energy resources

In response to green energy policy in our country to promote development of diversified energy resources and to gradually achieve target of 20% of energy generation from renewable resources by 2025, HSPB fully supports and continues to encourage PV system installation. HSPB has organized a series of observational activities on renewable energy resources to increase manufacturers' willingness to install PV and energy storage devices through on-site visits, discussion on regulations, sharing of performances and experiences, as well as provide technical exchange on construction and maintenance.



Meeting Discussion Exchange



On-site observation and experience sharing

HSPB actively counsels manufacturers on space utilization to install PV system. Part of them has gradually completed the installation, for instance AU Optronics Corporation in Longtan Science Park (installation capacity of 9.87MW) and Innolux Corporation in Jhunan Science Park (installation capacity of 4.88MW). Besides, HSPB has also taken initiatives to restore public space to support renewable energy sources, for example parking tower at Si-Soft Research Center in Hsinchu Science Park (installation capacity of 1.2 MW), wastewater treatment plant in Jhunan Science Park (installation capacity of 0.96MW). It is anticipated to motivate the manufacturers to follow and together build a low-carbon yet energy-saving green park.

In order to increase percentage of PV installation, HSPB established "Photovoltaic Promotion Team" to actively guide manufacturers in utilizing available space for PV installation, and to enhance guidance and track on regular basis for potential manufacturers to increase their willingness to do so. New manufacturers and plant owners are required to evaluate 50% of the available roof area to install PV to be inspected in land lease briefing, electricity plan and building permit application. As of statistics until December 2022, the total capacity of photovoltaic (PV) system installed in the park's factories and public facilities achieved 45.48MW.



Parking tower at Si-Soft Research Center

■ Reclaimed water related information or commitment

In order to reduce water consumption of the park and provide water resources for recycling, HSPB plans to progressively introduce reclaimed water. Relevant plans are as following:

1. Tongluo Science Park: Deploy water reclamation system with the total maximum amount of water supply of approximately 3,600 metric tons per day.
2. Hsinchu Science Park (Baoshan Phase II): Baoshan Phase II expansion plans to build its own 30,000 metric-ton reclaimed water plant, and coordinates with WRA, CPAMI and county and city governments to import 67,000 metric tons reclaimed water. It is expected to achieve 100% of reclaimed water usage at Baoshan Phase II in 2030.

E.1.3 Circular Economy

Corresponding material topic: Water and effluent \ Circular economy (including waste) \ Environment quality



Policy/strategy

Focusing on vision of sustainable development and implementation of environmental protection, HSPB exerts tight control over total emission, flow of waste disposal and continues to strive for development with minimal environmental impact to co-benefit with local community, Environmental Protection and Safety Division is responsible for various environmental permits, conducting on-site audits, tracking and guidance, as well as environmental quality monitoring.

Targets and goals

- Short-term goals**
- Overall rate of wastewater disposal of 100%
 - Reclaimed water in 2023 of approximately 700 metric tons per day
 - Drainage water meets and even beyond EIA standards
 - Improvement in function of electricity conductivity equipment of Tongluo Science Park sewage treatment plant
 - Implement honest declaration system, install pollution control equipment according to regulations and perform proper operation and maintenance.
- Mid-term goals**
- Installation of renewable energy resources achieves 25%
 - Rate of waste reuse reaches above 92% by 2030
 - Generate 3,600 metric tons of reclaimed water per day for park use by 2025
- Long-term goals**
- 100% recycled water by 2050 for advanced semiconductor process.
 - 45% of renewable energy by 2040 and 100% by 2050.

Management evaluation system

- Audit environmental permit according to “Air Pollution Control Act”, “Water Pollution Control Act”, “Waste Disposal Act” and relevant regulations, while irregularly conducting on-site inspection.
- Prior to development, submit various environmental assessment report according to Standard Operating Procedures of EIA.

2021-2022 performance and adjustment

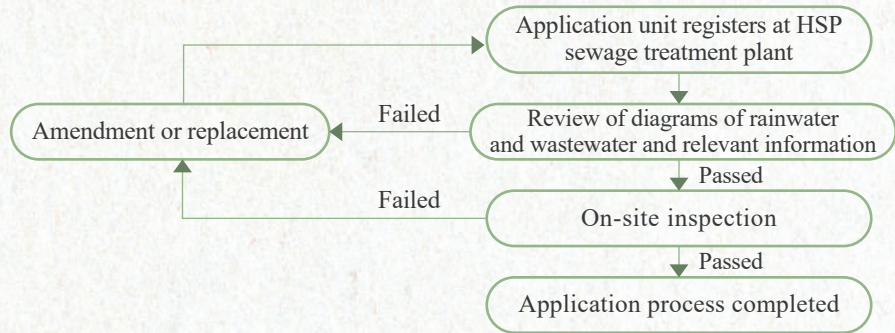
- Air pollution, wastewater and waste generation are in line with EIA commitment values.
- 100% of treated water concentration of sewage treatment plants in each park is less than national effluent standards and EIA commitment values.
- Sewage treatment plants in Hsinchu Science Park installed additional plate-frame filter press and reclaimed water pipelines in 2021, which will save about 51,658m³ freshwater consumption with a reduction rate of 46%.
- The rate of waste resources recycling in the park has reached 89.93%, exceeding Taiwan’s sustainable development target of 86.4%.
- Counseled 4 park manufacturers in 2021 to channel highly aqueous solvent waste into resource treatment facility for collection, which increased the initial resource recovery rate of the company from 56% to above 90%.
- Counseled 5 park manufacturers in 2022 to introduce carbon dust into heat treatment facility as supplementary fuel.
- Waste reductions in the park are 43,093 and 58,982 metric tons respectively.

Prevention or remedial measures

- Environmental protection supervisory group of each park in Hsinchu Science Park continues to carry out supervision tasks.
- Ongoing promotion of source reduction and improvement of resource recovery measures.
- Organizes annual "Waste Reduction and Circular Economy Outstanding Enterprise Evaluation" to acknowledge remarkable enterprises as role model.
- Sewage treatment plants piping regulations:

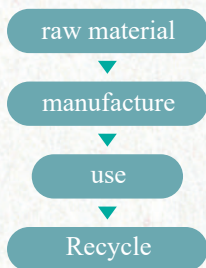
Prior to discharging the wastewater into the sewage system, the manufacturers in the Park shall submit application to the Science Park Bureau for approval (including the average daily, maximum daily and peak hourly flowrate of discharged wastewater, quality of discharged wastewater and location where the wastewater will be discharged and related illustrations of facilities). After approval, the wastewater from park manufacturers shall conform to the water quality standard for the accommodation capacity of drainage before discharging into the sewage drainage and shall pay seasonally to the HSPB the expenses for using the sewage drainage in accordance with the discharge flow rate and the quality of wastewater the former has used. If found incompliant with sewer-connected regulations, the user shall be charged accordingly and required to explain the reason for abnormality, with continuous reviews, sample collection and tracking until the manufacturer improves.

Flowchart for the application process

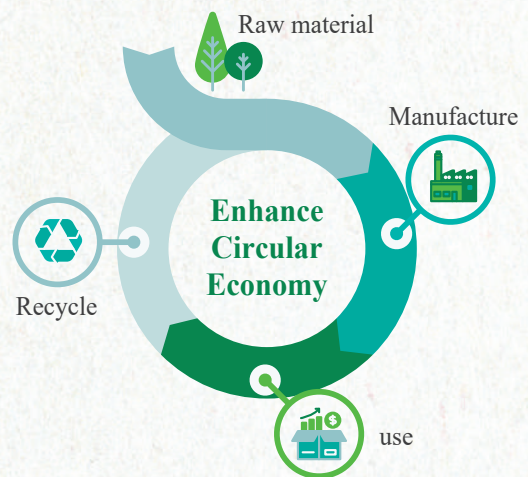
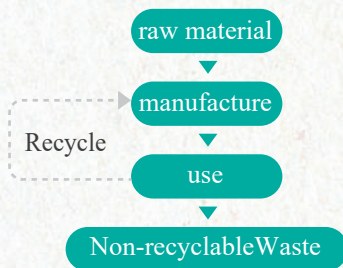


Hsinchu Science Park is the key cluster of advanced technology worldwide. HSPB proactively promotes circular economy which is in correspondence to government policies. Besides regularly guiding manufacturers to reduce waste at source, recycle and reuse resources, introduce circular economy and guide manufacturers to achieve circular economy inspection declaration or standard, HSPB also recognizes outstanding enterprises through conducting evaluation for “Waste Reduction and Circular Economy Outstanding Enterprise Award”. Meanwhile, HSPB continues to cooperate with Executive Yuan’s governance axis of “promoting recycling and reusing of resources” and “developing circular economy”, gradually achieving a win-win situation of resource recycling and industrial mutualism.

Linear economy



Reuse economy



Outcomes of circular economy promotion

HSPB continues to actively promote waste recycling. The percentage of waste recycling in the park progressively increased from 87.61% in 2019 to 89.93% in 2022, exceeding Taiwan's sustainable development target of 88% which shows that HSPB's counselling is effective. Based on questionnaire survey, the volumes of waste reduction were 43,093 and 58,982 metric tons respectively in 2021-2022. Some of the implementing measures include reusing leftovers of wafer dicing, replacing steel wire with diamond dicing blades to reduce silicon carbide sludge, filtering and reusing cutting fluid, diverting waste sulfuric acid into sewage treatment to minimize production, recycling waste copper sulfate into liquid form for reuse in the production process to limit its production and reclaiming waste photoresistor for use in manufacturing, etc.

Moreover, to understand the current utilization rate of resources in each industry, HSPB further compiles the resource recycling rate of six industries in the park and encourages improvement of manufacturers with lower recycling rates through regular supervision and professional guidance.

During counselling on production sources, focusing on wastes that are hardly recycled such as scrapped plastic mixture and highly aqueous solvent waste, the targets are selected through screening mechanism and on-site counselling is conducted with counselling committee which is composed of experts and scholars. HSPB counselled 4 park manufacturers in 2021 and successfully channeled highly aqueous solvent waste of certain company into resource treatment facility for collection, which increased the initial resource recovery rate of the company from 56% to above 90%. HSPB counselled 5 park manufacturers in 2022 and has introduced carbon dust into heat treatment facility as supplementary fuel.

In addition to that, HSPB constantly promotes source reduction and improves resource recovery measures, including development of feasible yet low-risk resources recycling technologies, combined with initial trial results from manufacturers, and encourages manufacturers to apply for recycling permit for individual case or bridge with treatment facilities, eventually informing park manufacturers through technical promotional conferences to achieve the target of improving waste resources recycling rate.



2021 circular economy promotional conference



2022 circular economy promotional conference



2021 outstanding enterprise evaluation



2022 outstanding enterprise evaluation

HSP sewage treatment plants treat the ammonia nitrogen concentration using “Anoxic/Oxic Membrane Bio-Reactor (AO-MBR)”. Due to the good quality of treated water, all water in this unit (flushing water for fine screen, cooling water for blower and cleaning water for the membrane, etc.) is partially recycled to achieve the purpose of fully recycling of this system. Besides, effluent from sewage treatment plants is partially recycled for toilet flushing, cleaning and defoaming in treatment units of the park, implementing the concept of “resource conservation” in practice.

Furthermore, the sewage treatment plants produce sludge cake of approximately 45 metric tons daily (water content 62-65%) and it belongs to non-hazardous industrial waste. With the uphold of the principle of “resource conservation”, the sludge cake generated from sewage treatment plant is handed over to qualified companies for proper treatment and can be used as a secondary raw material for brick manufacturing factories or building materials and cement, with the goals of reducing sludge production, conserving resources and minimizing environmental impacts.

In order to encourage the park manufacturers to implement circular economy and in line with international standards, HSPB provided guidance to 4 manufacturers to introduce circular economy standards and all of them achieved the Optimizing level in Circular Economy Business Model. In 2021-2022, there was a total of 12 enterprises awarded for their excellent performances in waste reduction and circular economy evaluation and commended as role model.



2021 on-site counselling project



2022 on-site counselling project



2022 circular economy outstanding enterprises evaluation



2022 circular economy outstanding enterprises evaluation

E.1.4 Total pollutant control

Due to global climate change, in order to protect the environment and conserve energy resources, HSPB is committed to promoting green energy and circular economy in accordance with government policies, actively providing guidance to manufacturers, improving production process, saving energy and reducing carbon emission, recycling energy resources and conserving ecosystem. HSPB also exerts strict control over total waste, precisely monitors the flow of waste disposal and sewage treatment for each plant, in order to prevent environmental burden, implement honest declaration system among park manufacturers, install pollution prevention equipment and refine operation, maintaining overall park’s environmental quality standards.

Environmental permit management

Every park has set up its total pollutant emission. Manufacturers who just move in or expand production capacity need to submit an estimate of total pollutant and can only operate after passing various environmental permit audits.

In 2021-2022, HSPB audited 1,611 applications on stationary air pollutant permits, water pollution prevention and control measures, operational waste disposal plans, resources recycling and reuse (including waste recycling) as well as total emission control. In addition, HSPB also handled 959 daytime audits, counselling and inspections to understand the current implementation status of pollution prevention and control and provide guidance.

Number of environmental permit audits

Number of audits	Years		
	2021	2022	Total
Permitted items			
Stationary air pollution source	197	176	373
Water pollution prevention and control measures	138	159	297
Operational waste disposal plan	321	383	704
Industrial waste recycling	25	19	44
Total pollution	106	87	193
Total	787	824	1,611

Air pollutant emissions control

HSPB has divided air pollution control into two stages, namely “investment application” and “operation management”. EIA results are implemented as basis for upper limit of total emission control and the amount of emission is allocated for each park manufacturer with total allocation not exceeding the approved volume by EIA.

The air pollutant control varies slightly with different science parks, including sulfuric acid, nitric acid, hydrochloric acid, hydrofluoric acid, phosphoric acid, acetic acid, chlorine, ammonia, volatile organic compounds, carbon monoxide, Particulate Matter 10 (PM10), sulfur oxides, nitrogen oxides, total suspended particulates, sulfur dioxide, nitrogen dioxide, and other pollutants. The permitted emission of various air pollutants in all the six science parks are lower than EIA commitment values, demonstrating that the process of air pollutant emissions is strictly and reasonably controlled which can guarantee the employees’ and surrounding residents’ health.

Air Pollutant Monitoring

Unit: tons/year

Pollutant	Sulfuric acid		Nitric acid		Hydrochloric acid		Hydrofluoric acid		Phosphoric acid		Acetic acid		Chlorine		Ammonia		VOCs		Carbon monoxide		Nitrogen oxides	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Hsinchu	EIA approved quantity																					
	Total approved quantity																					
	Actual emission																					
Jhunan	EIA approved quantity																					
	Total approved quantity																					
	Actual emission																					
Longtan	EIA approved quantity																					
	Total approved quantity																					
	Actual emission																					
Tongluo	EIA approved quantity																					
	Total approved quantity																					
	Actual emission																					

Pollutant	Total Suspended Particles (TSP)		Sulfur dioxide		Nitrogen dioxide		Carbon monoxide		VOCs		Sulfuric acid		Nitric acid		Hydrochloric acid		Hydrofluoric acid		Phosphoric acid		Chlorine		Ammonia	
	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Yilan	EIA approved quantity																							
	Total approved quantity																							
	Actual emission																							

Note 1: Actual emission estimation method = (Emissions of detected pollutants/detected production capacity) x annual production capacity.

Note 2: From September 2019 onwards, echoing to Environmental Impact Statement of Hsinchu Science Industry Park (Baoshan Land) Expansion Project, emissions of various air pollutants will be revised and new pollutant control items, SO_x and NO_x, are added to Baoshan Land. Besides, the factories in Baoshan site started obtaining the operation permit from August 2022, and thus actual emissions are only available from 2022.

Note 3: From March 2020 onwards, some air pollutants and health hazardous substances are newly added in accordance with "Environmental Impact Assessment Statement of Yilan Science Park, Hsinchu Science Park".

Note 4: Starting from January 14, 2022, the emissions of sulfuric acid, nitric acid and hydrofluoric acid will be revised in accordance with the "Environmental Impact Assessment Report of Tongluo Science Park Development Project at Hsinchu Science Park Phase IV Expansion Site".

*1: Acetic acid is not yet available for testing and therefore actual emission data are not available.

*2: The park manufacturer has not yet applied for the pollutant species.

*3: Actual emissions are not available because of non-permitted manufacturers or permit applications for mass balance calculation.

Note 5: Since there is no air pollution control in Hsinchu Biomedical Park, there is no survey of actual emissions.

Wastewater pollutant discharge control

HSPB requires the manufacturers to integrate wastewater discharges into sewage treatment plants for processing and decides the volume to be managed based on approved amount by EIA. The total wastewater allocations to be piped in each science park should be lower than amount approved by EIA to prevent the effects of discharge from sewage treatment plants and preserve surrounding ecosystem.

Wastewater discharge allocations

Unit: Cubic meters/day (CMD)

Science park	Items	Approved amount by EIA	Total approved allocation	Approved amount of management	Discharge of waterbody
Hsinchu		185,000	169,192	156,500	Keya Creek
Jhunan		56,500	36,255	40,412	Hsing Kang River
Longtan		41,168	22,163	22,102	Dakeng Quexi
Biomedical		4,990	1,809	1,346	Fongshan River
Tongluo		14,000	5,133	2,050	Xihu River
Yilan		4,900	466	180	Yilan River

Note 1: Refers to the volume of waste (sewage) approved in the Environmental Impact Assessment Statement.

Note 2: Refers to the amount of wastewater to be piped and the estimated amount to be retained.

Note 3: Refers to amount of wastewater (sewage) to be included in the sewerage of the park.

Statistics till December 31, 2022

The sewage treatment capacities for Hsinchu, Jhunan, Longtan, Tongluo and Yilan Science Parks are 185,000CMD, 60,000CMD, 25,305CMD, 12,000CMD and 2,450CMD respectively, with all exceeding the total approved allocations for each science park to ensure sufficient water treatment capacity for each park. Besides, HSPB monitors the effluent concentration of each park at all times to comply with national effluent standards and EIA commitment values. Statistics of effluent from each sewage treatment plant in 2021-2022 showed that the treated water concentrations were all lower than national effluent standards and EIA commitment values, demonstrating high stability and efficiency of sewage treatment system in every plant.



Tongluo Science Park sewage treatment plant



Yilan Science Park sewage treatment plant

2021-2022 effluent data of sewage treatment plant in each park

Items		Hsinchu Science Park		Jhunan Science Park		Longtan Science Park		Tongluo Science Park		Yilan Science Park	
Discharge location		Keya Creek		Hsing Kang River		Dakeng Quexi		Xihu River		Yilan River	
Year		2021	2022	2021	2022	2021	2022	2021	2022	2021	2022
Annual water discharge (million liters)		37,804	43,418	5,973	5,973	5,264	5,241	39.9	24.9	37.3	53.6
Average daily water discharge (CMD)		103,575	118,954	16,364	16,364	14,422	14,361	109.3	68.3	102.2	146.9
BOD (mg/L)	Effluent standards	25		25		25		30		25	
	EIA commitment value	15	16	10	10	20	15	16	10	10	20
	Average monitoring value	3.1	4.5	2.7	2.1	3.0	2.3	<2.0	<2.0	<2.0	<2.0
COD (mg/L)	Effluent standards	80		80		80		100		80	
	EIA commitment value	80		66		80		40		80	
	Average monitoring value	19.8	20.9	27.0	21.4	23.7	20.6	9.9	9.7	10.7	<10
SS (mg/L)	Effluent standards	25		25		25		30		25	
	EIA commitment value	10		16		10		5		20	
	Average monitoring value	5.9	6.0	5.4	4.4	2.9	2.1	<2.5	<2.5	<2.5	<2.5
Total dissolved solids(mg/L)	Average monitoring value	2,827	2,660	1,790	1,550	-	-	-	-	-	-

Note: The wastewater from the Biomedical Science Park flows into the Hsinchu County Jhubei Water Recycling Center through the sewage sewer for treatment, so the statistical value is not included in the reference.

In response to rising environmental awareness, EPA of Executive Yuan announced the implementation of Science Park Sewer System Effluent Standards which sets the target of ammonia nitrogen concentration value below 30mg/L. Hsinchu Science Park adopted a double-pronged approach of source reduction control and improvement of sewage treatment efficiency, while other parks achieved target through source reduction control. All parks have met the standards since its implementation.

Sewage treatment plants in Hsinchu Science Park treat the ammonium nitrogen concentration in wastewater using AO-MBR, in which Zone A and Zone B have been officially launched in January 2017 and March 2018 respectively with a total treated sewage capacity of 55,000CMD. From the starting of operation till end of year 2022, AO-MBR showed efficient treatment and the ammonia nitrogen reduction rate reached above 95%. Ammonia nitrogen concentration in effluent is able to consistently reach the target of less than 30mg/L, which is the effluent standard for science park as regulated by EPA.

Furthermore, corresponding to water resources recycling to increase consumption efficiency of reclaimed water, sewage treatment plants in Hsinchu Science Park installed additional plate-frame filter press and reclaimed water pipelines in 2021 and replace fresh water with effluent from AO-MBR for filter cleaning purpose. These actions helped to save about 51,658m³ freshwater consumption with a reduction rate of 46%, avoid water wastage and have showed significant results.

Waste management

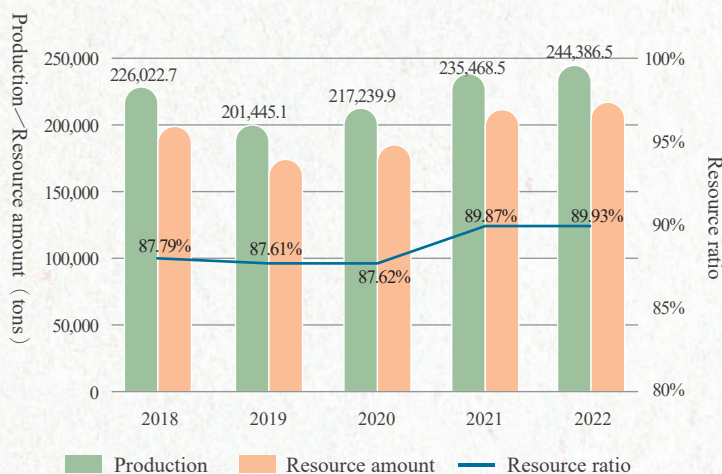
HSPB randomly conducts auditing and counseling for the manufacturers. They are required to prepare an industrial waste disposal plan in accordance with the regulations and implement waste disposal and treatment based on the Waste Disposal Act and other related regulations. The industrial waste is mainly divided into general and hazardous industrial waste. The total amount of waste generated and its resourcefulness in 2021~2022 are shown in the table below.

Unit: Metric tons

Year	2021	2022
General industrial waste	147,679.90	142,706.95
Hazardous industrial waste	87,788.63	101,679.54
Proportion of waste recycling and reclamation	89.87%	89.93%
Total declared waste generated	235,468.53	244,386.49

Besides the aforementioned control practices, HSPB collaborated with Central Taiwan Science Park (CTSP) and South Taiwan Science Park (STSP) to draft “Management Regulations for Reuse of Industrial Waste in Science Parks”, which provides the manufacturers and reuse facilities with applications of relevant permits for reuse purposes, in order to effectively improve efficiency of waste recycling. The total number of approved and still effective cases was 16 as of 2022 with total permitted reuse capacity of 4,137.56 metric tons per month.

The sources of industrial waste in HSPB are mainly the chemical agents discarded in the laboratories of the sewage treatment plants and the sludge after wastewater treatment. 235,468.53 tons and 244,386.49 metric tons of industrial waste were generated in 2021 and 2022 respectively. There was no significant leakage or spillage cases from 2021 to 2022.



Declaration and reuse of industrial waste from 2018 to 2022

The total declared waste generated in entire HSP was approximately 235,468.53 metric tons in 2021, with 89.87% being recycled treatment. The reuse rate was ranked highest in the IC industry among the six industries in park with a rate of 91.79% and followed by 83.28% in the optoelectronics industry.

Reuse of waste among six industries in 2021

Industry	Declared production (metric tons)	Reuse quantity (metric tons)	Reuse rate (%)
IC	180,887.41	166,037.81	91.79%
Optoelectronics	30,561.91	25,452.88	83.28%
Computer and peripherals	3,335.62	1,851.69	55.51%
Telecommunication	789.40	402.33	50.97%
Precision machinery	1,812.45	674.06	37.19%
Biotechnology	2,570.84	2,093.52	81.43%
Others	15,510.90	15,114.97	97.45%

In 2022, the total amount of waste generated in the whole park was 244,386.49 metric tons, of which 89.93% will be reused treatment. The reuse rate remained the highest in IC industry, which was 91.24%, followed by 84.93% in biotechnology industry. The reuse details are shown in the table below:

2021 HSP Composition of waste and treatment methods

Industry	Declared production (metric tons)	Reuse quantity (metric tons)	Reuse rate (%)
IC	190,481.70	173,791.09	91.24%
Optoelectronics	25,248.36	20,931.96	82.90%
Computer and peripherals	3,419.89	1,727.05	50.50%
Telecommunication	981.86	654.78	66.69%
Precision machinery	1,698.97	987.17	58.10%
Biotechnology	3,423.98	2,908.11	84.93%
Others	19,131.73	18,765.59	98.09%

E.1.5 Implementation of environmental monitoring

In order to enhance the environmental protection park, HSPB has invited experts and scholars, representatives of environmental protection authorities, leaders of neighboring communities, environmental protection organizations and park manufacturers to form the "Environmental Protection Supervisory Group of Hsinchu Science Park Bureau, National Science and Technology Council", and holds regular meetings to review the situation according to the size of the science park. It consists of 8 to 16 members, including experts and scholars, representatives of county (city) environmental protection authorities where the science park is located, neighboring community leaders and park manufacturers, who jointly participate and supervise the inspection and evaluation of environmental protection affairs, put forward improvement suggestions and track the effectiveness, so as to strengthen and ensure the implementation of various environmental protection practices.



The industrial clusters in HSP are quite dense and getting closer to neighboring residential areas, thus having higher sensitivity towards environmental impacts. HSPB also takes timely actions to minimize impacts to neighboring residents if environmental impacts have exceeded the capacity.

In order to perform environmental monitoring for every park which include quality of air, noise (including vibration), water, soil, groundwater and traffic flow, etc., the monitoring systems of different items are gradually integrated to improve the quality of data monitoring. "Hsinchu Science Park Environmental Quality Monitoring Results Information Network" was established to regularly disclose the current status of environmental quality monitoring to manufacturers and public.



Air quality monitoring



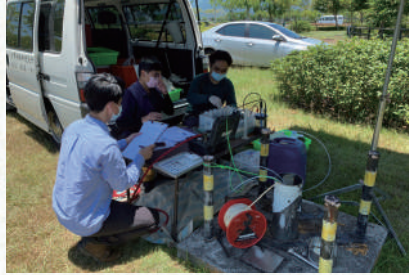
Noise quality monitoring



Water quality monitoring



Soil quality monitoring



Groundwater sampling



Effluent sampling

Hsinchu Science Park Environmental Protection Information Website

<https://saturn.sipa.gov.tw/SPAEP/INDEX.do>



Contractor environmental audits

In order to implement honest declaration system in park, install pollution prevention and control equipment as well as refine operation and maintenance according to regulations, HSPB applies on-site inspection, tracking and guidance to carry out relevant audits and tracking which include daytime inspections and mobile audits.

In particular, HSPB conducts annual auditing and counseling for the park manufacturers, cross-referencing air, water and waste declaration data with the permit documents and visiting the site to inspect the operation of environmental protection equipment. If there is any discrepancy, the manufacturer will be asked to make improvement and submit relevant application documents for change. In case of major violations, HSPB will issue a separate report to the environmental protection authorities for disposal.

In 2022, 377 daytime audits were completed with 158 abnormal results and the improvement rate has reached 99.37%. Meanwhile, a total of 117 mobile audits have been completed with 16 abnormal results and the improvement rate has reached 100%. The tracking of improvement status is still ongoing.

Smart monitoring system

In order to control the air quality in the vicinity of Hsinchu, Zhunan, and Longtan Science Park, HSPB promotes smart management in accordance with the "Using ICT Technology for the Development of Smart Park Project " to closely monitor the air quality and display real-time monitoring results and have completed the construction of four air quality monitoring stations and one digital signage in each of Hsinchu, Zhunan, and Longtan Science Park.

The air quality monitoring items include sulfur dioxide, nitrogen oxides, total hydrocarbons, ozone, carbon monoxide, suspended particulates and fine suspended particulates, wind direction and speed, atmospheric temperature and humidity, rainfall, etc. One set of noise meter and visibility meter is also installed in each park to understand real-time air quality information through long-term continuous monitoring.

Hsinchu and Jhunan Science Park became controlled special industrial parks on August 26, 2022, and February 23, 2022, respectively due to the expansion and change of the special industrial area. According to Article 9 of the Standards for Buffer Zones and Air Quality Monitoring Facilities in Special Industry Parks, manual testing of air pollutants must be performed. The items to be tested include nickel, arsenic, cadmium, manganese, beryllium, lead compounds in suspended particulates (PM10), hexavalent chromium (Cr⁶⁺) in TSP, inorganic acids (hydrofluoric acid, hydrochloric acid, nitric acid, phosphoric acid and sulfuric acid), acetic acid, ammonia and chlorine. The above monitoring items have been carried out at all monitoring stations in the park since the beginning of the control period.

The digital signage of each park displays the air quality monitoring results of the park and the water quality monitoring information of the effluent from the sewage treatment plant. It is also used to play the promotional video of the bureau, which can provide the employees with various real-time information. HSPB has set up "Hsinchu Science Park Air Quality Monitoring Network" for the public to inquire the real-time air quality status of the park and the nearby EPA monitoring stations. Besides, the function of "Environmental Monitoring Data" was added to the "Science Industrial Park Action Wizard 2.0" app for public to check the instantaneous air quality of Hsinchu, Jhunan and Longtan Science Park as well as the quality of effluent from the sewage treatment plants in science park.

Science Industrial Park Air Quality Monitoring Stations



Hsinchu Science Park-Jingsin Lake Station



Jhunan Science Park-Jhunan East Station



Longtan Science Park-Longtan Service Center Station

Digital signage in science industrial parks



Hsinchu Science Park



Jhunan Science Park



Longtan Science Park

Science industrial park air quality and effluent quality of sewage treatment plants monitoring results disclosure platform

Dedicated to environmental protection

In order to improve the effectiveness of every industrial operation, HSPB has organized the selection of "Hsinchu Science Park Excellent Environmental Dedicated Personnel" to commend the well-performed dedicated personnel and encourage the implementation of the environmental protection practices among institutions in the park. The scope of selection includes four major categories, namely "air pollution control personnel", "wastewater treatment personnel", "waste disposal professional technical personnel", and "toxic and chemical substance professional technical management personnel", which are set up in accordance with the relevant laws and regulations and an evaluation team is formed. In 2021 and 2022, HSPB has selected outstanding environmental dedicated personnel for each year and official award ceremonies have been conducted.



Photo of 2021 Excellent Environmental Dedicated Personnel receiving awards



Photo of 2022 Excellent Environmental Dedicated Personnel receiving awards

E.1.6 Landscaping

For the sake of improving the quality of environmental landscape and creating a conducive working environment, HSPB is actively promoting the establishment of sustainable environment. In addition to the acquisition of Green Building Logo for public buildings in conjunction with policy, HSPB also provides guidance to the park manufacturers to obtain Diamond Award for the “Ecology, Energy Saving, Waste Reduction and Health-Ecological Community Evaluation System (EEWC-EC)” through the control of the construction license issuance of factories, making them a benchmark in eco-friendly and sustainable development. As of end of year 2021, there were 78 green buildings within area under charge of HSPB with a total of 13 buildings being certified with Green Building Logo Diamond Award.

Number of green buildings constructed in all six science parks

Park	Number of green buildings
Hsinchu Science Park	29
Jhunan Science Park	15
Longtan Science Park	13
Biomedical Science Park	7
Tongluo Science Park	8
Yilan Science Park	6

Besides, HSPB continues to carry out planting maintenance, environmental cleaning and drainage work in the common areas of the park on a long-term basis, and regularly replaces grasses and shrubs in the imagery zones at the park entrance or along the main roads during different seasons, so as to improve the landscape with seasonal sceneries. In 2021, the respective new planting area of each park is: Hsinchu 4,572.6 m², Biomedical 860.7 m², Jhunan 936 m², Tongluo 106 m², Longtan 166 m², and Yilan 418.9 m². In 2022, the respective new planting area of each park is: Hsinchu 4,067.1 m², Biomedical 353.7 m², Jhunan 957 m², Tongluo 1,080 m², Longtan 783 m², and Yilan 553.7 m².

Also, pruned branches or recycled waste will be reused to create installation art, which will bring a livelier atmosphere to the park. On top of that, HSPB actively promotes the adoption of green areas in parks by manufacturers, and will hold a competition for park green area adoption units in 2021 to encourage manufacturers to improve the environment of the park.



Four seasons planting in Hsinchu Science Park



New ground cover planting in Yilan Science Park

During plant construction, HSPB requires the installation of a retreating green belt with a green area of more than 50% of the legal open space, so as to form a green corridor by linking the green belts of the park, making greenery everywhere in the park as if in a large park. It also aims in achieving the purpose of beautification, pressure relief, sound insulation and air purification through planting.



Outdoor view of Innodisk Corporation



Outdoor view of Taimide Tech Inc.

At present, 22 manufacturers or institutions have participated in the foster-park program in Hsinchu Science Park, Longtan Science Park, Jhunan Science Park and Tongluo Science Park, with an area of 28.6 hectares in 2022. With the joint effort of HSPB and park manufacturers, the environmental and landscape quality will constantly be improved.

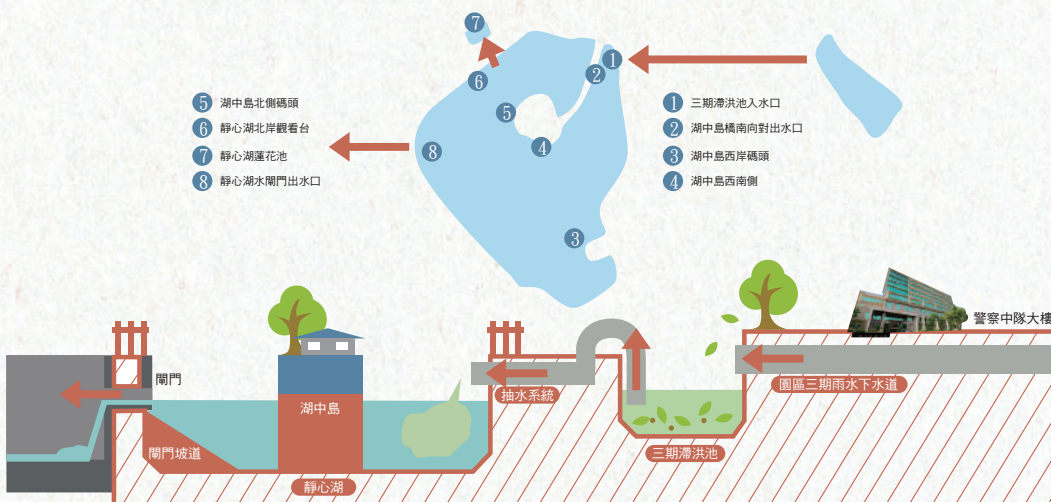
Jingsin Lake water quality testing and measures

Located in HSP, Jingsin Lake, which was early developed as a detention basin and recreational environment maintenance till now, is also a resting place for many birds and fishes. It has now become an important recreational and living place for the employees and residents of HSP, as well as an important role in the diversified culture and nature of HSP.

Jingsin Lake is an artificial lake that collects water from the stormwater drains of HSP Phase I and Phase III development area and plays a key role as a wet pond. However, in recent years, due to the climate change and reduced rainfall, the lake is prone to limited inflow during dry season which results in sluggish water storage. Therefore, most of the water is supplied by the inlet of the Phase III retention pond next to the police squadron. The design of outlet gate allows only discharge of a small amount of water when it overflows. Although this design secures water storage, it also makes it difficult to remove sediment and debris from Jingsin lake, leading to an increase in the accumulation of nutrients with nitrogen and phosphorus content over a long period of time, which is a concern for eutrophication.



Schematic diagram of inspection sampling



Cross-sectional view of Jingsin Lake and sampling sites

Analysis of study report shows that the nutrient concentrations in Jingsin Lake and Lotus Pond are still low with slightly alkaline water quality. Despite the signs of algae growth, the water quality is still considered healthy as the concentration can be regulated with a large volume of water in the lake. Plus, the water is not acidified and the eutrophication remains in its early stage, making it still safe for the aquatic animals living in Jingsin Lake.

The Phase III wet pond accounts for 70% of the total water inflow, demonstrating its importance in maintenance of the water level of the lake and the need to extend the water quality control measures to Phase III wet pond.

In response to the study report, the management unit of HSPB has proposed and initiated water quality improvement measures of Jingsin Lake. Firstly, to desilt the inlet of the Phase III wet pond and to improve the water quality by reducing the nutrient concentration. Besides, to promote feeding elimination and desilting at outlet to improve the overall water quality of the lake. Meanwhile, HSPB controls water quality through daily inspection sampling. Water quality analysis in 2022 showed good water quality in 2022 (conductivity 169 $\mu\text{mho/cm}$; fluoride ions 0.30 mg/L), except for pH 8.5 which is alkaline on average. Climate change and reduced rainfall in recent years will also be taken into future consideration in enhancing water supply improvement measures as well as maintenance of water retention and defense structure at the bottom of lake, in order to preserve water quality and environmental health of Jingsin Lake.

● E.2 Ecological Investigation

All six science parks under charge of HSP have conducted different ecological investigations. According to the ecological survey results from 2021 to 2022, there are more than 60 species of birds, amphibians, reptiles and mammals in the six science parks. The precious and rare wildlife species recorded include crested goshawk, crested serpent eagle, crested myna, Taipei grass frog, mountain scops owl, collared scops owl and greater painted-snipe while other wildlife species that should be conserved include brown shrike and Taiwan blue magpie. Besides, in response to the construction of the Hsinchu Science Park's Baoshan Phase II expansion, HSPB conducted infrared camera investigations in and around the area, which recorded rare and precious species of pangolin and other wildlife that should be conserved, such as the crab-eating mongoose. HSPB will closely monitor the impact of the construction on wildlife and implement protection measures in accordance with relevant EIA regulations.

Number of Animal Species in the Six Science Parks

Category/park	Hsinchu	Jhunan	Longtan	Tongluo	Yilan	Hsinchu Biomedical
Birds	64	53	66	67	63	47
Amphibians and reptiles	25	12	22	24	-	12
Mammals	15	9	-	13	7	8
Conserved wildlife	8	3	8	7	4	2
Taiwan endemic species and subspecies organisms	36	16	28	28	18	22

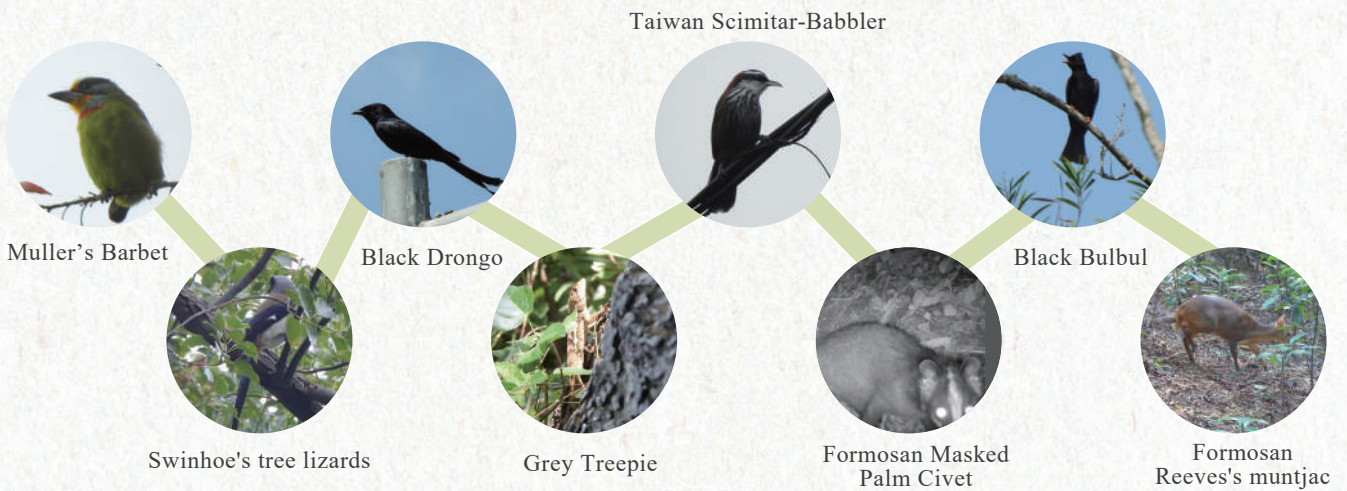
Rare and precious conserved wildlife animal species



Other wildlife species that should be conserved



Taiwan endemic species and subspecies organisms



Leopard cat corridor

Taiwan was once inhabited by two species of cats, the clouded leopard and the leopard cat. However, in recent years, scholars believe that the clouded leopard has threatened with extinction. The leopard cat, on the other hand, could be found in all corners of the island from 1930 to 1940. However, as human activities continue to expand, the distribution of the leopard cat has gradually shrunk, and now Miaoli, Taichung and Nantou are the only areas where it can still be found.

With the continuous development of semiconductor industry in our country, Tongluo Science Park in Miaoli will increase its base area and bring in more manufacturers. However, Tongluo Park is located within the important and potential habitats of the first-class conservation species of leopard cat. HSPB promotes the designation of leopard cat corridor to minimize interference with the ecological environment of the original species and sets up 10 monitoring points to record their activities. The monitoring results showed low activity of leopard cats within park area and the leopard cat corridor provides a viable solution for the coexistence of corporate development and animal habitat.

Tongluo Science Park is located at Jiuhu, Tongluo Township, Miaoli County. In view of the fact that Miaoli area is an important habitat of leopard cats and in order to take into account both the development of the park and ecological conservation, HSPB will create an ecological corridor for the leopard cats in Tongluo Science Park to provide a communication channel between leopard cats communities. Besides, park land or any other suitable sites will be used to build a passageway linking conservation site and park and connecting two habitats by means of above-ground, ground level or underground passages, with retreating green belts and double-layered planting. Fencing will be done along the surrounding roads to guide the leopard cats to the passageway. In combination with the existing drainage waterway, additional leopard cat-friendly facilities such as openings, hanging nets or climbing ramps will be prepared and rolling adjustment will be done according to actual project planning.

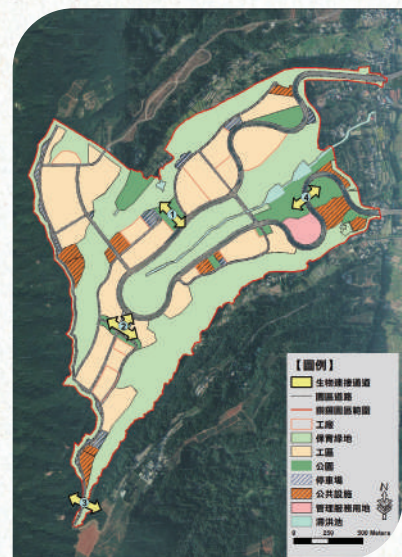


Diagram of Planning Location of Leopard Cat Ecological Corridor

A Friendly Society for Sustainable Integration

S.1 Dream Accelerator

S.1.1 Promotes Entrepreneurship and Employment

HSPB is shaping the park to provide employment and cultivate high quality manpower, bring in investment and actively creates job opportunities. According to the statistics, by the end of 2022, there were 175,217 employees in the six parks in HSP and the number of employees in 2022 was 6.33% higher than that in 2021, which is a new record high. From the economic point of view, the contributions of HSP to the neighboring areas include human resources, national income and local development.

In 2021, HSPB, together with Hsinchu Employment Center and Yilan County Government, held three recruitment events, releasing 1,349 job vacancies and attracting 310 participants. While in 2022, four recruitment activities were conducted, releasing 9,300 job vacancies and attracting 5,276 participants

Science Park Emerging Technology Application Project

Corresponding to the rapidly growing demand for global 5G, high performance computing and other emerging technologies, HSPB has consolidated the existing resources of the Project for Industry-Academia Collaboration on Innovative R&D in Science Parks and transformed to promote the Science Park Emerging Technology Application Project since 2021. With industrial demands as the guide, HSPB has initiated cross-industry collaborations while combining the strengths of academia and research institutes to jointly invest in the R&D of key technologies.

List of Emerging Technology Application Project

Year	Approved subsidies	Total subsidies (NTD million)	Number of engineers involved in research	Future manpower	Attract manufacturers to invest in R&D
2021	8	NTD 35 million	92	22	NTD 56.31 million
2022	14	NTD 60 million	162	36	Estimated NTD 60 million

Please refer to the Science Park Emerging Technology Application Project website for further information.

<https://web.sipa.gov.tw/EtaWeb/index.do>



Coaching and nurturing entrepreneurial teams

With the goal of innovation, transformation and sustainable development of the park's industries, HSPB has planned an exclusive platform of innovation and entrepreneurship tailored for youths with the core value of innovative thinking and innovative service. Young Entrepreneur's Studio was established in 2015 with cumulative 47 teams till present, 20 of which have established companies (17 in operation). In 2019, Yilan Entrepreneur's Studio was established at Yilan Science Park and 25 teams have been introduced, 22 of which have established companies (20 in operation).



JMEM team from Young Entrepreneur's Studio won the championship of student category in the 6th Entrepreneurship Star Draft Contest by Economic Daily News

Online integration and interaction to bring in new entrepreneurial energy

HSP is a national technology center that brings together Taiwan's most advanced industrial technologies. In the face of rapid changes in global breakthrough innovation, accelerating corporate transformation requires proactive future investment. New startup companies can expedite market deployment and expansion by penetrating into the industrial supply chain through independent venture capital or internal group investment departments. HSP Corporate Venture Capital (CVC) provides opportunities in sourcing investment and partnership for the startup companies and has formed CVC Networks to create a win-win-win situation for enterprises, startup companies and park.

Despite the restrictions of Covid-19 Alert Level 3, HSP CVC and startup companies conducted a two-day online matchmaking meeting in August 2021. 14 CVC companies from the fields of wafer, IC design, optoelectronics, networking, and precision machinery were invited to conduct nearly 30 one-on-one online matchmaking meetings with 8 startup company teams from the science park, NSTC From IP to IPO Program (FITI) and the Value Creation Programs for Start-up Teams.



HSP CVC and SiCEV Electronics Co., Ltd. (NSTC Value Creation Programs and FITI Teams)

S.1.2 Human Resource Development Grant Program

In recent years, the development of information and innovative technologies, first of which is AI and 5G, has led to the rise of digital transformation, accelerating the progress of intelligentization and digitization, bringing convenience and changes in people's life, work and social patterns. Through the integration of big data, Internet of Things and the cloud, the industries have formed a technological value chain of systems, software and terminal applications, making the development of 5G and AI a competency indicator for enterprises and countries.

In 2022, in response to the trend of information and communication industry, HSPB offered a series of courses focusing on 5G wireless communication design technology, smart application of big data and Artificial Intelligence (AI) technology, etc. Some online learning courses are also available for non-Hsinchu employees to learn in a more flexible way. Detailed course information is posted on the Technology Talent Learning Website.



Science Park Talent Cultivation Subsidy Program

In order to help cultivating professional and technical talents, the local public and private tertiary institutions are the beneficiaries of subsidy programs. Industry-related professional modular courses and internship programs are provided at schools and industrial teaching resources are brought in to minimize the industry-academia gap. The Science Park Talent Cultivation Subsidy Program is implemented to provide students with internship opportunities and increase candidate graduates' professional knowledge to be applied in enterprises, while developing multi-talented personnel through the program. Besides establishing an effective industry-academia integration system, HSPB has also assisted partners in training basic technical skills, brought in academic innovations, invited faculty members to serve as corporate R&D advisors, as well as enhanced corporate image and product promotion, achieving win-win outcomes for both industry and academia.

Results of Cultivation Program for Past Two Academic Years

Academic year	Subsidy program	Number of subsidy
110	NTD 9 million	12
111	NTD 8.783 million	12

Furthermore, for enhancing the professional roles of employees, the training program for professional skilled personnel is planned according to park's industrial development trend and the manufacturers' needs. The fields of skills include semiconductor technology, information and communication technology, emerging industry topics, biomedical technology, etc. Meanwhile, the types of training include professional skills courses (including practical training), enterprise package classes, master forums and a series of seminars in conjunction with the park's anniversary celebration involving experts from industry and academia. Moreover, in response to post-pandemic era and sustainable development of enterprises, HSPB has offered relevant courses such as Green Recovery and Net Zero Emission Development in the Post-Pandemic (COVID-19) Era and ESG Deconstruction and Construction and Sustainable Development of Corporates.

Training Achievements for the Past Two Years

Academic year	Courses offered	Total teaching hours	Training attendance
Year 2021	296 sessions	2,126 hours	9,529 people
Year 2022	286 sessions	1,854 hours	8,531 people



On November 10, 2022, Fellow Yi-Long Huang was invited to give a talk on Crossing Boundaries and Building Dreams, in which he elaborated on the ways and attitudes of crossing the fields of science and humanity



On November 30, 2022, Fellow Chih-Yuan Lu from Academia Sinica was invited to give a lecture on Vision of 2050 - 3D Structures, Storage and Computing Combinations, New Materials, and Quantum Technology, in which he shared the challenges and new horizons that Taiwan may face in the semiconductor industry in the next 30 years.

S.1.3 Precision Health-Approach to Biomedical R&D

■ Precision Health Inter-Disciplinary Promotion Program

For the purpose of enhancing cross-discipline precision health foundation R&D energy in HSP and encouraging the park manufacturers to take clinical needs as the starting point to link up with the surrounding medical and research institutions to facilitate the development and clinical application of precision health products while encouraging the advancement of industrial R&D results to the clinical trial stage, HSPB and NSTC are collaborating to launch the sub-projects of four-year (2022-2025) Precision Health Inter-Disciplinary Promotion Program. The project was announced and reviewed from March 30, 2022. A total of four research projects in the fields of precision diagnosis and treatment as well as precision detection and prevention were developed to promote industry-academia-research cross-disciplinary cooperation, with a total grant of NTD 24 million, which drives the industry to invest more than NTD 36 million in R&D.

In order to continuously promote the relevant industry, academic, research and medical units to jointly propose solutions based on clinical needs, bring into play the comprehensive effect of cross-disciplinary cooperation in HSP, provide the direction of product development for manufacturers through feedback from clinicians, help bringing manufacturers' R&D results into pre-clinical and clinical-related validation, accelerate the launch of precision health products and to increase product reliability, HSPB has promoted the establishment of two precision health alliances and hosted two thematic exhibitions in 2022.

For strengthening the capacity of the biomedical industry in HSP and to keep track of the international trend of precision health, a Taiwan-Japan-Europe international biomedical industry exchange event was held to link up the manufacturers in the park, peripheral medical and research institutions, promoting the integration of the biomedical industry with the surrounding hospitals. It also assisted three companies in the park to apply for IPO certification, so as to penetrate into the global market, driving the continuous growth of biomedical industry and optimizing the precision health industry cluster in Hsinchu Science Park.

■ BIO Asia-Taiwan Exhibition presents outstanding achievements

HSP has been actively developing biotechnology and medical industries in recent years. In order to promote the R&D achievements of biomedical industry, HSPB has joined hands with manufacturers to participate in biotechnology and medical exhibitions in recent years. BIO Asia-Taiwan Exhibition was held in Hall 2 of Nangang Exhibition Center from July 28 to 31, 2022. 21 exhibitors from HSP participated in the exhibition and HSPB has set up Science Park Pavilion with the main theme of Telemedicine, Precision Health, and Industrial Advancement, inviting 14 manufacturers to join. The Healthcare+ Expo (Taiwan) was organized from December 1 to 4, 2022, in Hall 1 of Nangang Exhibition Center. 31 exhibitors from HSP involved in the exhibition and the HSPB has invited 14 exhibitors to participate in the Science Park Pavilion with the theme of Resonating Taiwan's Medical Material Industry Cluster Toward a New Era of Precision Health. The exhibition showcased the latest R&D achievements of HSP manufacturers that integrate information and communication and biomedical technologies, targeting the latest global medical trends and helping them to attract business opportunities in domestic and global markets.



BIO Asia-Taiwan Exhibition 2021

■ Booster program for commercialization of biomedical products

As a mean of accelerating the commercialization of technological achievements in biomedical industry, the cross-industry integration of biomedical research and development results from industry-academia collaboration will be advanced toward commercialization, and cooperation between industry-academia and clinical needs will be promoted to complement the product safety, efficacy verification, drug efficacy and safety verification involved in the product development process. In 2021, the program has approved a total of 6 grants (program period from January 1, 2021, to December 31, 2021) with a total approved grant amount of NTD 12.7 million, attracting industry investment of more than NTD 29 million and facilitating industry, academia, research, and medicine to jointly promote 40 collaborative projects related to validation trials.

■ Medical equipment innovation

In line with International Promotion Plan for Accelerated Innovation and Advancement in the Medical Device Industry promoted by NSTC in 2021-2022, HSPB is implementing its sub-project Innovation in the Entrepreneurial Environment for the Medical Device Industry in Hsinchu Science Park by organizing various entrepreneurial activities, including international entrepreneurial ecology exchange and business opportunity linkage activities, Shako Coffee in-depth entrepreneurial counseling, fund raising and business matching, entrepreneurial exchange or experience sharing sessions, etc. From 2021 to 2022, HSPB has led 8 and 10 medical material startup teams respectively to participate in the Medical Taiwan - International Medical, Health and Care Expo 2021 for two consecutive years. Besides, in order to intensify entrepreneurial environment and accelerate industrial innovation and transformation, an innovation exhibition was held in December 2021, featuring discussions on innovation and entrepreneurship trends and product demonstrations to showcase the R&D achievements of startup teams in the field of medical device. In 2021, 12 startup teams have completed in-depth counseling and 25 teams have conducted networking activities. Meanwhile in 2022, 28 industry representatives and 24 teams of startup teams that have participated in the event actively assist medical device startup teams in expanding business opportunities both domestically and internationally.



Group photo of International Medical, Health and Care Expo (Medical Taiwan) on June 2022

In September, October and November of 2021 and July, August and October of 2022, with the themes of technical exchange, business opportunities matching and venture capital matching respectively, experts in related fields were invited to help teams in solving problems related to marketing strategies, capital raising needs, medical device product certification and commercialization, etc. In December 2022, startup companies with mature products and services were invited to visit Taipei Gan-dau Hospital. Through end-users' experience and feedback, it is hoped to further discuss on technology development and needs and to promote possible opportunities for future cooperation with medical institutions.



Hsinchu Science Park medical device startup companies venture capital matching session

In order to assist new entrepreneurs in expanding their business opportunities in foreign countries and cooperation as well as globalization, Hsinchu Science Park Medical Device Industry Entrepreneurial Environment Innovation Program 2022 has selected six medical device startup teams to visit Fukuoka and Kitakyushu in Japan for a 7-day exchange program in October of the same year. The trip included meetings with local medical device chambers of commerce, large trading companies and biomedical research parks, and exchanges with banks, venture capitalists, incubation centers, accelerators and university joint platforms to understand the local new venture ecosystem, learn about measures and resources to support new startup companies and conduct a number of exchange and networking activities to help new entrepreneurs understand the local market trends, new venture resources and the lack of successive business opportunities in Japan, helping new startup teams to take the first important step in developing Japanese market.



S.1.4 Innovation R&D Awards

In a bid to motivate park manufacturers to develop innovative products and explore international market, as well as to encourage their engagement in R&D and patenting to protect their inventions, so as to improve technology level and promote industrial development, HSPB has launched the Innovation Product Award and R&D Accomplishment Award.

Award	Review Items	2021-2022 Achievements
Innovation Product Award	Innovation, technology, market competency, R&D investment, derivative benefits and the number of internationally recognized awards, patents and papers published of participating products	17 innovative products received awards
R&D Accomplishment Award	R&D expenses and the proportion of total revenue, R&D manpower and the proportion of employees, the primary development technology or advanced process patent portfolio and management, key technology R&D achievements and new products invention, status of driving relevant industrial chain, industry-academia collaboration, the effectiveness of human resources training, etc.	5 companies received awards

2021 Innovation Product Award Winners



Macronix International Co., Ltd.
– ArmorFlash™ Secure Flash Memory



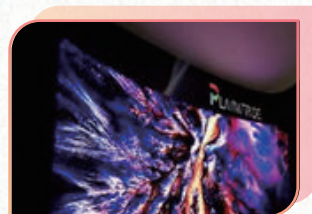
Elan Microelectronics Corporation-
Under PVC Biometric Smart
Card Solution



E Ink Holdings Inc.-Battery-
free ePaper Smart Credit Card



Wistron NeWeb Corporation-
SmartNIC Acceleration Card



PlayNitride Display Co., Ltd-
89-inch 5K ultrawide curved MicroLED display



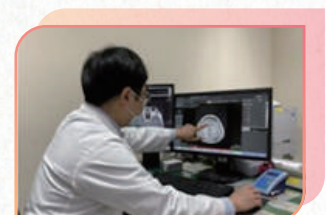
Innolux Corporation-LCD
with invisible camera



Gallant Precision Machining Co., Ltd.
– G10.5 Wet Process Equipment



Taiwan RedEye Biomedical Inc. - RedEye
Visible Spectrophotometer for clinical use



V5 Technologies Co., Ltd- Lung Image
Aided Interpretation Software



2022 Innovation Product Award Winners



Etron Technology Co., Ltd.-
E-Marker USB Type-C Cable ID Controller-EJ903



Realtek Semiconductor Corp-
Realtek's First Edge AI USB
Camera Controller (RTS5863)



Innolux Corporation-2016ppi true RGB
ultra high resolution LCD technology for VR display



PlayNitride Display Co., Ltd- Metaverse 0.49-inch,
4536ppi, ultra-high-resolution, full-color,
μ-PixeLED MicroLED micro-display.



AUO Corporation-14.6-inch
Rollable Micro LED display



E Ink Holdings Inc.-E Ink
Gallery 3 Full Color ePaper



Gallant Precision Machining Co., Ltd.
-AOI equipment



Grape King Bio Ltd. Longtan Science
Park Branch-Neuroprotection-Product
rich in Erinacein A and Hericium erinaceus



Price-giving ceremony for 2021 Innovative Product Award and R&D Achievement Award
at Hsinchu Science Park 41st Anniversary



Price-giving ceremony for 2022 Innovative Product Award and R&D Achievement Award
at Hsinchu Science Park 42nd Anniversary

Biomedical startup team R&D highlights

In order to help medical device startup teams in linking up with international resources and increasing their business development opportunities, HSPB has authorized Asia Pacific Accelerator Network Association to implement Hsinchu Science Park Medical Device Industry Entrepreneurial Environment Innovation Program, which continues to provide in-depth entrepreneurial guidance for medical device startup teams as well as domestic and international business matching activities. From 2019 to 2021, a total of 46 sessions of in-depth counseling activities involving 56 medical device startup teams have been completed and 10 industry matching sessions of different themes have been held, involving more than 115 industry representatives and 76 startup teams. In addition, HSPB led 8 new startup teams to participate in Medical Taiwan - International Medical, Health and Care Expo 2021 and hosted an international market exploration and networking session for medical device startup companies at the exhibition. Many official and private representatives from different countries were invited, as well as incubation accelerator units, consultants and investment companies to interact with the participating startup companies both on-site and online.

The accelerated counseling system in this program has assisted two startup teams, namely Enosim Bio-tech Co., Ltd. and NexVita Technology Corp., to receive subsidies from National Development Fund Business Angel Investment Program. Besides, nine medical device startup teams have successfully developed into HSP science business. HSPB expects that through the promotion of this program, more innovative and entrepreneurial resources as well as services will be introduced, so as to maintain the sustainable development and competency of HSP's industry.

In conjunction with the 41st anniversary, HSPB organized Intelligence Empowerment to Create New Materials - HSP Medical Equipment Entrepreneurship Environment Innovation Project expo and industry exchange session in the afternoon of December 15, 2021, to showcase the outstanding achievements of HSP in fostering innovative R&D capabilities among biomedical-related industries in recent years. This exhibition and industry exchange session invited 8 medical equipment-related startup companies to present their innovative achievements whereas 11 startup companies have presented their innovative R&D products and interacted with related investors and manufacturers.

S.2 Workplace Well-being

Corresponding material topic: Park occupational safety and health (including labor inspection)



Policy/strategy

Establish a conducive working environment to attract talents to work in park, encouraging the manufacturers to comply with related laws and regulations of Occupational Safety and Health Act in order to build a safe and healthy park.

Targets and goals

Promote the implementation of safety and health in every unit, establish an autonomous management system for safety and health and improve the overall safety culture of the park.

Management evaluation system

Practise labor supervision and inspection according to OSH-related laws and regulations. Ministry of Labor (MOL) assessment group will evaluate the HSPB implementation outcomes of annual labor inspection every year.

**2021-2022
performance and
adjustment**

- ▶ HSPB held 7 recruitment events with Hsinchu Employment Center and Yilan County Government respectively.
- ▶ Conducted 381 inspections on labor conditions and 2,565 safety and health inspections
- ▶ A total of 28 project audits and 1,598 sessions of labor supervision and inspection programs were carried out.
- ▶ Conducted 247 counseling sessions on OSH-related projects and 26 training sessions and presentations on OSH-related laws and regulations.

**Prevention
or remedial
measures**

- ▶ Establish Online Self-Service Chemical Declaration Platform which requires manufacturers to implement industry chemical management and regularly report chemical disposal information to assist the fire department in disaster relief.
- ▶ Implement the Safety and Health and Chemical Substance Counseling and Inspection Program for High Risk Businesses to promote the of safety and health practices among park manufacturers.
- ▶ Establish Park Safety and Health Expert Platform with a benchmark learning model of large factories leading small factories.
- ▶ Implement the Chemical Disaster Response Training and Drill Program to enhance the emergency response to chemical disasters and improve overall defense capability.

S.2.1 Labor Safety

In order to optimize the entrepreneurial and sustainable environment, HSPB is actively promoting autonomous management capability of OSH among park manufacturers to guarantee the employees' occupational safety and health by means of advocacy, counseling and inspection. HSP is entrusted by MOL to perform labor inspections and OSH advocacy and counseling. In addition to implementation of labor inspections (including inspections of dangerous machinery and workplace), HSPB also cooperates with MOL to plan and carry out project inspections (e.g., labor physical and mental health care project), and actively conducts advocacy on labor regulations and hazard prevention to convey information about workplace hazards, in order to enhance the professional ability of the occupational safety and factory workers.



Hsinchu Science Park GRI-403 Writing Guidance Session

Year	2021	2022
Labor inspection	1,232 sessions	1,333 sessions
Advocacy on labor regulations and hazard prevention	13 sessions/672 people	14 sessions/858 people

For the purpose of enhancing emergency response capability, the manufacturers are advised to set up Park Joint Defense Organization and conduct relevant training and drills on a regular basis. Besides, Online Self-Service Chemical Declaration Platform is also established which requires the manufacturers to enforce chemical management and regularly report the chemical disposal information to assist the fire safety unit in disaster management. In addition, Safety Health and Chemical Counseling and Audit Program for High-risk Operations is in place to prompt the park manufacturers to execute safety health practices. Safety and Health Experts Platform is also established to allow professionals from large factories with relevant practical experiences to guide small and medium-sized business units in setting up their own safety health management systems and thus improving the overall safety culture in the park.



Chemical spill drill by Hsinchu Science Park Joint Defense Group

The Ministry of Labor conducted the 111th Year Annual Labor Inspection Organization Performance Evaluation in 2022. The evaluation included the performance of occupational disaster reduction, labor inspection execution, disaster reduction strategy tools implementation and civil services. HSPB was rated Excellent in the evaluation and awarded a medal during National Conference on Occupational Safety Health and Labor Inspection on March 13, 2023, acknowledging HSPB's outstanding performance in labor inspection.

For encouraging manufacturers and employees to enforce occupational safety and health practices to prevent occupational accidents, the Selection of Excellent Occupational Safety and Health Units and Employees was held. 12 business units and 15 excellent employees were honored from 2021 to 2022. The award-winning units and personnel were formally presented at the opening ceremony of the Occupational Safety and Environmental Protection Month.



Excellent medal awarded by MOL



Awarding 2022 Excellent Occupational Safety and Health Winners

S.2.2 Safe and Protective Environment

Strengthen the security system in view of expanding park area

HSPB has invested in intelligent and mobile electronic camera systems. Electronic surveillance and license plate recognition systems have been installed at each main road junction in Hsinchu, Jhunan, Longtan, Tongluo, Yilan and Biomedical Science Park, acting as an important aid in crime prevention and detection. There are also security police teams or squads stationed in each of the 6 parks, which greatly enhance the park security.

In addition, due to the large number of employees and in order to improve service, besides police forces who are responsible for park security maintenance, outsourced security officers are also assigned to support the surveillance in public and residential areas of the park as well as to perform safety and order maintenance work that are not under public authority.



Security personnel helping with traffic flow

Strengthen the disaster prevention and management

The fire safety operation of HSP has been transferred to Hsinchu City and County Government in 2019 and 2020 respectively. Up until now, fire safety operation will be under the responsibility of the fire department of each county and city government where the science park is located. In order to improve the fire safety, HSPB has allocated a 5-year budget of NTD 37.66 million for Hsinchu County and City Fire Service Subsidy Program since the beginning of the handover. Hsinchu City and County governments will also be subsidized each year during the 5-year period to improve firefighting equipment and firefighting teams' skills. Plus, a communication platform for fire safety operation has been established in the HSP with the fire departments of Hsinchu County and City governments and ASIP being invited to join the platform to strengthen the communication mechanism between the county and city, manufacturers and HSPB through regular meetings. This will not only eliminate the uncertainties among park manufacturers which extend from inspections conducted by different firefighting units, but also raise their awareness of fire safety laws and regulations.

Meanwhile, HSPB has started fire safety counseling program in 2021 to help upgrading fire safety and emergency response skills among manufacturers. Experts from the Hsinchu County Fire Department and major companies in the science park were invited to become speakers, conduct fire safety regulatory advocacy and on-site counseling, with the aim of strengthening companies' regulatory and rescue capabilities so as to prevent disasters and minimize impact.



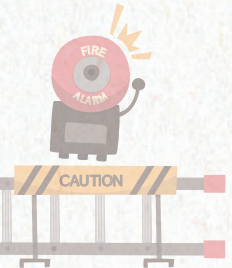
Fire safety operation communication platform meeting



Fire safety regulations advocacy



On-site fire service counseling



S.2.3 Safety Maintenance

■ Establish emergency notification system in the park

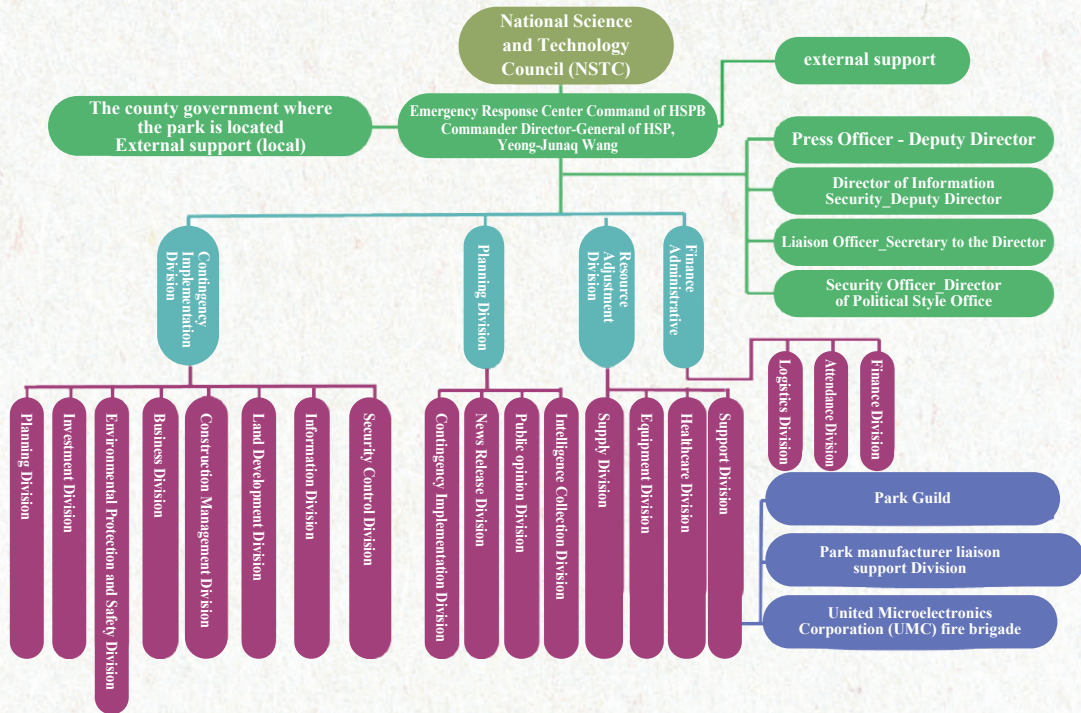
As to strengthen the emergency notification mechanism in the park, HSPB has set up a 24-hour emergency hotline (Tel: 03-5776666), which is responsible for answering disaster notification calls in Hsinchu Science Park (including the six science parks in Hsinchu, Jhunan, Longtan, Tongluo, Biomedical and Yilan) and assisting in compiling disaster information and contingency management, thus allowing HSPB to be aware of the disaster situation and notify higher authorities as well as request for external support to enhance emergency response efficiency.



24-hour emergency hotline of Hsinchu Science Park

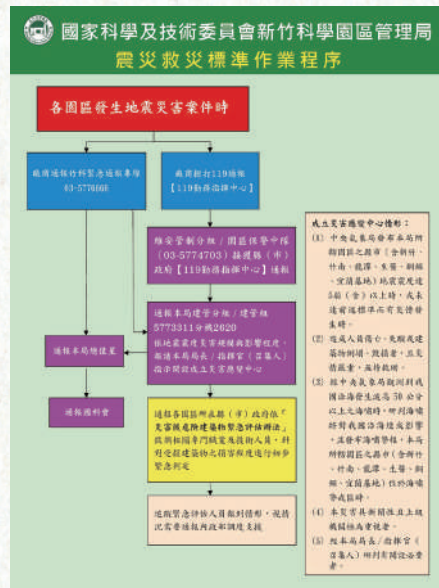
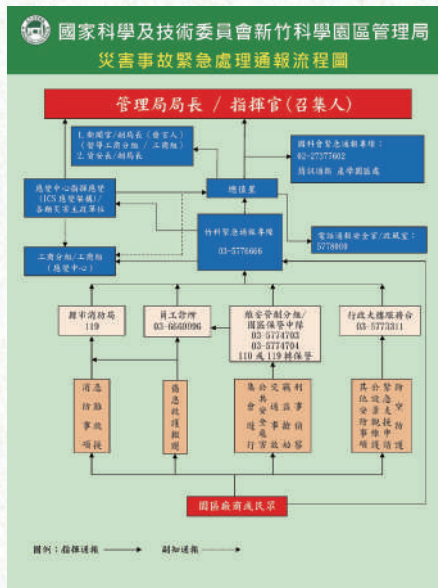
■ Strengthen the overall response capacity of key infrastructure

As a national science and technology and economic hub, the importance of Hsinchu Science Park is well understood. In order to strengthen the response capacity of the key infrastructures of science park and to respond to the impact of various disasters, HSPB has drafted the Operation Directions of Disaster Relief and Recovery Response Center of Hsinchu Science Park Bureau, National Science and Technology Council as the basis for setting up the Disaster Relief and Recovery Response Center in case of major disasters in the science park to be responsible for the disaster response and assist the manufacturers in resuming their operations.



Emergency Response Center Command and Response Structure of HSPB

In order to encourage disaster prevention and response work in the park, HSPB has compiled the Disaster Prevention and Rescue Operation Manual, formulated the procedures of responding to various accidents and disasters (such as earthquakes, fires, toxic and chemical disasters, floods, droughts, windstorms, etc. and other 21 types), which include disaster prevention, pre-disaster preparation, emergency response and recovery and reconstruction, etc. The procedures are also reviewed and amended on a rolling basis in accordance with the regulations of the central disaster prevention and rescue authorities.



Operation Directions of Disaster Relief and Recovery Response Center of Hsinchu Science Park Bureau, National Science and Technology Council

<https://www.sipa.gov.tw/home.jsp?serno=201001210034&mserno=201001210023&menu=ChineseMenu&contlink=include/menu03.jsp>



Aiming to continuously improve the emergency response and fire safety capacity among manufacturers, HSPB held the 111 Year Earthquake Evacuation and Fire Prevention and Rescue (including Commander Handover) Drill at Cyntec Co., Ltd. on September 22, 2022, in conjunction with the Hsinchu County Fire Department and National United University.

Taiwan is a seismic zone and therefore reducing casualties and damage caused by earthquakes is a topic that everyone needs to work on. The government has designated September 21 (921) as National Disaster Prevention Day. The main purpose is to raise awareness of earthquake prevention. The drill was designed with the setting of a 5-week magnitude felt earthquake in HSP, which caused a chemical spill that led to a fire. The drill included the activation of notification, evacuation of personnel, rescue and ambulance actions, as well as how to quickly and accurately hand over the disaster situation and command to the fire department, while assisting and protecting the firefighters in subsequent rescue measures to prevent the disaster from expanding. HSPB hopes that this exercise not only verifies the effectiveness of the emergency self-rescue and cooperation with Fire Department, but also demonstrates the best team understanding and disaster relief capability of each unit.



2022 Earthquake Evacuation and Fire Prevention and Rescue (including Commander Handover) Drill

■ Improve Smart Technology Security System in park

Through the construction of smart technology security system, the park performs crime prevention, criminal investigation, traffic safety and disaster prevention and relief. The park has installed full-featured dome cameras at important and high-incident intersections to monitor traffic conditions and determine the responsibility of accidents. In addition, license plate recognition cameras are installed at the entrance and exit lanes of the park to identify car plate number in real time and utilize the high-speed license plate search feature of the website platform to assist the police in investigating criminal cases such as hit-and-run vehicles, in order to improve the intelligent technology security system and continuously maintain the overall security and traffic safety in the park.



Image of smart technology security system

Industrial Park Safety and Health Counseling Program

As the benchmark of domestic industry and economic development as well as the home to many technological talents, HSPB organizes annual Industrial Park Safety and Health Counseling Program in order to assist the manufacturers in adapting to the rapidly changing labor environment, improve the current status of occupational safety and health and provide more sound care and protection for the employees. Major manufacturers and scholars and experts with practical experiences are invited to be the counselors, facilitating labor inspection through proactive counseling approach such as educational training, on-site counseling, professional consultation, observation and hands-on. The program aims at guiding manufacturers to promote safety and health effort, thus building a better working environment.

1. Building a safe and friendly workplace

The National Council for Sustainable Development (NCSO) of Executive Yuan has set Taiwan's Sustainable Development Core Goal 3 (T-SDG 03) as Ensure healthy lives and promote well-being for all at all ages. In response to this goal, HSPB aims to be a model for the park and plays a supervisory role to actively promote sustainable development, encouraging manufacturers to uphold a human-centered spirit and pay attention to occupational safety. In order to protect the occupational safety, health and hygiene of all employees, HSPB actively promotes and counsels occupation-related hazard prevention, formulates a number of policies based on the vision of zero workplace injuries and zero workplace accidents, and discloses the results in voluntary inspection report as a guide for constructing a friendly workplace environment.

2. Labor Inspection and Risk Classification Counseling

In order to provide a single window service for the technology industry in the industrial park, the Ministry of Labor has authorized the Labor Inspection Center of HSPB to perform labor inspections, hazardous workplace inspections, and hazardous machinery and equipment inspections. In 2022, 1,333 labor inspections, completion inspections of dangerous machinery and 15 inspections of dangerous workplaces were conducted. In addition, 1,245 applications for occupational safety and health (establishment of management staff, work rules, education and training programs, and establishment of medical personnel) were filed. Besides, regarding dangerous workplaces or small and medium-sized enterprises (SMEs) in the park, according to their risk classification, experts with experience in labor inspection are invited to conduct on-site counseling on topics such as safety management of machinery and equipment, chemical storage/use, explosion-proof electricity, chemical equipment, and occupational safety and health management system.



On-site counseling for SMEs by experts

3. Safety and health personnel improvement plan

In order to enhance the knowledge of the occupational safety and health personnel in the park, HSPB plans relevant thematic courses based on actual needs. 10 safety and health educational trainings and advocacy sessions were held in 2022 (Table 1, items 1 to 10). In line with the evaluation program of high-tech factory construction, HSPB hosted a construction engineering exchange meeting and invited the outstanding occupational safety and health construction industry to share their construction management guidelines at the meeting (Item 11). In addition, HSPB also organized self-evaluation training and improvement seminars for 2022 SME counseling program (Item 12 and 13), combining the experiences of safety and health experts to provide more resources for business units to improve counseling.



2022 Occupational Safety and Health Courses Conducted by HSPB

Item	Educational training	Attendance
1	Construction risk assessment practical training briefing	47
2	Construction project (including sewerage, confined space and construction frame assembly and disassembly) hazard identification and safety and health self-management promotional meeting	37
3	GRI Occupational Safety and Health Standard Disclosure practical briefing	41
4	Seminar on workplace pandemic prevention and health management promotion practices	44
5	Annual repair and high-risk operation hazard prevention seminar (including process exhaust safety management)	45
6	High-pressure gas hazard identification and self-management seminar	44
7	Practical training on hazard zoning and the selection of explosion-proof electrical products (Machinery management at source)	42
8	Practical training on corrosion deterioration assessment and non-destructive testing (including visual inspection techniques)	44
9	Practical training on safety management of high-tech factory processes	53
10	Hazard prevention and exposure assessment techniques for organic/specified chemical substance operations technical seminar	42
11	Science park construction engineering exchange meeting	105
12	Self-assessment training for small and medium-sized high-risk units	52
13	Seminar on safety and health improvement	107

4. Safety Partners

Labor Safety and Health Promotion Association: ASIP established Hsinchu Science Park Labor Safety and Health Promotion Association on January 1, 2005, and formed a safety partnership with the HSPB in 2007 to jointly establish an industrial safety and health care operation network to help reinforce intrinsic safety and encourage the autonomous management mechanism of the industry. In 2019, the association joined the Industrial Intrinsic Safety Promotion Alliance of Occupational Safety and Health Administration (OSHA) of Ministry of Labor and won the championship for three consecutive years from 2020 to 2022 for its implementation results.



Group photo of Director-General of Occupational Safety and Health Administration (OSHA) of Ministry of Labor (MOL) Tzou Tzu-Lien (center) and President of Promotion Association Shen Zhou (second from left)

Experts platform: HSPB invites industry experts, either from outstanding units or individual personnel, with practical experiences in safety and health to assist small and medium-sized business units in need to carry out relevant improvement measures. Through the guidance and sharing of practices, not only can we meet the law requirements, but also help the enterprises to better meet their own needs and current situation. In 2022, according to the needs of small and medium-sized enterprises, HSPB provided 20 on-site counseling sessions on topics such as labor health protection, chemical substance operation management, emergency response procedures and respiratory protection plans, etc. On-site surveys are carried out to understand the current situation and needs of safety and health, bringing more direct and diversified counseling to the manufacturers through one-on-one discussions, experience sharing, and on-site observation.

Emergency Response and Joint Defense Organization: HSPB expects to reduce casualties and property damage and minimize environmental impact through mutual support of the members of the group in the shortest possible time when a disaster occurs, based on the convenience of geographical location of each business unit. Therefore, Emergency Response and Joint Defense Organization has been established and divided into six groups, including Hsinchu City Group A, Hsinchu City Group B, Hsinchu County Group, Longtan Group, Tongluo Group, and Jhunan Group, which carry out hazard prevention and emergency response work according to the annual plan. The following table shows the demonstration drills conducted by each group in 2022. In addition, in order to enhance the knowledge of emergency response personnel, HSPB organized toxic and chemical disaster awareness level certification training and two off-site training sessions for 102 participants.

2022 Joint Defense Organization groups emergency response demonstration drills



Tokyo Electron Limited on 17th November



Nuvoton Technology Corporation on 1st December



Taiwan Semiconductor Manufacturing Company (TSMC) Fab 2 on 10th November



Grape King Bio Ltd. On 7th December



Powerchip Semiconductor Manufacturing Corporation (PSMC) on 27th November



Namics Taiwan Co. Ltd. on 9th December

5. Deepen the culture of industrial safety

Occupational Safety and Health Sustainable Development Seminar

In line with the Ministry of Labor's Occupational Safety and Health Administration (OSHA) promotion of SDGs 2030, the Occupational Safety and Health Seminar was held on October 20, 2022, as part of the Occupational Safety and Environmental Protection Month serial activities. The seminar was designed to encourage enterprises in the park to consider employee safety and health as an important capital in their sustainable development and to set important goals for corporate development. At the beginning of the seminar, OSHA introduced the ESG Occupational Health and Safety Sustainable Development Program to assist domestic enterprises in constructing occupational safety and health information disclosure practices for stakeholders, followed by sharing of the highlights of occupational safety and health implementation in factories. Innolux Corporation shared case studies on the promotion of physical and mental health at workplace to convey the company's philosophy of human-centered governance; United Microelectronics Corporation shared the digital safety management system developed by the company for smart chemical plants, which digitizes the information before being processed by AI intelligent management. Finally, AUO Corporation shared the whole process of contractor management, using high-tech personnel dynamic positioning and other technologies to track the contractors' compliance in the plant. At the same time, occupational safety equipment was also displayed outside the venue to make the seminar more attractive.



Occupational Safety and Health Seminar-Deputy Director-General, Hu, Shi-Min is giving opening speech



Occupational safety equipment display booth live photo

Emergency response drill for toxic and chemical disasters

In order to strengthen the ability of the park's business units to prevent and handle chemical disasters, a large-scale tabletop toxic and chemical disaster drill was held on November 10, 2022. Before the drill, Dr. Fuh-Yuan Shih, an expert in emergency response management and a doctor at National Taiwan University Hospital, was invited to introduce the tabletop disaster drill, guiding the course step by step on how to design a tabletop drill and set the drill objectives. After the participants understood the essence of the tabletop exercise, a tabletop disaster drill was conducted by TSMC, with the process following the ideas of Federal Emergency Management Agency (FEMA) and ISO 22301 business continuity management standard, while the decision making process was simulated by a random compound disaster problem and was made live. Afterwards, members of the contingency team review the drill objectives and continuously revise the contingency plan and standard operating procedures (SOPs) on a rolling basis.



TSMC conducting tabletop disaster drill

S.3 Joyful living in HSP

Corresponding material topic: Local community、Traffic control、Life enrichment



<p>Policy/strategy</p>	<ul style="list-style-type: none"> ➤ To help employees in achieving a work-life balance through all-rounded development in terms of economic growth, environmental protection and community harmony ➤ To enhance the improvement and maintenance of the surrounding environmental infrastructure and quality of living. Subsidies are provided to local governments and township offices for projects such as traffic improvement, police and fire prevention, education and culture, in accordance with the Principles for Handling Construction Funds for Subsidies to Local Governments by Hsinchu Science Park Bureau and the Regulations for Reviewing Construction Funds for Subsidies to Local Governments for Unspecified Projects by Hsinchu Science Park Bureau, National Science and Technology Council.
<p>Targets and goals</p>	<p>Adhere to the philosophy of environmental protection, resources conservation and the sustainable coexistence of industry, environment and ecosystem, as well as promote the mutualism and sustainable development of technology and environment.</p>
<p>Management evaluation system</p>	<p>The achievement of key performance indicators (KPI) is evaluated annually in accordance with the annual governance policies of Executive Yuan.</p>
<p>2021-2022 performance and adjustment</p>	<ul style="list-style-type: none"> ➤ HSPB compiles monthly report on results of key measures implementation. ➤ Total tour bus rides reached 464,000 passengers in 2021 and 510,000 passengers in 2022. ➤ Conducted 56 environmental education activities on HSPB sewage treatment plan in 2021 with 1,509 participants and 47 sessions in 2022 with 1,882 participants. ➤ Environmental education programs for rural schools, with a total of 4 sessions and 140 students participating. ➤ HSPB conducted a total of 30 neighborhood cleanup activities.
<p>Prevention or remedial measures</p>	<ul style="list-style-type: none"> ➤ Launch National Cleanup Week ➤ Conduct activities to promote neighborliness in remote elementary schools ➤ Planning of park construction based on demand and subsidizing local constructions ➤ Carry out a variety of labor and welfare activities

Launching of Non-Profit Kindergarten Becomes Employees' Backbone

HSP has always brought significant contributions and influences to Taiwan's technology. For building a stronger support for the manufacturers and employees and to help parents to work comfortably and promote the healthy growth of children, HSPB has established the first non-profit kindergarten Du-Xing non-profit kindergarten in HSP in 2022, providing high-quality and affordable public education and protection resources. The kindergarten opened on August 15, 2022, and accommodated children and grandchildren of the park employees from the age of 2 years old to elementary school, with a total of 265 children.

Du Sing non-profit kindergarten is located at No. 1, Du Sing Road, Hsinchu Science Park, near MediaTek Inc. and Novatek Microelectronics Corporation. It is an independent preschool with strategic location and a green area of over thousand pings in front as well as a park adopted by Macronix International Co., Ltd. at the back. The park is operated by the Association of Hsinchu Early Childhood Educators, a professional organization entrusted by HSPB to provide quality education, affordable fees and professional resource integration. In order to create a friendly education service that allows parents to balance between work and childcare, regular summer and winter daycare and after-school care until 7:00 p.m. are available. The three main educational goals are to bring up each child with love of sports, enjoyment of exploration and inspiration of good character. The educators fully leverage the advantages of the environment in encouraging children to be physically active and design a diverse learning zone. These actions aim to encourage children to explore language, space, cognition and interpersonal relationship, foster flexible thinking and active learning, inspiring children to care for themselves and others through love and role model as well as instilling positive and good character.



Du Sing Kindergarten



View of Du Sing Kindergarten outdoor learning area



Outdoor lesson



Part of classroom

S.3.1 Technology and Life Sciences

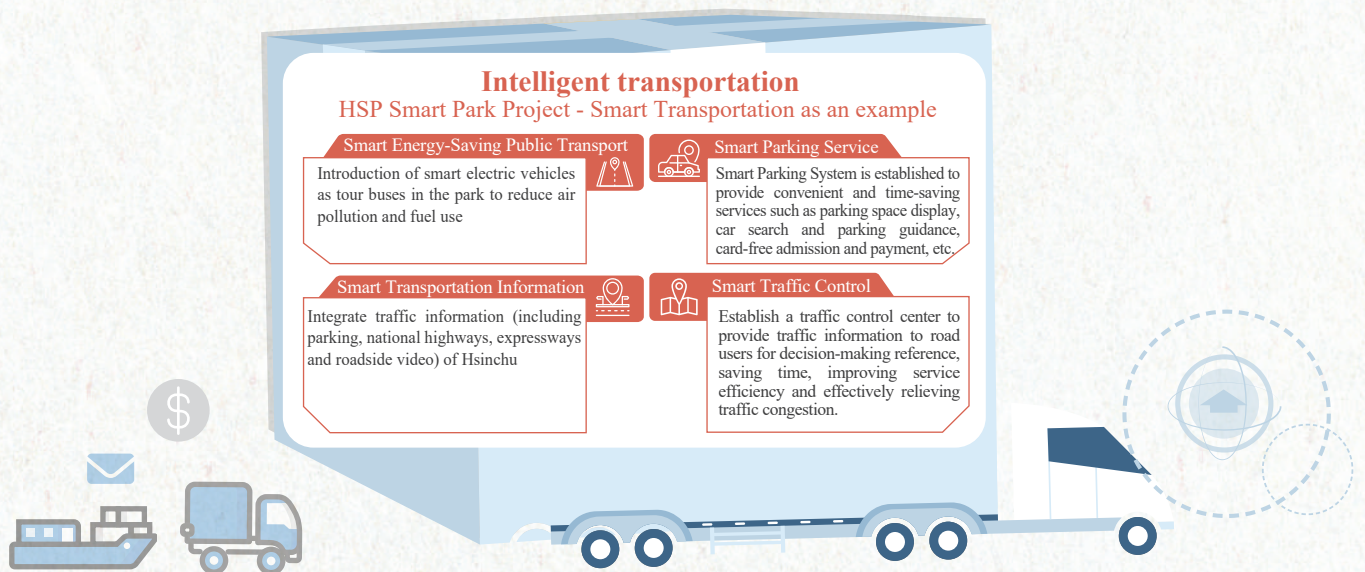
Application of ICT in developing Smart Park Project

NSTC has launched Using ICT Technology for the Development of Smart Park Project in 2016. The project won Gold Award of the 3rd Asia-Pacific Economic Cooperation (APEC) Energy Smart Communities Initiative (ESCI) Smart Transportation Gold Award in 2017, which fully demonstrated the technological strengths of Taiwan smart parks. In 2018, the project won the Merit Award of International Safety Awards (ISA) and was shortlisted for the International Data Corporation (IDC) Smart City 2019 - Smart City Asia Pacific Awards for Sustainable Infrastructure in 2019.

Smart Park Development Project

Policy	Installation Project
Smart Transportation	Energy-Efficient Public Transportation Network in the Park Smart Parking Service System Smart Transportation Information Service System
Smart Management	Environmental Management Information Website HSP 3D Geographic Information System (GIS)
Smart Sustainability	Smart LED Street Light System

In terms of transportation optimization, HSPB has implemented smart parking system, electric tour bus and smart traffic signage projects to improve intelligent transportation services. The smart parking system has introduced the license plate recognition and parking space occupancy detection systems, which effectively reduce the time spent by users and allow them to keep track of the parking status at instant. The green energy line from Taiwan High-Speed Railway (THSR) Hsinchu Station to Hsinchu Science Park has introduced electric tour buses, which not only serve the employees and residents along the park, but also save energy and reduce carbon emission. The total number of passengers in 2021 was 464,922 and 510,212 in 2022. The smart transportation signage provides real-time traffic information and users' reference. With the implementation of Program of Intelligent Transportation System of Hsinchu Traffic Corridor, the traffic congestion has been improved by more than 10%.



Regarding service efficiency, smart streetlights, smart air quality monitoring stations and wireless networks in public areas have been installed to expand the power of smart sustainability and smart governance. The smart streetlights can provide real-time information about the facilities online, which not only eliminates manual inspection, but also saves about 950,000 kWh of electricity per year. 12 air quality monitoring stations are set up and their monitoring results can be accessed through the Science Industrial Park Action Wizard App, providing instant environmental information to protect the public's rights. Besides, 29 wireless hotspots are set up to provide free Wi-Fi services to foreign visitors, employees and residents, serving approximately 855,000 visits per year.



National highway information

停車場名稱	照片	聯絡電話	地址	限高 (公尺)	費率	大客車格數	汽車格數	大客車剩餘車位數	汽車剩餘車位數	說明
研發二路位階停車場		03-5774883	新竹市東區研發二路12-1號	2.1	汽車30元/H.R.、月租1500元(僅限園區廠商承租)；機車30元/次、月租180元(僅限園區廠商)。	--	429	0	80	
興隆二路地下停車場		03-5797823	新竹市東區興隆二路1號	2.1	汽車30元/H.R.、月租1500元(僅限園區廠商承租)；機車30元/次、月租180元(僅限園區廠商承租)。	--	509	--	34	
科發行政大廳停車場		(03)577311#2153	30016 新竹市東區新發二路2號	無	汽車20元/時(前30分鐘免費)、機車免費	--	182	0	50	
研發竹科研發中心停車場		6687047	300 新竹市東區新竹市力行二路2號	2.5	30元/小時、月租1500元(僅限園區廠商承租)	--	887	0	52	
新竹清水處理廠停車場		6687145	300新竹市東區力行三路一號	2.1	30元/小時、月租1500元(僅限園區廠商承租)	--	418	0	119	無

Parking space availability real-time information



Science Industrial Park Action Wizard 2.0 interface and download

In the future, HSPB will continue to introduce or apply advanced technologies to promote the development of smart and innovative transformation of the science park and help the high-tech industry to grow sustainably. Our experiences in promoting smart parks are expected to help other countries to contribute more smart applications, so as to drive the continuous growth and progress of the overall industry.

S.3.2 Convenient Living

HSP focuses on R&D of high-tech industries, linking related upstream and downstream manufacturers, industrial chains and diversified operations, gradually expanding into six parks. In order to meet the employees' needs in each park, HSPB is committed to improving the software and hardware facilities and creating a clustering effect. HSPB has taken into account the opinions of the six park manufacturers and the neighboring communities, hoping to create a harmonious park with quality industry and living environment by improving public facilities and providing daily services.

Residential and Recreational Facilities

The dormitory is strategically located facing Jingsin Lake and in the middle of greens, as if you are walking along the Royal Palm Boulevard. It is also equipped with sports facilities such as tennis courts, basketball courts, golf courses and swimming pools, providing residents with a variety of leisure options.

For the sake of improving quality of accommodation, HSPB has been planning to renovate and renew the old singleton dormitories since 2006. The renovation work of Yung-Yuen singleton dormitory has been completed in 2021 and is available for rent. The scope of renovation includes sanitary equipment, electrical and mechanical equipment, roof waterproofing, exterior wall cladding, etc. An additional lift was built to create a barrier-free environment. Due to structural safety concerns, the Xuan-Yuan dormitory has been demolished and rebuilt in 2019 and is expected to be completed and available for rent in 2024. Regarding the dorms for dependents' households, the construction along lakeside has been planned in 2022 and is scheduled to be completed in 2026 and can accommodate around 72 families. The existing dormitories will be renovated according to their conditions and will continue to be maintained and managed properly in line with personal and quality needs, so as to improve the employees' living environment.

On the other hand, most of the residents move in because of their children's school enrollment needs. The facilities of both playgrounds (next to Hong Yi Building and Xue Cheng Building) in the area have been tested by professional organizations and have safety concerns. In order to fulfil children's leisure needs, the improvement project of children's playground in the park residential area has been completed in 2020 and has opened for use in May 2021 after inspection.



Children's playground in residential area

Science Park Exploration Museum

The Science Park Exploration Museum showcases the efforts of the park manufacturers and the history of the development of HSP. It does not only play as part of science education, but also continues the mission of historical inheritance. By learning from the past, visitors are expected to witness the efforts of the pioneers and take the chance to highlight the outstanding high-tech achievements of HSP industry.

So far, there are three main-themed halls in the museum, namely Visionary Hall, the Industry Hall and the Culture Hall, which respectively introduces innovative products in HSP, Green Park concepts and the achievements of each industry as well as the founding history of the park, leading visitors to review, understand and look ahead to HSP.



Foreign guests paying visit to exploration museum



Students paying visit to exploration museum

Science Park Exploration Museum mobile phone audio tour app



Science Park Exploration Museum website

<https://web.sipa.gov.tw/explore/index.do>



Mobile pop-up stores

From September to November 2022, the mobile retail stores of Uni-President Enterprises Corporation have been introduced to the park on a trial basis. It was located at the open space in front of the gate of Yilan Park Phase I standard plants from 12p.m. to 1.00p.m. every Wednesday and Friday to provide convenience services for the park manufacturers. Hundreds of commodities, such as room temperature, frozen and refrigerated products, including daily necessities, snacks, beverages, noodles and frozen food, etc., are provided to meet the catering needs of the park's employees and enrich the park's life functions. After the trial period, it is officially stationed in the science park in 2023 after the open online leasing. In addition, HSPB has brought in OKmart Co., Ltd. and Xianfang Co. Ltd to provide supermarket and catering services at the first floor of the second phase of new standard plants at Hsinchu Science Park and Yilan Science Park.



Mobile pop-up stores

S.3.3 Diversified Transportation Services

Traffic safety improvement and lane optimization planning of Hsinchu Science Park

With the industrial development of HSP, the traffic volume in the park continues to grow, which also leads to the rise of traffic accidents. In order to improve the road safety quality, HSPB has organized the project of Traffic Safety Improvement and Lane Optimization Planning of Hsinchu Science Park and a citizen engagement workshop, hoping to discuss the use and management planning of road space through the position and viewpoints of road users, together with industry, government, academia and citizens. The meeting was attended by 24 participants, including HSPB, Hsinchu County Government, police units, experts, public representatives, representatives of associations, local leaders and residents, etc. The scope of discussion included junctions prone to accidents, left turn and lane configuration adjustment for motorcycles and pedestrian quality, etc. HSPB will also take the conclusion of this meeting as an important basis for the subsequent road design and propose the overall road safety design standards for HSP.



Citizen engagement workshop on traffic improvement

Electric Vehicle (EV) Charging Bays

In response to energy saving and carbon reduction as well as to support EV using employees, HSPB has been constructing EV charging bays since 2018 to provide charging services for electric vehicles. The charging stations are distributed at HSPLink, the four main metered parking lots and the areas with relatively high traffic flow. There are 8 fast charging bays for Tesla vehicles at HSPLink and 32 EV charging bays at the four metered public and roadside parking lots, with no electricity charge to encourage more EV users. The total number of charging stations has reached 40, contributing to energy conservation and carbon reduction.

YouBike all over the Park

YouBike has reached 15 stations all over HSP, all of which are important spots, parking lots or crowded places. It has become a supplementary transportation tool to the tour buses in park and private transportation. Besides benefiting the employees in the surrounding communities, it is also a great blessing for the public transporters from other counties. In the past, one had to rely on buses or shuttle buses to enter HSP after getting off at Hsinchu or Xinzhuang railway station. Since the public bicycle system is available 24 hours a day, it can serve the employees commuting to work at night, which makes the transportation more flexible and convenient.

HSPB is now planning YouBike 2.0, with 15 stations set up next to the original YouBike 1.0. Other than YouBike 2.0 vehicles, YouBike 2.0E electric-assisted bicycles are going to be introduced to the line at the same time. YouBike 2.0E and YouBike 2.0 share the same parking pillar and app. With the assistance of electrical system, YouBike 2.0E allows riders to enjoy the experience of easy cycling long distances or steeper slopes. HSP is expected to provide YouBike with dual systems and offer different bike choices according to destinations or physical strength, thus improving the resilience and convenience of both internal and external transport, gradually moving towards a more perfect Green Technology Park.



YouBike2.0

THSR Under-bridge Liaison Route

In order to improve the convenience of transportation between the park and the THSR Hsinchu Station, the Construction Division and the Hsinchu County Government have planned the development of THSR Under-bridge Liaison Road Extension to HSP Project in the construction plan of the road system in the living area, with a total investment of NTD 2,740.1 million and implementation in three phases.

Phase I construction, from Xinglong Road to Gongdao 5th Road, is about 1.83 kilometers long and was opened to traffic in June 2015. Phase II, from Gongdao 5th Road to Zhongxing Road, is about 901 meters long and was completed and opened for use in August 2019.

The Phase III project starts from Zhongxing Road in the north, crosses Kehu Road and Ke-Zi-Hu-Si towards the south, connecting to Lixing Road in HSP, with a total length of 1.3 km, bridge of 610 meters, embankment and cut of 690 meters and a road width of 30 meters. The project costs NTD 1,746.03 million and has begun construction on November 23, 2020, and is expected to be completed by the end of September 2023.

Upon completion of Phase III, it can save 15 to 20 minutes driving time from HSP to Hsinchu City. It will be able to link up with Phases I and II of the operating High Speed Rail Bridge, effectively relieving the traffic flow between Hsinchu Science Park and Hsinchu High Speed Rail Station as well as between National Highway No.1 Zhubei Interchange and Hsinchu Interchange, thus improving the overall road traffic system and linking up specific areas of Hsinchu High Speed Rail Station, Hsinchu Biomedical Park, Taiwan Knowledge Economy Flagship Park and Touchong, Erchong and Sanchong Road of Zhudong Township.

S.3.4 Developing Health Promotion and Care

■ Pandemic preventive measures

In mid-May 2021, the outbreak of COVID-19 in Taiwan became more critical. The local city and county governments actively called for the public to do screening as soon as possible. In order to prevent virus from invading and affecting the science park, HSPB and the Hsinchu City Government cooperated to set up the first screening station at Du Sing Hall, jointly establishing a bastion of pandemic prevention for HSP.

In June 2021, there was a group diagnosis among migrant workers in the park, therefore increasing demand for screening. In order to solve this dilemma, HSPB cooperated with the Hsinchu City Government and the Miaoli County Government to establish screening stations for migrant workers in Hsinchu and Yilan Science Park. In total, 8,837 people have been screened in 2021. In a bid to allow employees to receive vaccination at the nearest location, HSPB works with Hsinchu City Government to set up a large-scale vaccination station at tennis court of HSP, which has been launched on June 16, 2021, providing a daily vaccination capacity of 1,200 people.

In October 2021, a large number of international vaccines are being imported into the country attributed to corporate donations and central procurement. In order to increase the vaccination rate in Taiwan, the Central Epidemic Command Center has encouraged ministries to open additional large-scale vaccination stations and large enterprises to have more than 100 people applied for vaccination (outreach) services. In line with the central government's policy, large vaccination stations were opened on October 18, 2021, at HSP and Jhunan activity centers, which were closed upon task completion of the phase until November 3, 2021, with a total of 12,118 people receiving vaccination.

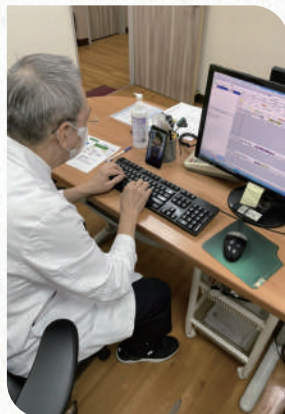
COVID-19
on-the-go
station

In line with the vaccination schedule, HSPB and Hsinchu City Government have jointly set up a vaccination station at HSP Activity Center since January 17, 2022, which is available for vaccination without appointment and provides nearby services science park's employees and surrounding residents. Till February 25, there were 21,955 people enrolled on the 19th day of the campaign.



On-site photos of vaccination stations at HSP Activity Center

Staff
clinic



Staff clinic video consultation service

Within 2022, the staff clinic of HSP provided vaccination appointments, COVID-19 video consultation and distribution of oral antiviral drugs for treatment in response to the pandemic.



In response to the rapid increase of confirmed cases of Omicron in May 2022, HSPB intended to call for park manufacturers to contribute to pandemic prevention, foster friendly workplace and take care of physical and mental health of diagnosed employees. Therefore, HSPB has formulated the Corporate Sustainability - Working Together to Fight Pandemic action plan on May 23, 2022, which includes five measures: establishing corporate care measures and care groups, educational training and advocacy, letter/phone/video care services, mobile support and corporate care package as well as physical and mental health care after back to workplace. Park manufacturers are expected to take this action plan as a reference to formulate their own measures to take care of their employees and implement them accordingly, while assigning someone to supervise them through the pandemic reporting system, telephone counseling and on-site visits.

According to the Ministry of Health and Welfare, the top ten causes of death in 2021 are malignant neoplasm (cancer), among which pneumonia that ranked third is especially noteworthy. In view of this, the staff clinic has been implementing preventive medical care by providing more than 150 contract manufacturers with free annual low-dose lung computed tomography (LDCT) examinations. By the end of 2022, 2,678 people have completed LDCT and the majority of manufacturers received showed appreciation towards the effort. Due to the dedication and care of the staff clinic, patients are early detected, treated and restored general health.

In 2022, the staff clinic provided 586 people with bone density assessment (ankle type), including 6 people with abnormal test values of -1.5 or less. The staff clinic further provided dual x-ray absorptiometry (DEXA) scans and professional medical follow-up services. Since 2022, the staff clinic has added free Coronary-Artery Calcium Score (CAC) test. Up till now, about 16,251 employees have completed free Computed Tomography (CT) examinations.

Vaccination is one of the most effective protective measures against viruses. The staff clinic has been actively promoting various vaccination services under the concept of care and service. In 2022, vaccination services were provided to about 7,700 people. In addition, 29 first aid training courses, 22 cardiopulmonary resuscitation (CPR)/automated external defibrillator (AED) classes, 1 ultrasound examination, 14 eye pressure tests and vision examinations, as well as 81 other multi-faceted health promotion courses were held in the same year, which raise the employees' awareness of their own health and enable the staff clinic to contribute to health care of the park.

■ Park Cup Sports Tournament

In a bid to promote the exchange between companies in the park and to encourage proper leisure activities among park's employees, HSPB plans a series of sports tournaments every year. In the first half of 2021, the Park Cup Sports Tournament was cancelled due to Covid-19 outbreak. Several tournaments were also postponed due to the pandemic, including the softball tournament, which was postponed to November. There were still 49 teams of nearly 1,300 participants this year. Besides, the tennis tournament was also successfully organized in late November with 14 teams of nearly 100 players participating.

Despite the impact of the pandemic, HSPB encourages the employees to go outdoor after work to cultivate an exercise culture, maintain physical and mental health, as well as improve self-immunity, looking forward to achieving work-life balance. Besides opportunities to be physically active and relieve work pressure, outdoor games can cultivate mutual understanding too!



Ball tournaments highlights



S.3.5 Community Mutualism

In order to achieve mutualism between park development and local construction, HSPB assists local governments in management of the growing demand for public facilities around the park followed by park development. Local governments are subsidized to improve the infrastructures, maintain safety and environmental quality, manage local constructions of traffic, police, fire, drainage, water supply, environmental protection, education and culture, medical and health care as well as land use within 3 km of the park. HSPB works closely with local governments to enhance the public facilities and improve the quality of services. Within 2021-2022, HSPB successively provides subsidies to local governments to improve roads, sidewalks, parks and road slopes, build and expand roads outside the park, upgrade teaching and environmental facilities, police, land and firefighting facilities, and improve drainage, etc., so as to further enhance the quality of living environment for residents, improve disaster relief and ambulance capabilities, promote the quality of school education and increase local flood control capabilities.

Occupational Safety and Environmental Protection Month Road Run and Health Promotion Activities

Whilst HSPB is committed to promoting industrial development and economic growth while also taking into account the sustainable development of the environment and workplace quality and to raise self-awareness of physical and mental health, workplace safety and environmental protection, Occupational Safety and Environmental Protection Month Serial Activities is held every year, hoping to increase public participation in creating a safe and healthy living environment, and work together to continue occupational safety and environmental protection efforts. On October 29, 2022, the opening ceremony was held in Tongluo Science Park. 1,500 employees, relatives and citizens were invited to run in Tongluo Science Park and Jiuhu Village to enjoy the beauty of the Hakka villages and florist's daisy. Besides, four parent-child health promotion activities were conducted, as well as high school, junior high school and elementary school industrial safety graphic contests. In addition to providing scholarships to award-winning students, it can also attract parents' attention to the importance of occupational safety through their children's perspective.



The 1st place entry in the middle grade group (Theme: Occupational Safety)



Tongluo Science Park Occupational Safety and Environmental Protection Month Road Run



National Cleanup Week

On the eve of the Lunar New Year, HSPB cooperates with EPA of Executive Yuan to launch the National Cleanup Week and holds the Clean Home for All Campaign in eight communities around the park, namely Science Park, Xinzhuang, Xiangong, Xianshui, Jinshan, Longshan, Gaufeng, and Guandong villages. After the New Year, the activities were held in Yilan, Longtan, Jhunan, and Tongluo Park respectively. Prior to the activities, the village chiefs will be contacted to conduct on-site surveys and assign the appropriate work content, number of people and equipment to be used. A total of 30 events were held from 2021 to 2022. The activities include street waste cleaning, tree pruning and the removal of water containers to eliminate dengue mosquitoes and to improve the environmental hygiene of the neighborhood. The community service has been very well received each year and the residents have shown their appreciation.



Photos of neighborhood cleanup

■ Park Labor's Day Celebration Party and Honor of Outstanding

For the purpose of recognizing the outstanding employees and celebrating Labor Day, the 2022 Labor Day celebration was postponed to September 1 due to the pandemic. 88 employees with outstanding performance in 2022 were publicly commended. There were also great performances and activities.



Photo of Park Labor's Day Celebration Party and Honor of Outstanding

■ Hsinchu Science Park Year-End Arts and Music Festival Hundred people gather at Jingsin Lake to enjoy music and shopping

The Jing Xin Lake hidden in the HSP is usually a popular recreational place for the park employees and citizens. In order to achieve a work-life balance among HSP employees and residents, HSPB held a music festival and parent-child activities on December 3, 2022, to promote family harmony and foster parent-child relationship. The music festival featured live performances by several live bands, as well as parent-child crafting activities at the lakeside stores. Many guests were invited to attend the concert, including the leaders of surrounding communities, together enjoying jazz music and food by the lake-side in a pleasant autumn afternoon.

In addition, HSPB invited Hsinchu Mental Health Association - Dream Workshop to set up a booth selling handmade products. Besides, the handcrafted soaps made by physically disabled friends for whom Dream Workshop counsels and cares were also given as gifts for the event, contributing to charity while enjoying music and eventually put a perfect ending to the music festival.





Public participated in the event with great interest



Message from Deputy Director of HSPB, Hu, Shi-Min



Chief Secretary draws lucky winner

S.3.6 Environmental Education

■ Social Education and Dissemination Promoting Environmental Education

With the goal of fulfilling social responsibility and promoting sustainable development, HSPB has been actively promoting environmental education. Sewage treatment plant of NSTC (hereinafter referred to as the site) has been certified as an environmental education facility since December 2013. In November 2018, the site has passed the evaluation of EPA of Executive Yuan and successfully extended its accreditation to 2023. Seven sets of special courses on water resources, wastewater disposal and renewable energy, including Magic Sewage Plant, Water Gatekeeper, Environmental Protection Journey of Technology, Water Travel Journal, Green Energy Miracle, Get Your Own Water and Surrounding Water World, have been set up to meet the learning needs of different age groups. In order to promote environmental education and respond to the feedback from general public, the site actively seeks cooperation opportunities with representative industries of Hsinchu Science Park, volunteer teams, teaching units and community groups, hoping to integrate local resources to jointly promote environmental education and science popularization.

Since the initiation of recruitment, 7 park manufacturers, 34 volunteers, 8 teaching units and 7 community organizations have joined the partnership to promote environmental education in the plant. In total, 56 and 47 visits were received in 2021 and 2022 respectively, with 1,509 and 1,882 participants respectively.

In addition to receiving bookings for courses, the plant will also take the initiative to visit schools in rural areas from 2021 to 2022 to disseminate environmental protection knowledge and care for the disadvantaged. A total of 4 sessions of environmental protection courses have been conducted through graphic and storytelling, experimental experiences and question-and-answer (Q&A) sessions, with total participating students reaching 140 people.



Rural school visit service



Environmental education course visit

Environmental Education Activities on Low Carbon Living

In recent years, environmental sustainability has been advocated. With the purpose to continue raising awareness of environmental sustainability among the park's employees and public, HSPB held a low-carbon living and environmental education event in conjunction with Work Safety and Environmental Protection Month on October 22, 2022, inviting the manufacturers and the surrounding public to the Samgabsui Environmental Education Center in Taoyuan City to learn the ways local residents and volunteers can uphold the demand for reduction and work together to protect and restore the land they live on, transforming the place into a fun and educational place.

Samgabsui Environmental Education Center takes living, production and ecosystem as the development conditions and wisely makes use of local elements (wood, bamboo, soil, brick, stone and grass) to create a friendly environment with a minimalist mindset and restoration of the old, improving the villagers' environmental literacy as well as expressing humanity and environmental literacy in community culture through practical activities and environmental education courses. A variety of environmental education programs and interesting visits are also provided. The teaching experts in conservation will guide the public in understanding conserved animals in Taiwan - the Taipei grass frog, teach them the correct way of habitat maintenance and lead them in observation and planning of suitable environment from a biological perspective to achieve ecological restoration.

Through environmental education field trips, the public can learn about friendly environment that can be practiced in daily lives and thus create a symbiotic and mutualistic environment through ecological methods. HSPB hopes to make the concept of friendly environment more profoundly embedded in community through education and fun, together constructing a more enriched ecological environment.



Low-carbon living environment education activities

Integrity Governance and Sustainable Services



G.1 Integrity governance

Corresponding material topic: Anti-corruption/corporate integrity

<p>Policy/strategy</p>	<p>To advocate integrity and honesty, strengthen the construction of ethics, reinforce transparency and accountability, prevent conflicts of interest, prevent corruption and practise integrity conduct standards among civil servants to foster a clean government, transparent Taiwan and global networking.</p>
<p>Targets and goals</p>	<ul style="list-style-type: none"> ▶ In accordance with the instructions from Agency Against Corruption of the Ministry of Justice and the Department of Government Ethics of National Science and Technology Council, annual project audits and project audits are conducted and official documents are signed by each team and division. When a potential violation risk event or person is discovered, a prompt study and proposal on relevant early warning actions is carried out and to be implemented. ▶ Ongoingly promote administrative transparency within sector, assist enterprises in building integrity governance network, foster in-depth communication and consensus between public and private sectors, create a clean and quality investment environment, develop the corporates' potential in generating reasonable profits, enhance the competency of technology industry and boost the country's overall economic efficiency, in order to achieve joint cooperation between the public and private sectors to improve Taiwan's Corruption Perceptions Index (CPI) ranking.
<p>Management evaluation system</p>	<ul style="list-style-type: none"> ▶ In accordance with the instructions from Agency Against Corruption of the Ministry of Justice and the Department of Government Ethics of National Science and Technology Council, annual project audits and project audits are conducted and official documents are signed by each team and division. When a potential violation risk event or person is discovered, a prompt study and proposal on relevant early warning actions is carried out and to be implemented. ▶ Promote the implementation of the Sunshine Law and report the results of conflict of interest of civil servants. ▶ Collaborate with the AAC and higher-level civil service ethics government agencies to organize the Foreign Technology Business Integrity Forum to enforce measures to simplify government and provide convenience, assist enterprises in building integrity governance networks and promote in-depth public-private sector exchanges and consensus-building to create a clean and quality investment environment.
<p>Prevention or remedial measures</p>	<ul style="list-style-type: none"> ▶ From 2021 to 2022, in accordance with policies of Agency Against Corruption of the Ministry of Justice and Department of Government Ethics of National Science and Technology Council (including the former Department of Government Ethics of MOST) as well as instructions from the head of HSPB, conduct audits, integrity advocacy and anti-corruption activities, in which all were completed as scheduled. ▶ Organized various anti-corruption activities and lectures, as well as a total of 12 corporate integrity management seminars. Additionally, apply electronic information devices to online and other diversified advocacy approaches. HSPB will continue to conduct three related promotional activities or lectures each year. ▶ Conduct two project audits and one detailed project inspection every year and sign a report to propose early warning or improvement measures to prevent the occurrence of risk events or personnel. ▶ In response to the pandemic, promote online visits of administrative transparency to elevate the transparency and credibility of decision-making process. ▶ Implement an honest government and enhance the effectiveness of governance. Host one cross-unit integrity meeting each year to promote the implementation of various integrity measures. ▶ In 2022, continue to follow the instructions from superiors and heads of agencies to conduct audits, integrity advocacy and anti-corruption activities.



Preventive and corrective measures

- ▶ Coordinate with other government agencies and park manufacturers to conduct various anti-corruption activities and seminars, gradually establishing an integrity platform for corporate services, in order to specifically promote the practice of corporate integrity and business secrets protection or other related issues.
- ▶ In order to reinforce the administrative transparency procedures of HSPB, a project administrative transparency section is established to achieve the goal of national supervision and integrity and transparency.
- ▶ Establish civil service ethics section: Provide hotline for corruption reporting 03-5778060, fax line 03-5772528, email address (ethics@sipa.gov.tw), reporting service hotline of Agency Against Corruption of the Ministry of Justice 0800-286-586 and a dedicated post office box for reporting (PO Box 153, National Museum of History Post Office 100006).

Corresponding material topic: Administrative efficiency



Policy/strategy

As a government agency, HSPB complies with all laws and regulations. All affairs and statistical information are published in accordance with the laws and regulations. All of our colleagues are required to conduct administrative affairs in accordance with the Public Servants' Administrative Neutrality Act to create a refreshing and law-abiding HSP and to take appropriate measures in accordance with Enforcement Act of Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) and related laws on gender equality.

Targets and goals

Supervise and prompt HSPB to focus on client's satisfaction, so as to improve the quality of service, enhance employees' perception of CEDAW practice and gender sensitivity, avoid discriminatory behaviors in the execution of operations, creating a gender-friendly workplace.

Management evaluation system

In accordance with the relevant laws and regulations, the procedures are governed by the Civil Service Act, Public Servants' Administrative Neutrality Act, Act of Gender Equality in Employment, Civil Service Performance Rating Act, Promotion Rating Scale for Civil Service Employees of Executive Yuan and Subordinated Entities and Public Schools, and Civil Servants Leave without Pay Act.

Performance and adjustments

Conduct CEDAW-related courses, training satisfaction surveys and pre- and post-CEDAW course assessments, with participation rate of 90 %.

Preventive and corrective measures

- ▶ To improve gender-friendly practices at public workplace, HSPB has confirmed 18 statutory gender-friendly issues such as whether the gender ratio of committee members conforms to the statutory gender ratio as determined by the Directorate-General of Personnel Administration of Executive Yuan.
- ▶ Provide a sex discrimination complaint mechanism, such as a complaint mailbox, and assign dedicated personnel to handle complaints in accordance with established procedures.
- ▶ In order to have a fair, objective and consistent index for evaluating the service quality besides enhancing the satisfaction level of service recipients for the purpose of improving service quality, a professional organization is appointed to conduct a survey every year.
- ▶ In accordance with the Operational Principles of Risk and Crisis Management of Executive Yuan and Subordinated Entities, an annual risk management operation plan is formulated. The risk items are reviewed on a rolling basis, so as to formulate risk countermeasures and continuously monitor the risk changes and take relevant control and response actions immediately.

G.1.1 Human Resources

Employee Composition

In accordance with the Act, HSPB has taken a forward-looking approach to human resources management, safeguarding the legitimate rights and interests of employees and maintaining harmonious relations in order to demonstrate the overall competency of the government.

Corresponding to the trend of knowledge-based economy and global competition, and to enhance the government's performance in governance concept while staying in line with Executive Yuan's development vision of creating an administrative team with integrity and justice to provide first-class public services to all, HSPB adopts a macroscopic, strategic and forward-looking approach in planning and managing human resources, coupled with a sound human resources system, enhance our overall competitiveness. All duties and job vacancies are handled in accordance with the rules and regulations, all of which are treated equally without any discrimination of gender, sexual orientation, age, appearance, physical or mental disabilities. HSPB appoints employees in accordance with the Civil Servants Appointment Law and does not employ minors below the age of 16. As a governmental agency, HSPB is not regulated by the Labor Union Act and the Occupational Safety and Health Act and has not established any organization, nor does any union-like organization exist.

As of end of 2022, the actual number of employees in the bureau is 182 (excluding the security police squadron), including 141 regular employees, 30 contract employees and 11 skilled workers, all of whom are 100% Republic of China (R.O.C.) nationals. There are 74 non-employee workers stationed in HSPB, mainly assisting in the implementation of the bureau's projects.

HSPB integrates persons with physical or mental disabilities according to government regulations. The average number of employees with physical and mental disabilities being hired in 2022 is 7.17 people and the actual hiring ratio exceeds 43.3% of the number of employees to be hired (5 people), which is in compliance with the labor-related regulations. However, in order to safeguard the employment of physically and mentally challenged personnel, HSPB has decided to assign this group to the positions of job agents from March 1, 2020. Currently, there is one disabled job agent being employed. Besides, HSPB is dedicated to involving more females in developing career. The percentage of senior female supervisors in 2022 was 20% higher than that in 2020 whereas the percentage of junior female supervisors in 2022 was the same as that in 2020, which shows that the percentage of female participation in the workplace is increasing year by year.



Employee Composition

Year		2020	2021	2022	
Item/Gender	Age				
Senior	♂ Male	Under 29	0	0	0
		30-49	1	3	6
		50 and more	11	10	8
	♀ Female	Under 29	0	0	0
		30-49	2	2	1
		50 and more	6	6	7
Junior	♂ Male	Under 29	1	1	1
		30-49	36	36	32
		50 and more	7	9	11
	♀ Female	Under 29	3	3	3
		30-49	50	53	53
		50 and more	7	8	10
Primary	♂ Male	Under 29	0	0	1
		30-49	1	1	1
		50 and more	0	0	0
	♀ Female	Under 29	3	4	2
		30-49	4	4	5
		50 and more	0	0	0
Hired	♂ Male	Under 29	1	1	0
		30-49	3	0	1
		50 and more	12	12	8
	♀ Female	Under 29	0	0	0
		30-49	10	9	9
		50 and more	14	15	12
Janitors, mechanics	♂ Male	Under 29	0	0	0
		30-49	0	0	0
		50 and more	8	9	8
	♀ Female	Under 29	0	0	0
		30-49	0	0	0
		50 and more	5	4	3
sum		185	190	182	

Note:

1. The workforce includes janitors, mechanics and drivers.
2. In 2022, the percentage of male employees was 42.31% and female employees was 57.697%. 3.85% of employees were under 29 years old, 59.34% were 30-49 years old and 36.81% were over 50 years old.
3. The staff at the top of the hierarchy are all senior and full-time employees, with no part-time or casual employees.

According to employees' status, Civil Service Employment Act applies to civil service employees. Contract-based employees are subject to the Employment of Contract-based Employees Ordinance and Regulations on Contracted Employment of the Executive Yuan and Its Subordinate Agencies. Meanwhile, skilled workers are subject to Guidelines for the Management of Workers.

Salaries and compensation of employees are handled according to the Civil Servants' Salary Act and other related regulations, varying based on the rank, performance and years of experience. The evaluation of employees is conducted based on the Civil Service Performance Rating Act and there is no difference between male and female.

New staff

Year	2020				2021				2022			
	Male		Female		Male		Female		Male		Female	
	Number of New staff	Employment rate(%)	Number of New staff	Employment rate(%)	Number of New staff	Employment rate(%)	Number of New staff	Employment rate(%)	Number of New staff	Employment rate(%)	Number of New staff	Employment rate(%)
Under 29	0	0.00%	0	0.00%	1	0.53%	3	1.58%	1	0.55%	0	0.00%
30-49	3	1.62%	6	3.24%	6	3.16%	5	2.63%	2	1.10%	8	4.40%
50 and more	0	0.00%	0	0.00%	2	1.05%	0	0.00%	2	1.10%	1	0.55%
Total Number of New staff	9				17				14			
Total Number of staff	185				190				182			
Total Employment rate(%)	4.86%				8.95%				7.69%			

Note:

1. The number of new employees does not exclude the number of employees who withdraw from the company halfway.
2. Employment rate= Number of new staff/Total number of staff at the end of the current year.

Labor turnover

Year	2020				2021				2022			
	Male		Female		Male		Female		Male		Female	
	Number of Labor turnover	Turnover rate (%)	Number of Labor turnover	Turnover rate (%)	Number of Labor turnover	Turnover rate (%)	Number of Labor turnover	Turnover rate (%)	Number of Labor turnover	Turnover rate (%)	Number of Labor turnover	Turnover rate (%)
Under 29	1	0.54%	1	0.54%	0	0.00%	0	0.00%	0	0.00%	1	0.55%
30-49	5	2.70%	4	2.16%	4	2.11%	3	1.58%	3	1.65%	5	2.75%
50 and more	10	5.41%	4	2.16%	4	2.11%	1	0.53%	7	3.85%	6	3.30%
Total Number of Labor turnover	25				12				22			
Total Number of staff	185				190				182			
Total Turnover rate (%)	13.51%				6.32%				12.09%			

Note:

1. The number of employees who left the bureau includes those who retired, were promoted, had their duties changed, or were transferred to other agencies.
2. Turnover rate= Turnover number/Total number of staff at the end of the current year.

Rights and benefits

The welfare of the employees of HSPB is governed by the Guidelines for the Treatment of Public Education Employees in the National Military, the Rules for Leave of Absence for Civil Servants and the Public Education Employees' Insurance Law, etc. The subsidies include marriage subsidy, childbirth subsidy, funeral subsidy, child education subsidy and subsidy for childcare leave without pay. There are six types of insurance benefits that can be applied for public education personnel, namely disability, old age, death, funeral of dependents, maternity and parental leave without pay. Leave of absence is granted up to 30 days per year depending on length of service. Other leaves include personal leave, sick leave, marriage leave, maternity leave, funeral leave and family care leave. Retirement payment appropriation is made in accordance with the Civil Servants' Retirement Pension Act and its regulations.

Application Status of Employee Subsidy

Item	Number of applicants in 2021	Number of applicants in 2022
Marriage subsidy	2	0
Funeral subsidy	4	2
Childbirth subsidy	7	8
Child education subsidy	94	88

According to the Implementation Guidelines of General Health Examination for Civil Servants, employees who are 40 years old or above will be subsidized to attend a medical checkup once every two years and will be given one day of official leave and a certificate to apply for subsidy. In 2021 and 2022, 21 and 23 employees who have reached the age of 40 participated in medical checkups respectively.

Parental leave without pay

Due to the declining birth rate in Taiwan, the government has adopted a number of parenting-related measures for civil servants, such as applying for parental leave without pay under the Civil Servants Leave without Pay Act and subsidy under the Public Education Employees' Insurance Law.

Year	2020			2021			2022		
	Male	Female	Sum	Male	Female	Sum	Male	Female	Sum
The number of employees eligible for parental leave without pay	10	20	30	5	16	21	8	23	31
The number of employees who were on parental leave without pay in the current year (A)	0	3	3	0	3	3	0	6	6
The number of employees who were expected to be reinstated after parental leave without pay in the current year (B)	0	3	3	0	1	1	0	2	2
The number of employees who were actually reinstated after parental leave without pay in the current year (C)	0	3	3	0	1	1	0	2	2
The cross-year number of employees who were actually reinstated after parental leave without pay (D)	0	2	2	0	0	0	0	1	1
The cross-year number of employees who were actually reinstated and has been reinstated for 12 months (E)	0	2	2	0	0	0	0	0	0
Reinstatement rate 1(C/B)	-	100%	100%	-	100%	100%	-	100%	100%
Retention rate 2(E/D)	-	100%	100%	-	-	-	-	0	0

Note: 1. Cross year refers to application for parental leave without pay that was not applied in the current year but a year or two years earlier.

Parent-child activities in a harmonious workplace

For the sake of enhancing the parent-child relationship to promote family harmony and activate the foster bonds between employees, HSPB regularly organizes parent-child activities every year but was suspended once in 2021 due to the pandemic. In 2022, HSPB has entrusted Newsys Environmental Tech. Inc. to conduct the 111th Year Environmental Education Parent-Child Program in conjunction with the environmental education curriculum, allowing employees and children to build a solar car and learn the importance of energy and renewable energy. Besides, the participants also paid a visit to Hsinchu Coastal Low-Carbon Center for Environmental Education Center. A total of 48 people participated in the event and learned how to implement environmental protection in their daily lives through fun and education.



111th Year Environmental education parent-child activity on Aug 19, 2022

Training and education

HSPB attaches great importance to the protection of employees' rights and interests. In addition to providing employees with the rights and benefits in accordance with the relevant laws and regulations, HSPB also conducts regular sexual harassment awareness and prevention advocacy. With respect to internationally recognized human rights-related regulations, all employees are treated equally without discrimination of gender, race, religion or political affiliation.

Year		2021			2022		
Item/Gender		Number of people	Total training hours (hr)	Average training hours	Number of people	Total training hours (hr)	Average training hours
Supervisor	Male	20	1,062	53.10	20	1,174	58.70
	Female	16	1,059	66.18	17	908	53.41
Nonsupervisor	Male	46	2,843	61.80	47	3,217	68.44
	Female	66	5,080	76.96	67	4,634	69.16
Hired	Male	12	407	33.91	13	328	25.23
	Female	23	640	27.82	28	896	32.00

Note:

- The management positions include Section Chief, Deputy Section Chief, Supervisor, Chief Secretary, Deputy Director-General and Director-General. The regular positions include mechanics and janitors. The contract employment includes contracted and hired employees.
- The above people include those who have left the company in the current year
- Due to the business attributes, male supervisors averagely had slightly fewer training hours compared with female ones.

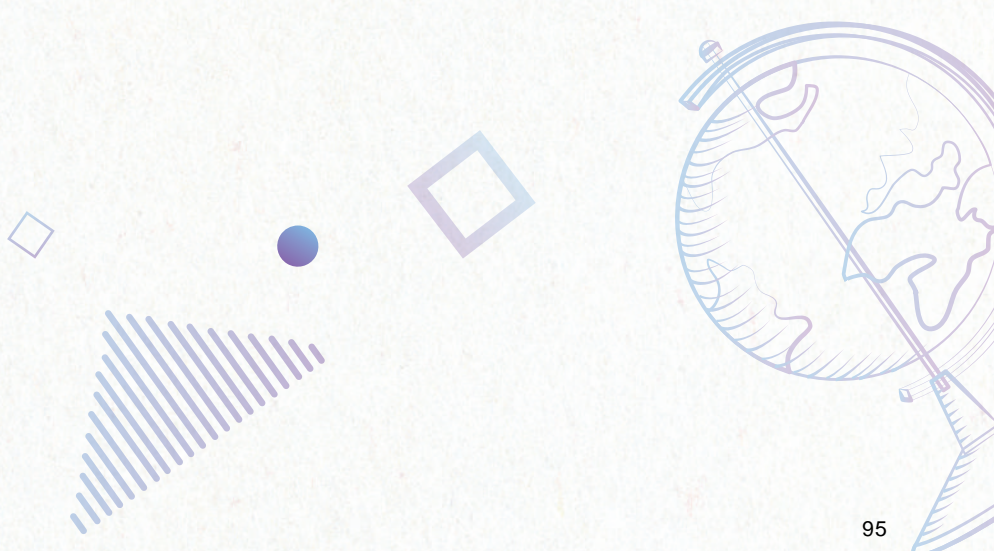
In order to create a quality learning culture and enhance employees' innovative ability, HSPB hold 13 gender mainstreaming training sessions from 2021 to 2022, totaling 30 hours, with an average of 35 employees participating in each session. Also, 523 hours of training courses were conducted on current major government policies, environmental education, human rights education, multi-ethnic culture, administrative neutrality, integrity and service ethics, civic engagement, national defense education, leadership development and business professional knowledge, with attendance up to 4,846 participants.



Introduction to CEDAW and Case Study Course on December 29, 2021



Have you CEDAW today? course on October 20, 2022



G.1.2 Compliance with Various Laws and Regulations

■ Understand and abide by the law

As a government agency, all divisions and offices of HSPB comply with all laws and regulations in the performance of their official duties and formulate administrative rules to enhance employees' compliance. Relevant affairs and statistical information are all made available to the public in accordance with The Freedom of Government Information Law. Employees are required to follow the relevant stipulations of the Ethics Guidelines for Civil Servants to ensure administration in accordance with the law. In 2021-2022, there will be no violations of major economic, environmental and social laws and regulations.

■ Anti-corruption

On January 25, 2022, Transparency International released its 2021 Corruption Perceptions Index (CPI), in which 180 countries and regions around the world (including R.O.C. Taiwan) were included in the ranking. Our country scored 68 points (out of 100) with an increase of 3 points compared to 2021 and ranked 25th in the world, which was up 3 places from 2021, moving into top class of global integrity.

Civil Service Ethics Office of HSPB is established in accordance with the Act of the Establishment and Management of the Government Employee Ethics Units and Officers, and all integrity businesses shall be formulated, coordinated, directed and supervised by the Agency Against Corruption of the Ministry of Justice. HSPB conducts relevant integrity work in accordance with the Ministry of Justice's letter No. 10700054160 dated August 7, 2018, amending National Integrity Building Action Plan and correspondence of Department of Government Ethics of National Science and Technology Council. HSPB has no corruption or malfeasance incidences during the reporting period of 2021~2022.

For understanding the integrity risks of the bureau, risk assessment and inventory on business nature were conducted in December 2021 according to the instructions of Civil Service Ethics Office of the National Science and Technology Commission (formerly Department of Government Ethics of MOST), with the results reported. In December 2022, the risk assessment and inventory were conducted again in accordance with Reinforcing the Principle of Regular of Public School Employees in Executive Yuan and its Subordinated Entities (Organizations) promulgated by Executive Yuan on November 18, 2022, as well as the messages from the NSTC, using Grants Over NTD 100 million and Large Procurement cases as inventory subjects of and reporting the results to NSTC.



Implementation of early warning actions

- As implementation of early corruption preventive actions, HSPB takes the opportunity of signing official documents and project audits to take precautionary actions when there is a risk of corruption or breach of law that has not yet constituted a criminal offense.
- Annual report on the number and effectiveness of project audits on high-risk corruption operations: Conduct audits and track and control evaluation on high-risk corruption operations, study and propose corruption preventive measures and submit the head of the agency for implementation.
- Provides a reporting platform: Establish civil service ethics section. Provide hotline for corruption reporting 03-5778060, fax line 03-5772528, email address (ethics@sipa.gov.tw), reporting service hotline of Agency Against Corruption of the Ministry of Justice 0800-286-586 and a dedicated post office box for reporting (PO Box 153, National Museum of History Post Office 100006).



Implementation of Sunlight Law

- In order establish the integrity governance, HSPB conducts public servants' property declaration briefing and conflict of interest recusal law training. HSPB is responsible for the declaration of public servants' property and the registration of integrity ethics as well as timely annual briefings. District prosecutors and judicial officers are invited to conduct integrity seminars. Also, convey the latest integrity measures and related information of Agency Against Corruption of the Ministry of Justice and the Department of Government Ethics of National Science and Technology Council to every employee by mouth, papers or e-mails through civil service ethics websites, supervisors' meetings, newsletters, bureau's TV wall, outdoor large-scale electronic display board and circulars.
- Apply transparent procedures to affairs related to the public rights to enhance the transparency of rebuttal process and thus making public supervision more accessible.



Integrity advocacy mechanism

- Strengthen integrity advocacy: Conduct governance integrity advocacy in accordance with United Nations Convention Against Corruption, National Integrity Building Action Plan as well as the messages from Agency Against Corruption of the Ministry of Justice and the Department of Government Ethics of National Science and Technology Council, in order to instill correct understanding of the current integrity policy among HSPB employees public, achieving the goal of anti-corruption for all.
- Corporate Integrity Forum: Promote corporate integrity and ethics in corporate governance, assist the park manufacturers, foreign businesses, employees of HSPB and related practitioners to understand corporate corruption and malfeasance (bribery, embezzlement, fraud, breach of trust) and the Trade Secrets Act, etc. Create a quality and clean government and enhance industrial sustainable development through public-private efforts.
- Improve administrative efficiency and transparency - Benchmark Agency Observation and Learning: Observe other excellent administrative agencies in the implementation of administrative transparency, in order to promote transparency, provide convenience while enhancing governance efficiency and increasing people's understanding, trust and supervision on public affairs.
- Promote education for all: Conduct an annual anti-corruption advocacy series to encourage civic engagement and produce various advocacy materials.



Improve governance efficiency

- Integrity meeting: Each year, the head of agency chairs integrity or related meetings and evaluates the integrity risks and is responsible for evaluating the effectiveness of integrity measures, implementing early warning actions on violations that have occurred and actively assisting the agency in preventing the recurrence of such violations.
- Government Procurement Act: Supervise the government procurement process to encourage the authorities to conduct procurement in accordance with the law and establish a fair and open procurement environment.
- Sunshine Law: Reinforce Act on Property-Declaration by Public Servants, Act on Recusal of Public Servants Due to Conflicts of Interest and Ethics Guidelines for Civil Servants.
- The Anti-Corruption Informant Rewards and Protection Regulation: Strengthen the protection of informant, advocate confidentiality and enforce the confidentiality of reported cases.

Integrity advocacy

In order to implement integrity policy, rectify political practices, enhance governance effectiveness and the awareness of anti-corruption among all, HSPB creates a synergy among all departments. In 2021-2022, HSPB co-organized 110th Year Hsinchu Science Park Bureau Purchasing Manufacturers Corporate Integrity and Regulations Forum, 110th Year Foreign Technology Business Integrity Forum, 110th Annual Occupational Safety and Environmental Protection Month Tongluo Science Park Walkathon Integrity Booth Anti-Corruption Activity, Education Programs on Government Integrity and Dedication Service Reference Manual, Small Grants and Administrative Transparency Seminar, 2022 Technology Industry Integrity Governance and Trade Secret Protection Summit, 111th Annual Occupational Safety and Environmental Protection Month Integrity Booth Anti-Corruption Activity and Jingsin Lake Music Festival Integrity Booth Anti-Corruption Activity with AAC, NSTC, Hsinchu District Prosecutors Office, park manufacturers and relevant divisions and offices respectively, involving a total of 2,180 participants.

In addition, HSPB also conducts internal staff education and training on anti-corruption, such as Administrative Transparency Training and Observation Visit, New Employee Education and Training - Awareness of Integrity in the Civil Service, and Procurement Integrity and Integrity Ethics and Law Enforcement in 2021, with a total of 68 participants, accounting for about 37% of the total employees. In 2022, a total of 117 participants, or 64% of the total employees, attended the Education Programs on Government Integrity and Dedication Service Reference Manual, Small Grants and Administrative Transparency Seminar, as well as Advocacy of Act on Property-Declaration by Public Servants and Act on Recusal of Public Servants Due to Conflicts of Interest.

Plus, with the aim to incorporate integrity education, student group visits and multimedia presentations are carried out with the collaboration between Civil Service Ethics Office and Science Park Exploration Museum. A total of 4 sessions (Happy Arts and Science Tutorial Class, National Taichung University of Education, National Dahu Agricultural Vocational High School and Minghsin University of Science and Technology) on promoting campus integrity and anti-corruption were organized, with about 144 students participating.



110th Year Hsinchu Science Park Bureau Purchasing Manufacturers Corporate Integrity and Regulations Forum on April 28, 2021



110th Year Foreign Technology Business Integrity Forum on October 6, 2021



110th Annual Occupational Safety and Environmental Protection Month Tongluo Science Park Walkathon Integrity Booth Anti-Corruption Activity on November 6, 2021



Education Programs on Government Integrity and Dedication Service Reference Manual on March 16, 2022



Small Grants and Administrative Transparency Seminar on May 4, 2022



2022 Technology Industry Integrity Governance and Trade Secret Protection Summit on July 19, 2022



Anti-corruption advocacy at Happy Arts and Science Tutorial Class on August 18, 2022



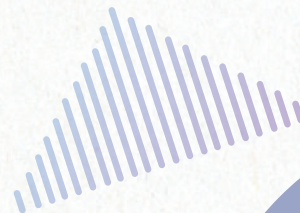
Campus integrity promotion anti-corruption activity on November 23, 2022 (National Taichung University of Education)



Occupational Safety and Environmental Protection Month Integrity Booth Anti-Corruption Activity on October 31, 2022



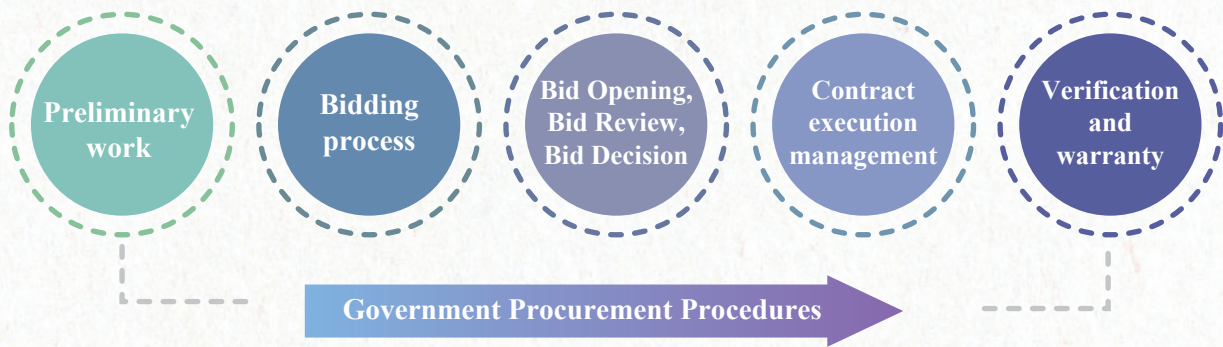
Jingsin Lake Music Festival Integrity Booth Anti-Corruption Activity on December 3, 2022



Government procurement

HSPB conducts public tenders and performs related procedures to select vendors for various constructions, labor services and properties based on the principles of transparency, fairness and competition in accordance with Government Procurement Act. The contracts signed must comply with the implementation guidelines in Personal Data Protection Act and Labor Standards Act, Regulations of Leave-Taking of Workers as well as Act of Gender Equality in Employment, which stipulate respect for property rights, labor rights, and environmental protection. These include protection of copyright and personal information, insurance coverage, non-discrimination against women, indigenous people or disadvantaged groups affairs and priority use of environmentally friendly products. There is no risk of violation of freedom of association and group consultation, use of child labor, forced labor, etc. by the parks and related suppliers.

Within 2021-2022, HSPB decided a total of 308 procurements for construction projects, labor and property, summing up to NTD 25.1 billion. The total number of bids won by local contractors was 308, accounting for 100%. 95 procurements are still being executed at the end of 2022 while 213 have been completed. There is no case of suspension due to breach of procurement contract.

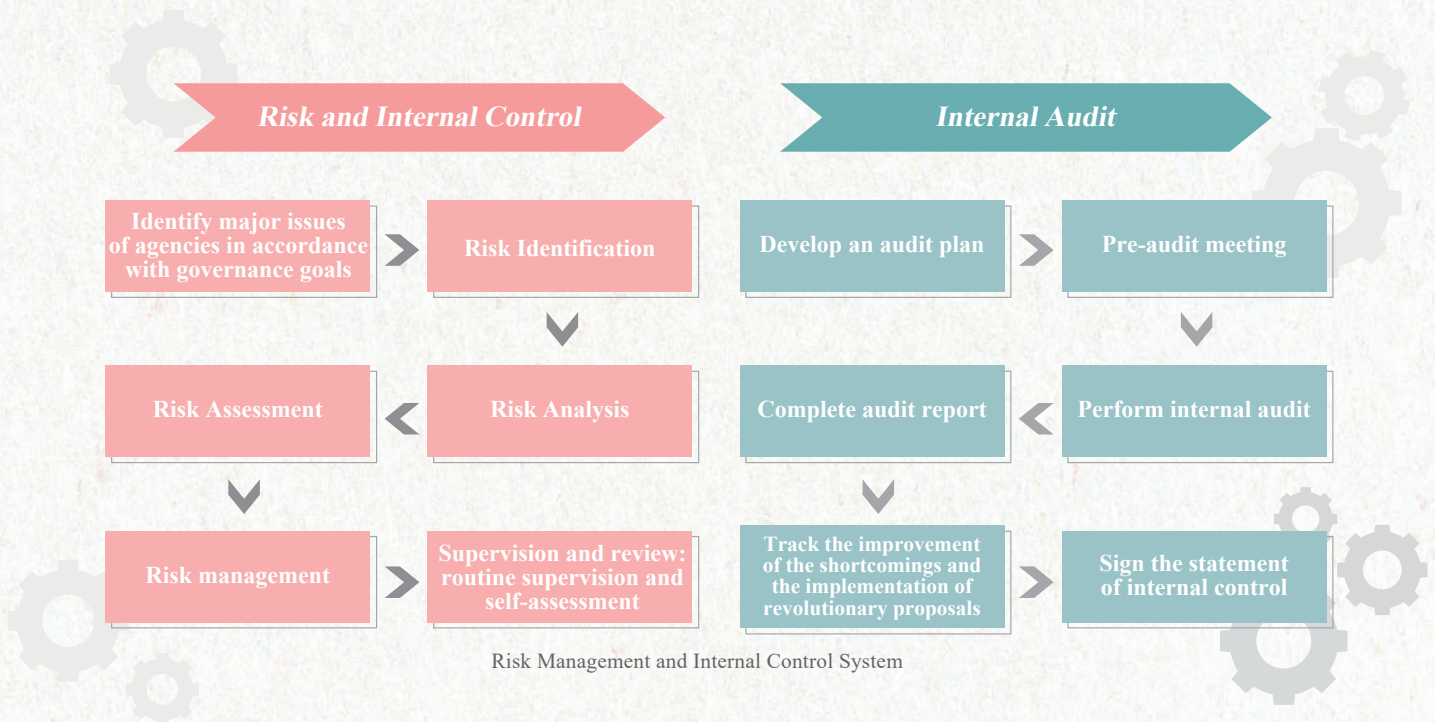


Green procurement

In line with the trend of encouraging green production and consumption by the EPA of Executive Yuan, HSPB constantly implements green procurement practices and specifies the proportion of environment-friendly products purchase. The amount of green procurement in 2021 and 2022 were NTD 4,552,019 and NTD 7,058,807 respectively, achieving 100% and 99.82% of green procurement ratio respectively.

G.1.3 Risk Management and Internal Control

In response to the emerging risks that may lead to a decrease in performance of the science Park and public satisfaction, HSPB has established a risk management system which reviews the risks of the science park every year. The risk management system includes all items that can be reduced by administrative means. Through internal control self-assessment and internal auditing, the bureau has improved its administrative actions, implemented and evaluated the revolution proposals. HSPB completes internal control operations such as internal control self-assessments and internal audits as required every year. NSTC also keeps track of the internal control performance through annual audits.



With the purpose of encouraging the integration of risk and crisis management into daily operation and decision making, reducing the possibility and consequences of disasters and thus achieving governance goals, improving the agency’s performance serving as a reference to assist each unit in promoting integrated risk management, the annual risk management operation plan is formulated in accordance with the operational principles of risk and crisis management of Executive Yuan and its subordinated entities.

■ Risk Management Strategies of Hsinchu Science Park Bureau

1. To conduct risk identification of the major issues of agencies in accordance with governance goals.
2. To analyze the possibility and degree of impact of the risks identified, and thus establish a risk map.
3. Rolling review of the risk items, formulation of risk countermeasures, and continuously monitoring of the changes of risks and implementation of relevant control and response actions.
4. Regularly review the risk management measures related to the various operational processes and make necessary amendments.

In 2022, HSPB has selected five major issues, including Precision Health R&D and Cluster Development Project, Public Education and Childcare Facilities, Hsinchu Science Park (Baoshan Site) Phase II Expansion Project, Hsinchu Science Park (X-Site) First Software Service Building Construction Project and Hsinchu Science Park New Phase III Standard Plant Project. After risk identification by each unit, 7 risk items were listed. The risk of major issues is reduced to a tolerable level (low risk) through the formulation of risk countermeasures. Each business unit continuously monitors risk changes and emergence of new risks, and then conducts rolling reviews of risk items through self-assessment and internal audit systems. For internal control lacking and revolution proposals, HSPB assigns the relevant units to input the improvement status and continuously tracks until the improvement is completed to ensure that appropriate improvement measures have been taken, which is then to the head of department for approval.

Summary Table of Risk Items in 2022

Item	Risk events	Organizer
1	Unable to hold international exchange activities, forums, seminars and thematic exhibitions as scheduled.	Planning Division
2	Project execution and inspections were affected by the pandemic.	
3	Negative news about public education and childcare facilities affects the image of HSPB.	Environmental Protection and Safety Division
4	Unable to acquire land as scheduled	Construction Management Division
5	Delay in issuance of soil and water conservation declaration certificate	Business Division
6	Delayed project completion affects the park operation.	
7	Delay in contract issuing or extension of construction period affects the schedule of establishment of park's business	

G.1.4 Cyber Security

In line with the cyber security policy of We are safe and secure, we are free from troubles, HSPB has established an appropriate information security management system to ensure the confidentiality, integrity, availability and compliance of HSPB's critical information and communication assets to support the smooth park operation and to comply with the Cyber Security Management Act and related laws and regulations.

HSPB was initially approved by the Executive Yuan on June 14, 2019, as a Level B agency for information and communications security responsibility. After the reorganization of the Ministry of Science and Technology (MOST) into the National Science and Technology Council (NSTC), it was re-approved by the Executive Yuan on August 12, 2022, as a Level B agency. In order to ensure the confidentiality, integrity and reliability of information, support the NSTC's policy of upward centralization of resources, strengthen the internal and external network defense, improve the reliability of information devices and network systems and prevent the destruction or misuse of resources to enhance the overall information security protection mechanism, an information security management system has been established. The annual maintenance is conducted in accordance with the ISO 27001 information security management system standards, which is continuously verified by a third party. Meanwhile, Information Security Committee is convened to review information security policies and track performances. The Notification of Cyber Security Incident is incorporated into internal control system to enhance all employees' awareness of information security and information security protection to prevent potential information security threats, so as to comprehensively improve information security level. By 2022, all major information systems are ISO 27001 certified and the maturity level of information security governance has reached Level 3.

■ Science Park Information Sharing and Analysis Center (SP-ISAC)

Science Park Information Sharing and Analysis Center (SP-ISAC) has been established in cooperation with NSTC. The main mission of the platform is to collect, exchange and analyze data on information security risks. By the end of 2022, all manufacturers in HSP have joined the platform to exchange local and foreign information to achieve the goal of early warning and emergency response. Besides, SP-ISAC platform provides information security consultation and assistance to the park manufacturers and organizes educational trainings to strengthen the park's information security control and protection capabilities. From 2021 to 2022, the platform has provided more than 29 consultations on information security and response techniques and actively notified the park manufacturers. More than 822 pieces of information (including information security trend news, threat information, security suggestions of system repair, threat IP blacklist, etc.) have been published. Among them, there are 28 cases of information feedback from manufacturers which are shared after deidentification of the cases. In addition, from 2021 to the end of 2022, a physical training course has been conducted at National Center for High-Performance Computing of HSP with 32 participants. Another 15 online training courses were also conducted on information security, including website principles and attack and defense practices, web penetration attack practices, ransomware virus introduction and detection, blue team deployment and defense theory, Google hacking and Shodan practices, information security incidences response practices and sharing, mobile application security, etc., as well as other beginner and middle security level courses. Besides, one on-site and two online seminars were held, with a total of 56 participants from park manufacturers (346 online participants), sharing the latest information security trends and promoting the joint information security mechanism.



Live photo of cyber security event on October 21, 2022

■ Personal data protection

In a bid to protect and manage personal information, HSPB has formulated the Personal Data Protection Management Guidelines of the Hsinchu Science Park Bureau of National Science and Technology Council. It focuses on the introduction of a personal data protection management executive team, establishment of specialized personnel in each unit and clear regulations of personal information collection, processing and utilization procedures, handling exercise of rights by the affected and the security maintenance of personal information files, in order to implement the Personal Data Protection Act and fulfill the responsibility of personal information file protection.

The Personal Information Protection Management Executive Group Meeting is held annually to regularly review the implementation of personal information protection matters and reevaluate the personal information management policies of the bureau in order to achieve the goal of personal information protection.

In 2021, the entire organization introduced the international standard ISO 27701 personal data privacy information management system and used the Lease Management Process and Occupational Safety and Health Information Network Process as the scope of validation. Personal Information Management System (PIMS) is established to regulate the collection, processing and utilization of personal information in compliance with the Personal Data Protection Act and ISO 27701. In order to ensure that the PIMS of HSP complies with laws and regulations and has the ability to improve continuously and effectively, two internal audits and one external audit were conducted., All employees have completed personal data protection-related training to raise the awareness and have successfully passed ISO 27701 certification in 2021.

In 2022, PIMS was reviewed, revised and continuously improved in accordance with the Personal Information Management System (PIMS) procedure manual established by HSPB. HSPB also implemented various annual personal information protection plans following procedures to maintain the validity of the ISO 27701 certificate. There was no complaints of personal data breach during the reporting period of 2021 to 2022.



Personal data exercise on October 27, 2021



ISO 27701 certificate



● G.2 Continued Success

Corresponding material topic:
Investment recruitment \ Indirect Economic Impact



<p>Policy/strategy</p>	<p>HSPB is innovation-oriented, promoting industrial transformation through Support Hardware with Software, renovating HSP, focusing on industry and talents, R&D and innovation, land and factories, new southward policy and advocacy, etc., strengthening bonds with international innovative technology, capital and talents, building a quality investment environment, maintaining stable operation without being affected by the global economic downturn and critical industrial and economic conditions, so as to promote sustainable operation and development.</p>
<p>Targets and goals</p>	<p>Construct a high-performance industrial development environment, promote interest in investment and maintain the competency in sustainability of Taiwan hi-tech industries.</p>
<p>Management evaluation system</p>	<ul style="list-style-type: none"> ▶ Business Division regularly compiles information on the park's revenue and the number of employees. ▶ Investment Division compiles monthly statistics on investment approvals and capital increase cases. ▶ Every year, NSTC assigns the three science park bureaus to take turns in conducting survey and analysis on the satisfaction level. ▶ Conduct regular science park review meetings with NSTC for new investment projects.
<p>Performance and adjustments</p>	<p>The actual number of investment cases introduced in 2021 was 49 with an additional investment cases of 38 per year. The actual number of investment cases introduced in 2022 was 30 with an additional investment cases of 63 per year, which are in line with the expected target.</p>
<p>Preventive or corrective measures</p>	<ul style="list-style-type: none"> ▶ Investment Division promotes and attracts investment to the park and continues to cooperate with city and county governments as well as neighboring academic and research institutions to hold seminars and related activities. ▶ Actively organize job fairs and recruitment events with various counties and cities.

G.2.1 Major Infrastructure Construction

Hsinchu Science Park

Most of the existing standard plants in Hsinchu Science Park have been in use since 1982 and most of them have been built for more than 30 years. Plus, the intensity of land use is low and there is an urgent need for renewal and redevelopment to facilitate the revitalization and efficient use of land. HSPB has proposed a number of projects for the reconstruction and expansion of new plants, including the Hsinchu Science Park (Baoshan Site) Phase II Expansion Project, Hsinchu Science Park X-Site Project, Hsinchu Science Park Phase III to V Standard Plant Renewal Project and Hsinchu Biomedical Park Phase III Biotechnology Building Construction Project, in the hope of improving the internal infrastructure and thus eliminating worries.

■ New Phase II Standard Plants

After decades of development, the buildings in HSP have been built one after another since its establishment. Although the initial standard plants meet the needs of industrial use, the land was not effectively utilized. In order to meet the demand for continuous expansion of high-tech industries in Taiwan and support their continuous yet rapid development as well as create job opportunities, the renewal plan of standard plants is carried out.

As a result of the evaluation and study conducted by HSPB, the New Phase II Standard Plant, a three-story underground and eight-story above-ground steel structure, is built in the street surrounded by Chuangxin 3rd Road and Yanfa 2nd Road in the Phase I Development Area of Hsinchu Science Park, with a base area of about 1.86 hectares and a total floor area of 18,900m², providing 16 factory units. The space is designed as square and flexible units with good lighting conditions. Each floor is equipped with independent support facilities for electricity, telecommunication, air-conditioning and shaft to create maximum space utilization efficiency. A comfortable social space and intelligent visitor guidance system are also planned to provide a friendly working environment for incoming manufacturers and employees. The construction of the new standard plants in Phase II began in April 2019 and completed by the end of 2020. In 2021, after the license acquisition and verification processes, the new factory has been available for lease.



New Phase II standard factory building

The original tenants of standard plants A and B of Phase III have already moved in. Soon, HSPB is going to demolish the old plants A and B construct a new building of Phase III on the site, ongoingly promoting the renewal plan of standard factory buildings in aforementioned park.

■ Phase III, IV and V standard plant renewal project

The third, fourth and fifth phases of the standard factory buildings in HSP were completed from 1982 to 1985. Their facilities and layout are old and not in line with the needs of high-tech industries. In order to promote the renewal of the old plants and effective land utilization, increase the total floor area of the factory buildings available for use as well as improve the competitiveness and production efficiency of the technology industry in the park, HSPB has started to plan the renewal plan of the three batches of old standard factory buildings (Phases III to V) in the park since 2020. After approval by the Executive Yuan on April 9, 2021, and integration of 10 old standard plants in those three phases, they were dismantled and renewed into 9 standard factory buildings. The number of factory units increased from 88 to 196 with total floor area growing from 53,702 square meters to 366,004 square meters. The total cost is about NTD 27,256.7 million and the project period is from 2021 to 2035.

From April 2021 to October 2022, HSPB has completed the first batch (2 buildings) of the old plant renewal project (i.e., the construction of new standard factory in Phase III), including the selection of architects, planning and design of the project content, tendering and bid awarding, etc. It is expected that after the construction and completion of operation from 2023 to 2026, a total of 42 units (about 190 pings per unit) of standard factory buildings will be available for lease. The second and third batches will be renewed (i.e., new standard factory buildings in the fourth and fifth phases) in accordance with the renewal plan approved by the Executive Yuan.



New Phase III standard factory

■ Baoshan Site Expansion Project

In 2020, HSPB initiated the expansion plan after receiving approval from Executive Yuan to achieve the goal of maintaining the world leading position in semiconductor industry and to meet the land demand for construction of three to four 2nm mass production plants around the Hsinchu Science Park. The project is located in the Specific Area of Hsinchu Science Park - Hsinchu County (Baoshan Township) and near the border of Baoshan Urban Plan Area. The land acquisition process has completed in 2021, with 48.18 hectares of industrial land and 3.34 hectares of residential land, totaling 91.02 hectares.

For the purpose of providing the owners of land and land improvements with a full understanding of the procedures of purchase agreement and land acquisition as well as the agreed price (compensation fee) and incentive, HSPB held several public hearings and explanatory meetings besides conducting one-on-one purchase agreement with the owners, as well as visited the owners, local organizations and public representatives for communication and coordination.

With all the efforts, the rate of land acquisition by agreement with landowners at market price has reached over 90%, significantly reducing the number of compulsory acquisition methods. Several public hearings and explanatory meetings have been conducted, as well as one-on-one purchase by agreement with all owners, visiting all owners, local organizations and public representatives for communication and coordination. In order to minimize the loss of private property, HSPB not only handled all kinds of compensation and relief for the land and ground property in accordance with the regulations, but also encouraged land purchase by agreement with an additional incentive payment, which was recognized as lenient and favorable within law to protect the rights of all owners. In addition, the bureau has designated community land for residential placement and settlement, changed the relocation site of the Baosheng Temple to a religious specialized area and provided subsidies to the Baoshan Township Office for the construction of columbarium facilities at the Shuangxi Cemetery. Also, HSPB coordinated with the Ministry of the Interior and Hsinchu County Government to conduct a comprehensive review of the urban plan of surrounding areas for manufacturers' industrial land use and other resettlement measures in order to take care of both public and private interests.



Diagram of Baoshan Phase II Expansion Project

Hsinchu Science Park X-Site

HSPB drives the comprehensive development of the information and communication industry cluster, in which the vertical integration efficiency of the semiconductor upstream, midstream and downstream industrial chains has long been an international benchmark. The integration of software applications through advantages of hardware has prompted the industry to upgrade again. Consequently, HSPB promotes the Innovation Industrial Park – Hsinchu Science Park X-Site Project and continues to bring in software and hardware-software integration companies to join science park.

The X-Site of Hsinchu Science Park covers an area of about 3.76 hectares and is located within the 36-hectare X-Plan technology corridor on the Gongdao 5th Road launched by the Hsinchu City Government. The Executive Yuan approved the plan in July 2020 and is an important base to promote integration of software and hardware. The first building has been completed and opened in mid-2024 while the second and third buildings are expected to be completed and opened in December 2027. The companies to be stationed in are mainly industries related to R&D design, information software and services, software and hardware integration and smart applications. HSP also anticipates that the central and local governments will jointly develop Innovative Science Park and International New Innovation Demonstration Base to assist high-tech companies in combining academic and research resources and thus give full play to high-performance R&D energy, cultivate outstanding technological talents as well as stimulate local innovative R&D strengths. This can create a cluster that can incorporate regional advantages and development conditions, laying the foundation of future industrial development for the next generation.



Hsinchu Science Park X-Site

Hsinchu Biomedical Park

■ The third biotechnology building

In response to the fact that several companies have made appointments to move into the second biotechnology building during the construction period, HSPB has started planning for the construction of the third biotechnology building from 2019. The construction plan has been approved by the Executive Yuan in the letter No. 1090007977 dated March 27, 2020, and the construction contract was filed on January 27, 2021. The construction is scheduled to be completed on November 25, 2023, providing 50 units of biotech standard factory (including 12 units of 100 pings, 28 units of 200 pings and 10 units of 300 pings) for lease by manufacturers.



Third biotechnology building

Yilan Science Park

Park due to the restrictions of the EIA, which has resulted in a lower occupancy rate compared to other parks. In order to revitalize the park and promote the development of local industries, HSPB has actively communicated with the Yilan County Government and promised to appropriately open up the production of factories under the condition that the total amount of pollutant emission remains unchanged, in order to promote the upgrading of local industries and increase employment opportunities.

The Yilan Science Park has strived to pass the Environmental Impact Statement of the Yilan Science Park (reopened EIA) in January 2020, and opened up to industries such as precision machinery, biotechnology, green energy, communication and optoelectronic component systems. After the start of mass production, the land demand has also increased significantly due to the higher number of inquiries from related industries. By the end of March, the occupancy rate of standard factory buildings has reached 93% and the scheduled land occupancy rate is over 49%. The occupancy rate of land has reached 50% by the end of 2020 and there are still a number of companies applying to move into the park.

The Yilan Science Park is located in the center of the Lanyang Plain and is connected to the Taipei Metropolitan Area via the Hsuehshan Tunnel, making Yilan not only livable, but also a business-friendly city. To meet the high demand for factory buildings, the Science and Technology Bureau has started construction of the second phase of standard factory buildings in October 2019, which can provide 32 factory units and will be completed in December 2021. There are already a number of companies applying for booking.

HSPB and the Yilan County Government continue to cooperate to build a quality investment environment and make Yilan Science Park a new choice for investment in Northern Taiwan, so as to become a new intelligent and quality park that integrates the strengths of local industries.



Phase II standard factory building at Yilan Science Park

Tongluo Science Park

In order to increase the companies' interest to move in and create a win-win strategy for both industrial development and environmental protection, HSPB has applied for a turnkey project to upgrade the function of the conductivity treatment facilities at the wastewater treatment plant, constructing a high-conductivity wastewater treatment facility with an average daily treatment capacity of 4,500CMD and an external high conductivity wastewater transmission and collection pipeline. It is anticipated that the project will treat the high conductivity wastewater generated in the park through public investment to meet the irrigation water quality standards, enabling investors to work on industrial upgrading and create high yield value. The turnkey project has started in January 2021 and is expected to be completed in August 2023.



Image of the brine room of sewage treatment plant in Tongluo Park

Longtan Science Park

After land acquisition of the second phase in 2019, HSPB started to handle the development work of the site. The bureau completed the submission and approval of soil and water conservation plan for Phase II site in October 2020, and the design, contracting and construction of the new soil and water conservation facilities in September 2022. Besides, the design and contracting of the Circle 2 Parking Lot, Distribution Pool and Sports Center Complex Building Project took time from December 2020 to February 2023. The construction will be carried out from February 2023 to December 2025, and is expected to be opened in June 2026.

G.2.2 Benchmark Factory Expansion

1. Polaris Pharmaceuticals sets up factory in Yilan Science Park

Polaris Biopharmaceuticals, Inc. will be established in Yilan Science Park with an investment of NTD 2 billion to serve as a new cancer drug production plant and to develop biopharmaceutical OEM business, including nanotein culture medium and mRNA biopharmaceuticals or vaccines, which is expected to increase 222 job opportunities.



2. Powerchip Semiconductor Manufacturing Corporation (PSMC) expands its factory in Tongluo Science Park

Invest NTD 278 billion to build two 12-inch wafer fabs and held the groundbreaking ceremony on March 25, 2021. The initial mass production is expected to begin in 2023 and the capacity will continue to expand, adding 3,000 vacancies and reaching an annual production value of over NTD60 billion.



3. Hon Young Semiconductor Corporation builds plant at HSP

Invest NTD 3.76 billion in silicon carbide power components (SiC), microelectromechanical sensors (MEMS) and silicon related products (ultra-high voltage and power management ICs, etc.) to accelerate the formation of compound semiconductor industrial chain in Taiwan, which is expected to create 344 jobs.



4. Shin-Ho Instruments Co., Ltd. builds factory at Tongluo Science Park

Invest more than NTD 400 million to build a new sterilization plant in Tongluo Science Park and hold a groundbreaking ceremony on July 30, 2021, introducing Belgian's IBA photon and electronic irradiation sterilization systems to develop effective irradiation and sterilization technologies.



5. Groundbreaking for E Ink Holdings Incorporated office buildings in HSP

Invested NTD 1.912 billion in a new factory building at the existing site and held a groundbreaking ceremony on December 6, 2021. Aiming to integrate upstream and downstream R&D resources of e-paper technology and to keep advanced R&D technology in Taiwan.

6. Groundbreaking of Innodisk Corporation at Yilan Science Park Phase II

Invested NTD 580 million in a new factory in Yilan Science Park. The groundbreaking ceremony was held on February 19, 2022. Invest in development and manufacturing of flash memory, 5G global network and servers. It is expected to complete and start mass production in the fourth quarter of 2023, creating approximately 190 job opportunities.



7. Super Energy Materials, Inc. new plant at Longtan Science Park

Invested NTD 1 billion to build a new plant in Longtan Park. The groundbreaking ceremony was held on March 10, 2022. Going to start the production of electronic grade silicon nitride (SiN) powder, which is expected to be completed by the end of 2023.

8. Groundbreaking of Ardentec Technology Inc. new factory at Longtan Science Park

Invested NTD 1.6 billion to build a new factory in Longtan Science Park. The groundbreaking ceremony was held on June 30, 2022, providing testing technology and services for system-level packaging products, which is expected to be completed by the end of 2024 and will open about 700 job vacancies.



9. PharmaEssentia Corporation set up new plant at Jhubei

Invested NTD 5.1 billion in the construction of a new plant in Hsinchu Biomedical Park. The groundbreaking ceremony was held on October 20, 2022, for the bio-production of long-acting interferon Ropeginterferonalfa-2b (Ropeg, P1101). The project is expected to be completed in 2025.

G.2.3 Launching of New Plant

1. Launching of VisEra Technology Co., Ltd. new plant at Longtan Science Park

In response to the market demand for image sensors, 3D optical components and optical fingerprint sensors, VisEra has invested NTD 15 billion in a new factory in Longtan Park. The plant has been launched on June 29, 2022, and provides advanced image sensor and micro-optical component manufacturing technologies and sufficient production capacity, thus creating another peak of semiconductor industry in HSP.



2. Launching of Fox Automation Technology Inc. new factory

In order to expand the production capacity of semiconductor equipment, machine modules and key spare parts, Fox Automation Technology Inc. invested NTD 2.4 billion in setting up a new factory in the Jhunan Science Park. The new plant has been launched on October 6, 2022, and will continue to expand production capacity and revenue in response to strong market demands for advanced processes such as 5G, AI, high-performance computing and electric vehicle applications, while at the same time strengthening the supply chain of upstream and downstream manufacturers in the semiconductor industry, as well as enhancing the global competitiveness of our semiconductor industry cluster.



G

● G.3 Global Network

G.3.1 Involvement in International Associations

HSP is currently a member of International Association of Science Parks and Areas of Innovation (IASP) and Asian Science Park Association (ASPAs). It participates in the annual leaders' meeting, council meeting and business meeting. HSP sends its members to present papers, introduces HSP's successful experiences and communicates with science parks and manufacturers from various countries in order to promote and attract investment. Since 2018, Director-General of HSP, Yeong-Junaq Wang, has taken over the chairmanship of ASPA and was-elected in 2022 to enhance the influence of ASPA in Asia.

-  In 2021, the COVID-19 pandemic has not abated. HSP continues to participate in international activities in several ways. In October 2021, Director-General of HSP, Yeong-Junaq Wang, participated in the online international conference and lectures at the Science Park Innovation Fair (SPIF) jointly organized by the Asian Science Park Association (ASPAs) and Daegu City, Korea, and recommended Andes Technology Co., Ltd. and Somnics, Inc. to participate in the industrial exhibition. The original term of Director-General of HSP, Yeong-Junaq Wang, as the Chairman of ASPAs ended in 2022, but was extended to 2024 by the Board of Directors in November 2021, which greatly enhances the international influence in Asia.
-  The 24th Annual ASPAs Conference was held on November 16-17, 2021, in Kuala Lumpur, Malaysia, organized by Malaysian Technology Development Corporation (MTDC). The conference was originally scheduled for 2020 but was postponed due to the impact of the Covid-19 pandemic. The theme of the conference was Advancing Technological Revolution Through Cooperation, and speakers from different countries were invited to share their views and bring in a diversity of perspectives, and to continue international cooperation beyond the constraints of the pandemic.
-  In November 2021, Yeong-Junaq Wang, as the Chairman of the Board of Directors of the ASPAs, was invited to deliver a speech and address the anniversary celebration of Yakutiadk Science Park in Sakha Republic.
-  In September 2022, Yeong-Junaq Wang participated in the IASP annual meeting in Spain. After two years, the World Science Park Congress, which was suspended due to the pandemic, was held again in Seville, Spain. With the theme of Green and Digital Change Powered by Innovation - The Role of Innovation Ecosystems, the conference invited science park experts from all over the world to give lectures, discuss and share their experiences.
-  In October 2022, Yeong-Junaq Wang participated in the 2022 ASPAs Annual Meeting in Jeju, Korea, and exchanged views with representatives of science parks from member countries. The ASPAs Board of Directors Meeting was held on October 31 to discuss the status of the organization in previous year and set the organizational goals and resolutions in near future. The Future of Science Parks in the Post-Corona Era was the theme of the conference and speakers from different countries were invited to share their views and bring in international perspectives.







IASP 2022 Annual Meeting in Spain
on September 2022



ASPAs 2022 Annual Meeting in Jeju, Korea,
on October 2022

Expanding New Southbound Markets

In implementing the government's New Southbound Policy and the National Science and Technology Commission's directive to extend the power of science parks overseas, HSP has been fostering its cooperation with New Southbound countries in recent years, especially India, where it has been working with Century Development Corporation to promote Technology Innovation International Park (TIIP) in Bangaluru, the Silicon Valley of India, as a foundation for market exploration in India. Meanwhile, Thailand is another key country.

-  In March 2021, HSPB replied to the consultation of Hoa Lac Hi-Tech Park, HHTP, in Vietnam about the key to success of HSP, its role and the cooperation and linkage with ITRI.
-  In July 2021, HSPB participated in the 7th Bilateral Science and Technology Cooperation Committee jointly organized by National Science and Technology Council of Taiwan and Vietnam through online.
-  In Sep 2021, HSPB led 14 Taiwanese manufacturers to participate in 2021 Online Taiwan Expo in Thailand with over 20,000 visitors online.
-  In October 2021, HSPB led 14 Taiwanese manufacturers to participate in the HSIP Medical Devices Online Procurement Conference and assisted Taiwanese manufacturers to conduct 82 negotiations with 39 international buyers.



On September 2021, 14 companies from HSP participated in 2021 Online Taiwan Expo in Thailand



On October 2021, 14 manufacturers participated in HSIP Medical Devices Online Procurement Conference

■ Sister Science Park Visits

By the end of 2022, HSPB has established sisterhood with 31 Related agencies in 16 countries to share their management experiences, increase technical and business exchanges, and keep abreast of the latest development trends of science parks in the world. Despite the limitation in physical communication due to pandemic, the online meeting allows the exchange of science and technology far and wide.

- 🌐 Online meeting with Royal Science and Technology Park, Kingdom of Eswatini, from April 2021 to discuss future cooperation plans.
- 🌐 In May 2021, HSPB participated in the online opening ceremony of the Iran Association of Science Park.
- 🌐 In October 2021, Director-General of HSP, Yeong-Junaq Wang, and delegation from Economic and Trade Mission to Central Eastern Europe visited Slovakia, Czech Republic and Lithuania, and signed a memorandum of cooperation with the Research Center of Zilina University in Slovakia to foster cooperation.
- 🌐 In December 2021, HSP received delegation from Slovakia and signed a memorandum of cooperation with Technical University of Košice.
- 🌐 In October 2022, the Royal Science and Technology Park in Kingdom of Eswatini visited HSP and signed a Memorandum of Understanding.



Photo of HSP signing a Memorandum of Understanding with Royal Science and Technology Park, Kingdom of Eswatini

Global Network

Besides networking with other science parks around the world to stimulate each other's innovation, HSPB also raises the visibility of the park and its manufacturers through various activities such as exhibitions, visits and investment recruitments.

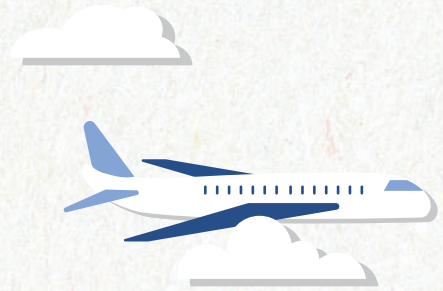
- Organized EU-Taiwan Medical Equipment Matchmaking Session in March 2021, which was attended by six companies to explore global market opportunities.
- Participated in the Medical Japan-International Medical Equipment Exhibition in October 2021. 11 medical equipment manufacturers participated in the event and exchanged commercial opportunities with customers, both on-the-spot and online.
- In October 2021, Taiwan-Japan Distance Procurement Symposium was held with the participation of six medical equipment manufacturers to expand business opportunities in a remote manner.
- In October 2022, Director-General of HSP, Yeong-Junaq Wang, went to Japan for Kitakyushu Science Park Anniversary Forum and startup organizations visit as well as a Taiwan-Japan forum on the themes of second generation semiconductors and startup support.
- In October 2022, Chief Secretary of HSPB, Jing-Chiou Yu, led six medical equipment startup teams from HSP to visit local medical equipment chambers of commerce, major trading companies, biomedical research parks and startup sites in Fukuoka and Kitakyushu, Japan, and to plan for exchange and networking.
- In November 2022, Deputy Director-General, Shu-Chu Chen led nine medical equipment companies from HSP to visit 6 organizations in Denmark, Sweden and Germany (Denmark: Sundhed, Healthcare; Sweden: Medicon Valley; Germany: Asklepios, Fraunhofer and Chempark) to conduct commercial opportunities exchange and matchmaking.
- In November 2022, Deputy Director, Shu-Chu Chen led nine HSP medical equipment manufacturers to exhibit at MEDICA 2022 in Düsseldorf, Germany to link up with the global market.



EU-Taiwan Medical Equipment Matchmaking Session in March 2021



Taiwan-Japan Distance Procurement Symposium in October 2021



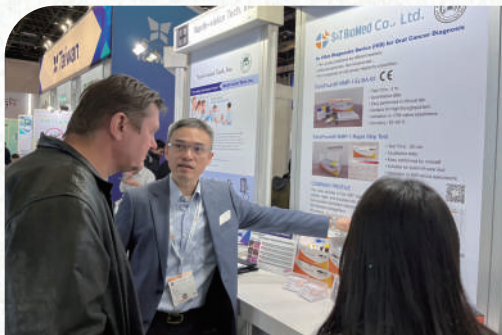
In October 2022, Director-General of HSPB, Yeong-Junaq Wang, went to Japan for Kitakyushu Science Park Anniversary Forum and startup organizations visit.



In October 2022, Chief Secretary of HSPB, Jing-Chiou Yu, went to Fukuoka and Kitakyushu, Japan, for visit and exchange.



In November 2022, Deputy Director-General, Shu-Chu Chen led nine medical equipment companies from HSP to visit 6 organizations in Denmark, Sweden and Germany.



In November 2022, HSP medical equipment manufacturers participated in MEDICA in Düsseldorf, Germany.

G.3.2 Academia-Industry Consortium for Science Park in Hsinchu Taiwan

HSP is surrounded by top academic and research institutions, including National Yang Ming Chiao Tung University, Tsinghua University, Industrial Technology Research Institute (ITRI) and National Synchrotron Radiation Research Center (NSRRC). These diversified external resources can provide HSP with abundant human resources, on-the-job trainings, industrial experiences, incubation services and R&D energy to promote the industrial development and innovation of HSP and the surrounding counties besides bringing the cluster effect to drive the transformation of national industries.

NSTC (former Ministry of Science and Technology) and HSPB, together with ASIP, universities, research institutes, government agencies, enterprises and other relevant units in the northern region, form Academia-Industry Consortium for Science Park in Hsinchu Taiwan, which is dedicated to the networking among industry, government, academia and research sectors as well as to discuss on the park's development profile, industrial development policies and industry-academia partnership system, so as to enhance their collaboration through exchange of opinions among leaders. This helps in leading the economic development of Northern Taiwan to converge with the international community. The association also organizes technical forums, industrial trend and technical seminars, industry-government-academia-research exchange meetings as well as training courses, in order to perform technology exchange and matchmaking while jointly promoting industry upgradation to achieve government's industrial development strategy of Connecting to the Place, Linking the Future, Linking the World.

Smart Transportation Innovative Technology Forum

Smart transportation is one of the important parts of our digital nation development plan and also the application of digital program innovations. Intelligent transportation and smart mobility have become emerging issues of concern for all countries. The main purpose of smart transportation is to reduce traffic congestion, improve traffic control through the coordinated operation of the Internet of Vehicles (IoV) formed through vehicle telematics, cloud computing and high-end big data processing, so as to provide users with a more convenient, safer, smoother and more eco-friendly smart transportation service.

Three speakers were invited to present in this forum, namely Director of Hsinchu City Government Department of Transportation, Ni Mao-rong, President of Taiwan Telematics Industry Association (TTIA), Men-Feng Wu and former Chairman of CECI Engineering Consultants, Inc., Taiwan, Prof. Hsun-Jung Cho. Through the presentation and comprehensive discussion of three major topics: performance of the cooperation platform between Hsinchu County and Hsinchu Science Park, application and development trend of telematics industry in Taiwan, and application of AI technology in intelligent transportation, more strategies for smart transportation and solutions for urban transportation problems are to be proposed.



Group photo of honored guests at the Forum on Smart and Innovative Transportation Technologies

Interdisciplinary Innovation Technology Forum - AI Empowerment x Smart Transportation

Along with evolution of era and rapid development of technology, big data and AI technologies have been widely applied to traffic management mode, so as to solve the existing problems through smart solutions and improve operational efficiency. Many cities around the world have been developing, demonstrating and testing intelligent transportation projects and have further progressed to the stage of expansion and promotion.

In this era of technology, transportation is becoming increasingly diversified. Ways to integrate the latest technologies such as cloud computing, AI, big data and 5G network are the focus of this forum. Founder of Meridigen Biotech Co., Ltd., John Hsuan, Chairman and President of Elan Microelectronics Corporation, I-Hau Yeh, and President of Coretronic Corporation, Robert Hsueh were invited to the forum to share and discuss on the integration of intelligent transportation across disciplines from the perspective of smart city governance. Besides, through data linkage with smart transportation central control center, IoT can be applied in vehicles to form IoV, which serves as the backbone of intelligent transportation system together with a network of transportation centers. The future of Taiwan's electric vehicle industry is now at a critical moment.



Group photo of distinguished guests of Interdisciplinary Innovation Technology Forum - AI Empowerment x Smart Transportation

Precision Smart Nursing International Technology Exchange Forum

Due to the growing silver hair generation, smart nursing has become a trend. In order to provide the latest international technology in guiding R&D of manufacturers and academics, HSPB and Academia-Industry Consortium for Science Park held the Precision Smart Nursing International Technology Exchange Forum on October 24, 2022, with 56 participants including manufacturers, academic and research institutions, and doctors. The theme of the forum was Smart Care, in response to Taiwan's ageing society. Smart care has become a new trend in the future and a new demand in the post-pandemic era. This forum focused on ways to integrate big data into customized care services, exploring the R&D achievements of precise smart nursing for dementia, and invited professional speakers to share their insights on treatment of dementia and to exchange with the participants.

HSP manufacturers represent ICARES Medicus, Inc. and General Biologicals Corporation to share the clinical application results of intraocular lens and Covid-19 nucleic acid detection reagent respectively. This enables the participants, experts and scholars and medical professionals to have a deeper understanding of the R&D capabilities of HSP manufacturers, keeping them in track the latest national and global trends in precision health and therefore laying a stronger foundation.

This forum is expected to introduce new ideas and insights, analyze global development of precision health, learn the key international issues to increase chances of international and cross-disciplinary collaborations, therefore accelerating the industrial innovation and future layout of the park manufacturers, so as to shape precision health industry cluster in HSP.

Innovation towards Sustainability

Legacy and innovation

In recent years, AI and Internet of Things (IoT) technologies have gradually matured, revealing that the technology industry is moving towards the era of AIoT. AI, IoT and 5G communication are certainly potential business opportunities and the focus of park manufacturers. Focusing on the future trend of software and hardware integration in the technology industry, HSPB has made Support hardware with software to transform HSP as governance axis in 2018, hoping to build on the past strengths of hardware in ICT industry, promote the development of software and hardware as well as cross-disciplinary integration, ongoingly driving the innovation and transformation of HSP while maintaining its status as international benchmark.

Software and hardware integration, industry re-upgrading

HSP has led the comprehensive development of information and communication industry clusters, among which the vertical integration efficiency of semiconductor upstream, midstream and downstream industrial chains has long been an international benchmark, promoting industry re-upgradation by integrating strengths of hardware into software applications. X-site of HSP covers an area of about 3.76 hectares and is located within the 36-hectare X-Plan technology corridor on the Gongdao 5th Road launched by the Hsinchu City Government. The Executive Yuan approved the X-site proposal in July 2020, which is going to be the key site for software and hardware integration as well as the construction of three R&D buildings. The construction of the first building started in early 2022 and is expected to be completed and opened in 2024. Meanwhile, the second and third buildings will be developed as the second phase and are expected to be completed by the end of 2025. The companies to be stationed in are mainly industries related to R&D design, information software and services, software and hardware integration and smart applications. HSP also anticipates that the central and local governments will jointly develop Innovative Science Park and International New Innovation Demonstration Base to assist high-tech companies in combining academic and research resources and thus give full play to high-performance R&D energy, cultivate outstanding technological talents as well as stimulate local innovative R&D strengths. This can create a cluster that can incorporate regional advantages and development conditions, laying the foundation of future industrial development for the next generation.



Planning of premises

Utilizing the existing advantages of hardware production, HSP integrates software applications into trend development of emerging industries, stays vibrant and continues to promote related construction. For instance, in response to the rapid development of Hsinchu Biomedical Science Park, the second biotech building in the Biomedical Science Park was completed in 2020 and the occupancy rate has reached 96% (as of the end of 2022). The construction of third biotech building started in 2021 and is expected to be completed and launched at the end of 2023.

Besides, new standard plants that meet the needs of future high-tech industry development will be constructed. HSPB has initiated HSP Phase III, IV and V Standard Plants Renewal Project, which will gradually renew 10 old standard factory buildings from 2021 to 2035. It is expected that the floor area can be expanded from the existing 53,700 square meters to 366,000 square meters after renewal.

In addition, the construction of second phase of the standard plants in Yilan Park has been completed in 2021 and opened for lease in May 2022 in order to constantly introduce communication knowledge services, digital creativity and R&D industries.



Improve the construction and management of traffic environment

HSPB and Hsinchu City and County governments are working together to promote the AI Intelligent Traffic Control Pilot Project to solve the traffic congestion issue on the north-south route between the science park and the county. In addition, HSPB and Hsinchu County Government are jointly proposing the THSR Under-bridge Liaison Route Extension to HSP Project. It is expected to be opened to traffic in mid-2023, which will relieve the congestion problem along Jhubei-HSP and complete the road network in the specific area of THSR. Moreover, HSPB will continue to improve traffic safety and optimize lane planning.



In 2020, the long-term policy goal of legacy and innovation is set to inherit the industrial clustering effect laid down by the science park over the past 40 years and to build a world-class science park that will continue to innovate through HSP expansion, establishment of semiconductor advanced process R&D center, planning of emerging software park as well as improvement of biotechnology industry clusters. By utilizing existing ICT strengths to develop emerging technology applications, the vision of Support hardware with software to transform HSP will be progressively achieved. HSP will continue to work on related efforts as below:



Global networking and overseas market exploration

Through active participation in international events, HSPB is aware of the latest development trends in science parks worldwide and fosters collaboration with science parks in various countries to assist manufacturers in exploring overseas market. In line with the new southbound policy, HSP has promoted exchanges and partnership with India and entered Europe, Asia and America under the name of Taiwan IC Solution to assist IC design companies in developing market matching opportunities. Also, in order to promote Taiwan's biotechnology achievements, HSPB actively involves in relevant global exhibitions to keep biotechnology industry on par with the world.



Encourage innovative R&D and entrepreneurship

Innovation is the key to stay competent while R&D is the driving force of industrial growth and sustainable operation. HSP constantly promotes relevant policies to lead innovation and has implemented projects such as Science Park Emerging Technology Application Project, Booster program for commercialization of biomedical products, Precision Health Inter-Disciplinary Promotion Program, as well as Hsinchu Science Park Talent Hub to help young entrepreneurs in pursuing their dreams and has established Young Entrepreneur's Studio and Yilan Entrepreneur's Studio, which are exclusively tailored for young entrepreneurs.



Park expansion helps to maintain the leading position of semiconductor industry

HSP is one of the most intensive semiconductor production area around the globe and has a complete IC industry infrastructure and industrial chain. However, the existing land is nearly occupied and is insufficient for R&D and mass production. In order to support the development of semiconductor industry and provide a quality infrastructure investment environment, HSP continuously proposes the expansion of park. The expansion of the Baoshan site is in progress as scheduled and manufacturers have started to build factories. Meanwhile, the pilot project of Longtan Science Park expansion has been submitted to Executive Yuan in November 2022, which is expected to enhance the supply chain of semiconductors based on the existing local industry so as to complete the semiconductor industry in Taiwan.



Appendix

● **Appendix I : Third-party inspection agency**
(British Standards Institution,BSI)Verification Opinion Statement

● **Appendix II : Global Reporting Initiative**
(GRI) Index

● **Appendix III : Sustainable Development Goals**
(SDGs) Index



● Appendix I : Third-party inspection agency (British Standards Institution,BSI)Verification Opinion Statement



獨立保證意見聲明書

國家科學及技術委員會新竹科學園區管理局 2022 ESG 永續報告書

英國標準協會與國家科學及技術委員會新竹科學園區管理局(簡稱竹科管理局)為相互獨立的公司，英國標準協會除了針對國家科學及技術委員會新竹科學園區管理局 2022 ESG 永續報告書進行評估和查證外，與竹科管理局並無任何財務上的關係。

本獨立保證意見聲明書之目的，僅作為對國家科學及技術委員會新竹科學園區管理局 2022 ESG 永續報告書所界定範圍內的相關事項進行保證之結論，而不作為其他之用途。除對查證事實提出獨立保證意見聲明書外，對於其他目的之使用，或閱讀此獨立保證意見聲明書的任何人，英國標準協會並不負有或承擔任何有關法律或其他之責任。

本獨立保證意見聲明書係英國標準協會審查竹科管理局提供之相關資訊所作成之結論，因此審查範圍乃基於並侷限在這些提供的資訊內容之內，英國標準協會認為這些資訊內容都是完整且準確的。

對於這份獨立保證意見聲明書所載內容或相關事項之任何疑問，將由竹科管理局一併回覆。

查證範圍

竹科管理局與英國標準協會協議的查證範圍包括：

1. 本查證作業範疇與國家科學及技術委員會新竹科學園區管理局 2022 ESG 永續報告書揭露之報告範疇一致。
2. 依照 AA1000 保證標準 V3 的第 1 應用類型評估竹科管理局遵循 AA1000 當責性原則(2018)的本質和程度，不包括對於報告書揭露的資訊/數據之可信賴度的查證。

本聲明書以英文作成並已翻譯為中文以供參考。

意見聲明

我們總結國家科學及技術委員會新竹科學園區管理局 2022 ESG 永續報告書內容，對於竹科管理局之相關運作與永續績效則提供了一個公平的觀點。基於保證範圍限制事項、竹科管理局所提供資訊與數據以及抽樣之測試，此報告書並無重大之不實陳述。我們相信有關竹科管理局的環境、社會及治理等績效資訊是被正確無誤地呈現。報告書所揭露之永續績效資訊展現了竹科管理局對識別利害關係人的努力。

我們的工作是由一組具有依據 AA1000 保證標準 V3 查證能力之團隊執行，以及策劃和執行這部分的工作，以獲得必要之訊息資料及說明。我們認為就竹科管理局所提供之足夠證據，表明其符合 AA1000 保證標準 V3 的報告方法與自我聲明參考 GRI 永續性報導準則係屬公允的。

查證方法

為了收集與作成結論有關的證據，我們執行了以下工作：

- 對來自外部團體的議題相關於竹科管理局政策進行訪談，以確認本報告書中聲明書的合適性
- 與管理者討論有關利害關係人參與的方式，然而，我們並無直接接觸外部利害關係人
- 訪談 23 位與永續性管理、報告書編製及資訊提供有關的員工
- 審查有關組織的關鍵性發展
- 審查內部稽核的發現
- 審查報告書中所作宣告的支持性證據
- 針對公司報告書及其相關 AA1000 當責性原則(2018)中有關包容性、重大性、回應性及衝擊性原則之流程管理進行審查

結論

針對 AA1000 當責性原則(2018)之包容性、重大性、回應性及衝擊性與 GRI 永續性報導準則的詳細審查結果如下：

包容性

2022 年報告書反映出竹科管理局已持續尋求利害關係人的參與，並建立重大永續主題，以發展及達成對永續具有責任且策略性的回應。報告書中已公正地報告與揭露環境、社會及治理的訊息，足以支持適當的計畫與目標設定。以我們的專業意見而言，這份報告書涵蓋了竹科管理局之包容性議題。

重大性

竹科管理局公布對組織及其利害關係人之評估、決策、行動和績效會產生實質性影響與衝擊之重大主題。永續性資訊揭露使利害關係人得以對公司之管理與績效進行判斷。以我們的專業意見而言，這份報告書適切地涵蓋了竹科管理局之重大性議題。

回應性

竹科管理局執行來自利害關係人的期待與看法之回應。竹科管理局已發展相關道德政策，作為提供進一步回應利害關係人的機會，並能對利害關係人所關切之議題作出及時性回應。以我們的專業意見而言，這份報告書涵蓋了竹科管理局之回應性議題。

衝擊性

竹科管理局已鑑別並以平衡和有效之量測及揭露方式公正展現其衝擊。竹科管理局已經建立監督、量測、評估和管理衝擊之流程，從而在組織內實現更有效之決策和結果管理。以我們的專業意見而言，這份報告書涵蓋了竹科管理局之衝擊性議題。

GRI 永續性報導準則

竹科管理局提供有關參考 GRI 永續性報導準則 2021 之自我宣告，並對每個涵蓋其行業準則和具相關性的 GRI 主題準則之重大主題，其揭露項參考全部報導要求的相關資料。基於審查的結果，我們確認報告書中參照 GRI 永續性報導準則之永續發展相關揭露項目已被報告、部分報告或省略。以我們的專業意見而言，此自我宣告涵蓋了竹科管理局的永續性主題。

保證等級

依據 AA1000 保證標準 v3 我們審查本聲明書為中度保證等級，如同本聲明書中所描述之範圍與方法。

責任

這份永續報告書所屬責任，如同責任信中所宣稱，為竹科管理局負責人所有。我們的責任為基於所描述之範圍與方法，提供專業意見並提供利害關係人一個獨立的保證意見聲明書。

能力與獨立性

英國標準協會於 1901 年成立，為全球標準與驗證的領導者。本查證團隊係由具專業背景，且接受過如 AA1000AS、ISO 14001、ISO 45001、ISO 14064 及 ISO 9001 之一系列永續性、環境及社會等管理標準的訓練，具有主導稽核員資格之成員組成。本保證係依據 BSI 公平交易準則執行。



For and on behalf of BSI:

Peter Pu, Managing Director BSI Taiwan

Statement No: SRA-TW-2022066
2023-07-12

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INDEPENDENT ASSURANCE OPINION STATEMENT

Hsinchu Science Park Bureau, National Science and Technology Council 2022 Sustainability Report

The British Standards Institution is independent to Hsinchu Science Park Bureau, National Science and Technology Council (hereafter referred to as HSPB in this statement) and has no financial interest in the operation of HSPB other than for the assessment and verification of the sustainability statements contained in this report.

This independent assurance opinion statement has been prepared for the stakeholders of HSPB only for the purpose of assuring its statements relating to its sustainability report, more particularly described in the Scope below. It was not prepared for any other purpose. The British Standards Institution will not, in providing this independent assurance opinion statement, accept or assume responsibility (legal or otherwise) or accept liability for or in connection with any other purpose for which it may be used, or to any person by whom the independent assurance opinion statement may be read.

This independent assurance opinion statement is prepared on the basis of review by the British Standards Institution of information presented to it by HSPB. The review does not extend beyond such information and is solely based on it. In performing such review, the British Standards Institution has assumed that all such information is complete and accurate.

Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to HSPB only.

Scope

The scope of engagement agreed upon with HSPB includes the followings:

1. The assurance scope is consistent with the description of Hsinchu Science Park Bureau, National Science and Technology Council 2022 Sustainability Report.
2. The evaluation of the nature and extent of the HSPB's adherence to AA1000 AccountAbility Principles (2018) in this report as conducted with reference to type 1 of AA1000AS v3 sustainability assurance engagement and therefore, the information/data disclosed in the report is not verified through the verification process. This statement was prepared in English and translated into Chinese for reference only.

Opinion Statement

We conclude that the Hsinchu Science Park Bureau, National Science and Technology Council 2022 Sustainability Report provides a fair view of the HSPB sustainability programmes and performances during 2022. The sustainability report subject to assurance is free from material misstatement based upon testing within the limitations of the scope of the assurance, the information and data provided by the HSPB and the sample taken. We believe that the performance information of Environment, Social and Governance (ESG) are fairly represented. The sustainability performance information disclosed in the report demonstrate HSPB's efforts recognized by its stakeholders.

Our work was carried out by a team of sustainability report assurers with reference to the AA1000AS v3. We planned and performed this part of our work to obtain the necessary information and explanations we considered to provide sufficient evidence that HSPB's description of their approach to AA1000AS v3 and their self-declaration with reference to GRI Standards were fairly stated.

Methodology

Our work was designed to gather evidence on which to base our conclusion. We undertook the following activities:

- a review of issues raised by external parties that could be relevant to HSPB's policies to provide a check on the appropriateness of statements made in the report.
- discussion with managers on approach to stakeholder engagement. However, we had no direct contact with external stakeholders.
- 23 interviews with staffs involved in sustainability management, report preparation and provision of report information were carried out.
- review of key organizational developments.
- review of the findings of internal audits.
- review of supporting evidence for claims made in the reports.
- an assessment of the organization's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000AP (2018).

Conclusions

A detailed review against the Inclusivity, Materiality, Responsiveness and Impact of AA1000AP (2018) and GRI Standards is set out below:

Inclusivity

This report has reflected a fact that HSPB has continually sought the engagement of its stakeholders and established material sustainability topics, as the participation of stakeholders has been conducted in developing and achieving an accountable and strategic response to sustainability. There are fair reporting and disclosures for the information of Environment, Social and Governance (ESG) in this report, so that appropriate planning and target-setting can be supported. In our professional opinion the report covers the HSPB's inclusivity issues.

Materiality

HSPB publishes material topics that will substantively influence and impact the assessments, decisions, actions and performance of HSPB and its stakeholders. The sustainability information disclosed enables its stakeholders to make informed judgements about the HSPB's management and performance. In our professional opinion the report covers the HSPB's material issues.

Responsiveness

HSPB has implemented the practice to respond to the expectations and perceptions of its stakeholders. An Ethical Policy for HSPB is developed and continually provides the opportunity to further enhance HSPB's responsiveness to stakeholder concerns. Topics that stakeholder concern about have been responded timely. In our professional opinion the report covers the HSPB's responsiveness issues.

Impact

HSPB has identified and fairly represented impacts that were measured and disclosed in probably balanced and effective way. HSPB has established processes to monitor, measure, evaluate and manage impacts that lead to more effective decision-making and results-based management within the organization. In our professional opinion the report covers the HSPB's impact issues.

GRI Sustainability Reporting Standards (GRI Standards)

HSPB provided us with their self-declaration of with reference to GRI Standards 2021 (For each material topic covered in the applicable GRI Sector Standard and relevant GRI Topic Standard, comply with all reporting requirements for disclosures). Based on our review, we confirm that sustainable development disclosures with reference to GRI Standards' disclosures are reported, partially reported or omitted. In our professional opinion the self-declaration covers the HSPB's sustainability topics.

Assurance level

The moderate level assurance provided is with reference to AA1000AS v3 in our review, as defined by the scope and methodology described in this statement.

Responsibility

The sustainability report is the responsibility of the HSPB's chairman as declared in his responsibility letter. Our responsibility is to provide an independent assurance opinion statement to stakeholders giving our professional opinion based on the scope and methodology described.

Competency and Independence

The assurance team was composed of Lead auditors experienced in relevant sectors, and trained in a range of sustainability, environmental and social standards including AA1000AS, ISO 14001, ISO 45001, ISO 14064 and ISO 9001. BSI is a leading global standards and assessment body founded in 1901. The assurance is carried out in line with the BSI Fair Trading Code of Practice.



For and on behalf of BSI:

A handwritten signature in black ink, appearing to read 'Peter Pu'.

Peter Pu, Managing Director BSI Taiwan

Statement No: SRA-TW-2022066
2023-07-12

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● Appendix II : Global Reporting Initiative (GRI) Index

The following content has been verified by an independent third-party and the result is published in the independent assurance report in Appendix I.

「 * 」 indicates major aspects.

Statement of use	HSPB, NSTC has reported in accordance with the GRI Standards for the period 2022/01/01 to 2022/12/31.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard(s)	-

GRI Category/ Material As- pects	No	GRI Index	Report Contents or Explanation	Page	Omit/ remark
1. The organization and its reporting practices					
GRI 2: General Disclosures 2021	2-1	Organizational details	1.1 About HSPB Editorial Policy	12 4	
	2-2	Entities included in the organization's sustainability reporting	1.1 About HSPB Editorial Policy	12 4	
	2-3	Reporting period, frequency and contact point	Editorial Policy	4	
	2-4	Restatements of information	Editorial Policy	4	
	2-5	External assurance	Editorial Policy	4	
2. Activities and workers					
GRI 2: General Disclosures 2021	2-6	Activities, value chain and other business relationships	1.1 About HSPB G.1.2 Compliance with Various Laws and Regulations	12 96	
	2-7	Employees	G.1.1 Human Resources	90	
	2-8	Workers who are not employees	G.1.1 Human Resources	90	
3. Governance					
GRI 2: General Disclosures 2021	2-9	Governance structure and composition	1.1 About HSPB	12	
	2-10	Nomination and selection of the highest governance body	Not applicable	-	HSPB is a government agency.
	2-11	Chair of the highest governance body	1.1 About HSPB	12	
	2-12	Role of the highest governance body in overseeing the management of impacts	Editorial Policy	4	

GRI Category/ Material As- pects	No	GRI Index	Report Contents or Explanation	Page	Omit/ remark
3. Governance					
GRI 2: General Disclosures 2021	2-13	Delegation of responsibility for managing impacts	1.1 About HSPB	12	
	2-14	Role of the highest governance body in sustainability reporting	1.1 About HSPB	12	
	2-15	Conflicts of interest	1.1 About HSPB	12	
	2-16	Communication of critical concerns	1.1 About HSPB G.1.3 Risk Management and Internal Control	12 99	
	2-17	Collective knowledge of the highest governance body	Not applicable	-	HSPB is a government agency.
	2-18	Evaluation of the performance of the highest governance body	-	-	Handled in accordance with the Civil Service Performance Rating Act
	2-19	Remuneration policies	G.1.1 Human Resources	90	
	2-20	Process to determine remuneration	G.1.1 Human Resources	90	
	2-21	Annual total compensation ratio	-	-	Non-disclosure based on the principle of confidentiality
4. Strategy, policies and practices					
GRI 2: General Disclosures 2021	2-22	Statement on sustainable development strategy	Message from Director-General	6	
	2-23	Policy commitments	Message from Director-General Innovation towards Sustainability	6 120	
	2-24	Embedding policy commitments	Message from Director-General	120	
	2-25	Processes to remediate negative impacts	1.3 Stakeholder Communication and Identification	18	
	2-26	Mechanisms for seeking advice and raising concerns	G.1.2 Compliance with Various Laws and Regulations	96	
	2-27	Compliance with laws and regulations	G.1.2 Compliance with Various Laws and Regulations	96	
	2-28	Membership associations	G.3.1 Involvement in International Associations	113	
	5. Stakeholder engagement				
GRI 2: General Disclosures 2021	2-29	Approach to stakeholder engagement	1.3 Stakeholder Communication and Identification	18	
	2-30	Collective bargaining agreements	G.1.1 Human Resources	90	
Material Topics					
GRI 3: Material Topics 2021	3-1	Process to determine material topics	1.4 Material topics and sustainability goals	22	
	3-2	List of material topics	1.4 Material topics and sustainability goals	22	

GRI Category/ Material As- pects	No	GRI Index	Report Contents or Explanation	Page	Omit/ remark
Topic-specific disclosure: 200 series (Economic topics)					
* Indirect Economic Impacts					
GRI 3: Material Topics 2021	3-3	Management of material topics	G.2 Continued success	104	
GRI 203 Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	G.2.1 Major Infrastructure Construction	105	
			S.3.5 Community Mutualism	84	
	203-2	Significant indirect economic impacts	G.2.1 Major Infrastructure Construction G.2.2 Benchmark Factory Expansion	105 110	
*Anti-corruption					
GRI 3: Material Topics 2021	3-3	Management of material topics	G.1 Integrity governance	88	
GRI 205 Anti-corruption 2016	205-1	Operations assessed for risks related to corruption	G.1.2Compliance with Various Laws and Regulations	96	
			G.1.2Compliance with Various Laws and Regulations	96	
	205-3	Confirmed incidents of corruption and actions taken	G.1.2Compliance with Various Laws and Regulations	96	
Topic-specific disclosure: 300 series (Environmental topics)					
*Water and Effluents					
GRI 3: Material Topics 2021	3-3	Management of material topics	E.1.3Circular Economy	30	
			E.1.2 Sustainable use of energy resources	40	
	303-1	Interactions with water as a shared resource	E.1.2 Sustainable use of energy resources	30	
GRI 303 Water and Effluents 2018	303-2	Management of water discharge-related impacts	E.1.4 Total pollutant control	44	
			E.1.2 Sustainable use of energy resources	30	
	303-3	Water withdrawal	E.1.4 Total pollutant control	44	
	303-4	Water discharge	E.1.2 Sustainable use of energy resources	30	
			E.1.4 Total pollutant control	44	
303-5	Water consumption	E.1.2 Sustainable use of energy resources	30		
Topic-specific disclosure: 400 series (Social topics)					
*Local Communities					
GRI 3: Material Topics 2021	3-3	Management of material topics	S.3 Joyful living in HSP	75	
GRI 413 Local Communities 2016	413-1	Operations with local community engagement, impact assessments, and development programs	S.3 Joyful living in HSP	75	
			S.3.2 Convenient Living	78	
	413-2	Operations with significant actual and potential negative impacts on local communities	S.3 Joyful living in HSP S.3.2 Convenient Living	75 78	
Custom topic					
*Net zero program					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	E.1.2 Sustainable use of energy resources	30	

GRI Category/ Material As- pects	No	GRI Index	Report Contents or Explanation	Page	Omit/ remark
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*Adaptation to climate change					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	E.1.2 Sustainable use of energy resources	30	
*Circular economy (including waste)					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	E.1.3 Circular Economy	40	
*Environment quality					
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*Park occupational safety and health (including labor)					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	S.2 Workplace well-being	64	
*Traffic control					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	S.3 Joyful living in HSP	75	
*Life enrichment					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	S.3 Joyful living in HSP	75	
*Administrative efficiency					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	G.1 Integrity governance	88	
*Investment recruitment					
GRI 3: Material Topics 2021	3-3	Management of material topics and related content	G.2 Continued success	104	

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Goals 3	Ensure healthy lives and promote well-being for all at all ages	SDGs Practice S.3.4 Developing Health Promotion and Care	8 82
Goals 4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	SDGs Practice S.1.2 Human Resource Development Grant Program	8 58
Goals 5	Achieve gender equality and empower all women and girls	SDGs Practice G.1.1 Human Resources	8 90
Goals 6	Ensure availability and sustainable management of water and sanitation for all	SDGs Practice E.1.2 Sustainable use of energy resources	8 30
Goals 7	Ensure access to affordable, reliable, sustainable and modern energy for all	SDGs Practice E.1.2 Sustainable use of energy resources	8 30
Goals 8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	SDGs Practice S.1.1 Promotes Entrepreneurship and Employment	8 56
Goals 9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	SDGs Practice S.1.1 Promotes Entrepreneurship and Employment	8 56
Goals 10	Reduce inequality within and among countries	SDGs Practice G.1 Integrity governance	8 88
Goals 11	Make cities and human settlements inclusive, safe, resilient and sustainable	SDGs Practice S.3.2 Convenient Living	8 78
Goals 12	Ensure sustainable consumption and production patterns	SDGs Practice E.1.3 Circular Economy	8 40
Goals 13	Take urgent action to combat climate change and its impacts	SDGs Practice E.1.2 Sustainable use of energy resources	8 30
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Hsinchu Science Park Bureau, National Science and Technology Council (HSPB, NSTC)

2022 Sustainability Report

Publisher and chief editor : Wang, Yeong-Junaq

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Website : <https://www.sipa.gov.tw>

Sustainability special column : <https://web.sipa.gov.tw/CSRWeb>

Date of Publication : Published on August 2023



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